MANUFACTURING OF “AEROFUSION HYBRID COOLING” AIR COOLER APPLIANCE

A PROJECT FEASIBILITY STUDY PRESENTED
TO THE FACULTY OF COLLEGE OF ENGINEERING
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FOR THE DEGREE IN BACHELOR OF SCIENCE IN
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MARKET STUDY

Introduction

The air cooler appliance market is an important segment of the larger home appliance industry, with around 89% of Filipino households relying on electric fans as their main home cooling solution. However, rising temperatures due to climate change are revealing the limitations of traditional fans and air coolers. Infanta, Quezon, serves as a local example of this challenge. According to PAG-ASA, the area often records dangerously high heat index levels of 42-46°C and has an average temperature of 29.61°C, which is 2.39% higher than the national average. These conditions make traditional electric fans and evaporative air-cooling fans less effective, intensifying the discomfort during the hottest parts of the day.

This study proposes an air cooler product called “AeroFusion” which aims to cater the needs of the market in terms of providing an innovative solution to an existing evaporative air cooler appliance, adapted to the households’ practical needs during peak heat climate condition. Infanta will be set as an ideal test market for an innovative air cooler product.

Market Description

The market for air cooler appliances includes a range of products designed to circulate air and provide cooling effects in homes, categorized under small appliances. This major category features the proposed air cooler product alongside several existing types of fans in the market, such as traditional ceiling fans, portable options like box fans, desk fans, tower fans, and floor fans, as well as conventional evaporative air coolers.

Globally, the market is expected to experience significant growth, with estimates predicting a compound annual growth rate of approximately 6.5% from 2023 to 2030, according to data from Verified Market Reports (2025). The increasing demand for energy-efficient cooling solutions and improved indoor comfort is driving consumers toward cooling fans, which serve as a cost-effective, eco-friendly alternative to traditional air conditioning systems.

The “Aerofusion” air cooler aligns well with global demand for sustainability, making it an ideal innovation for the home appliance market, particularly in Infanta, Quezon. This region possesses unique demographic and climatic characteristics that create favorable market conditions for introducing new cooling technologies. Infanta serves as a commercial hub for northern Quezon, attracting customers from neighboring municipalities, including Real, General Nakar, and Polillo, enhancing potential market reach beyond the resident population.

Additionally, infrastructure improvements, such as a stable electricity supply from QUEZELCO and the upgraded Marikina-Infanta Highway, have made the municipality more accessible for product distribution and ensured reliable power for appliance operation. Recent government initiatives by the Department of Energy that promote energy-efficient appliances further contribute to a supportive regulatory environment for innovative cooling solutions, which offer reduced electricity consumption compared to traditional air conditioning.

Proposed Product Concept

The concept for the “Aerofusion” air cooler emerged from the observation of low penetration rates of home air conditioning appliances and the common cooling practices used during extreme heat periods. Many Filipinos employ various improvised solutions, such as running multiple fans simultaneously for better air circulation or placing ice containers near air vents. These makeshift methods highlight a market opportunity for improved cooling products while underscoring the limitations of existing technologies.

Traditional evaporative coolers, although popular in dry climates, are less effective in high-humidity environments like Infanta, where they can increase moisture in already saturated air.

The innovation combines the affordability of fans with enhanced cooling effectiveness beyond simple air circulation. The breakthrough lies in integrating a cooling coil system, like air conditioning technology but simplified for cost-effectiveness, with traditional evaporative cooling pads, hence the term "Hybrid."

Design considerations focused on several key factors. Portability is essential, recognizing that Filipino families often move between different areas of their homes throughout the day. Sustainability is also a priority, as the unit does not use chemical refrigerants found in traditional air conditioning systems. Additionally, the fan incorporates tech features, such as remote control via mobile apps, which recent market reports indicate are highly appealing to consumers.

Target Market

The primary market for the “Aerofusion” air cooler targets households in Infanta, Quezon, across all income classes, except the low-income segment, which comprises 6.9% of the population in Quezon province (PSA.gov.ph, 2023). Based on Infanta's demographic profile and its classification as a first-class municipality, this market segment possesses both a need for cooling solutions and the financial capacity to invest in home appliances.

The secondary market will be barangay health and day care centers, as these settings are often occupied by vulnerable populations, including infants,

young children, patients, and the elderly, who are especially susceptible to heat-related stress.

Demand Analysis

Assessing market demand is essential for determining the commercial viability of any new product introduction. Demand analysis helps with understanding the quantity of products that target customers are willing and able to purchase at various price points within a specific timeframe. For the Hybrid Air Cooling Fan, it is crucial to understand demand patterns in Infanta, Quezon, as this information will guide production volumes, pricing strategies, and distribution requirements. This analysis provides vital insights into whether there is sufficient market interest to support the business venture.

Accurate demand estimation facilitates proper resource allocation and helps avoid both overproduction, which can tie up capital in unsold inventory, and underproduction, which can lead to missed sales opportunities. For a new cooling technology entering an established market dominated by traditional fans and air conditioners, understanding historical demand patterns and future growth trajectories is particularly important. This analysis must also consider seasonal variations, economic factors, and the increasing frequency of heat events that drive purchases of cooling appliances.

Historical Demand

The Aerofusion team analyzed historical demand patterns using the latest population census data from the Philippine Statistics Authority with population growth rates of 2.08% from year 2016 to 2020 and 0.47% from year 2021 to 2025. This is validated alongside the household-size information from the Municipality of Infanta profile on the official Quezon provincial government website. The number of households serves as a key indicator of market demand for air coolers, as each household represents a potential consumer of cooling devices. To ensure data accuracy and continuity throughout the 10-year analysis period, we calculated the published compound annual growth rates (see Appendix A).

Table 1: *Home appliance cooling fan historical demand based on Household Population (2016 - 2025)*

Year	Historical Demand
2016	16,400
2017	16,728
2018	17,062
2019	17,403
2020	17,733
2021	17,817
2022	17,903
2023	17,989
2024	18,079
2025	18,166

Sources: Philippine Statistics Authority (PSA) and Quezon.gov.ph official website under Municipality of Infanta Profile

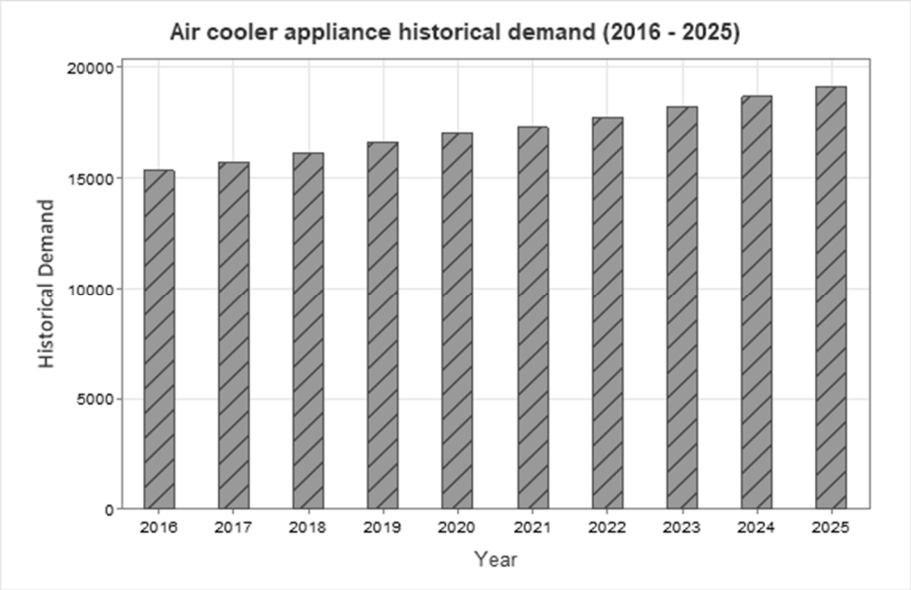


Figure 1: *Home appliance cooling fan historical demand based on household population (2016 - 2025)*

Table and Figure 1 present the historical household population in Infanta over the past decade, demonstrating consistent year-over-year growth from 16,400 households in 2016 to 18,166 households in 2025. This represents an average annual growth rate of 2.08% from 2016 to 2020 and 0.47% from 2021 to 2025. Overall, a total increase of 11% over the ten-year period. The upward trajectory of household formation indicates sustained demographic expansion driven by economic development, and Infanta's emergence as a commercial hub for northern Quezon. Each new household represents potential demand for cooling appliances, particularly given Infanta's extreme heat conditions. This creates an expanding market base for cooling solutions. This growth pattern is particularly

significant as it coincides with PAGASA's reports of increasingly dangerous heat index levels, suggesting that new households are entering a market where effective cooling is not just desired but essential for health and comfort.

Major Consumers/User of the Product

Residential households are the largest consumer segment for air cooler appliances in Infanta. This segment includes both replacement purchases for worn-out units and additional purchases as families expand their living spaces or seek to cool multiple rooms simultaneously. Beyond residential households, some small retail shops, grocery stores, gyms, and even open-air functions often opt for air coolers over more expensive air conditioning, due to rising energy costs.

Projected Demand

The projected demand was assessed using four distinct forecasting methods applied to the historical household data from 2016 to 2024. Each method employs different mathematical approaches for trend analysis, enabling a thorough evaluation of future demand patterns. The choice of the most suitable method was based on the error standard deviation, with lower values indicating greater forecast accuracy.

***Table 2**: Home appliance cooling fan projected demand (2026 - 2035)*

Year	Projected Demand
2026	18,580
2027	18,772
2028	18,963
2029	19,154
2030	19,346
2031	19,537
2032	19,728
2033	19,920
2034	20,111
2035	20,302

Using the previously analyzed demand data, Table 3 forecasts household demand for the “Aerofusion” air cooler over the next 10 years. The statistical straight-line forecasting methodology was utilized to determine this 10-year demand (see Appendix A), as it demonstrated the lowest standard deviation among the four methods tested, indicating the highest accuracy in fitting historical data patterns.

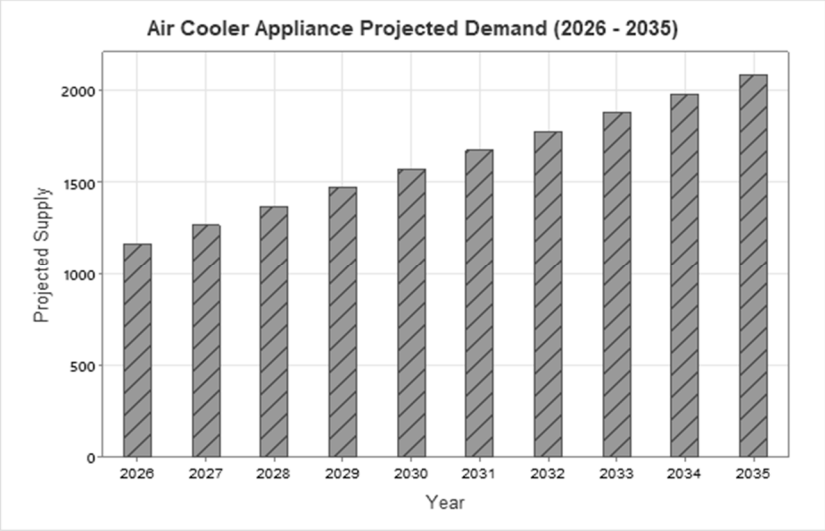


***Figure 2**: Home appliance cooling fan projected demand (2026 - 2035)*

Figure 2 illustrates the expected household demand for “Aerofusion” air cooler over the next decade. The bar graph indicates a consistent increase in demand for the proposed product, with no anticipated decline. This suggests substantial market potential for the product and that it is likely to experience sustained demand among households in Infanta. This is driven by the municipality's ongoing high heat index levels and the increasing need for effective, affordable cooling solutions.

Supply Analysis

This analysis examines the current supply landscape of conventional home cooling fans, including floor fans, table fans, wall-mounted fans, and portable evaporative air cooler appliances to establish baseline market conditions and project future supply patterns of the “Aerofusion” air cooler appliance.

Historical Supply

The air cooler appliance market in Infanta has primarily been focused on retailers of small home appliances. Prior to 2019, there was only one vendor, Rendezvous Trading, supplying small fans and air coolers in the area. As a result, residents often had to travel to Metro Manila to find additional options. This scenario changed in late 2019 when two new suppliers emerged: Angela Shopping

Mall, a general merchandise retailer with an appliance section, and Royal Star Appliance Marketing Inc., a full-service appliance retailer that carries major brands of household cooling fan appliances. By early 2020, these retailers had successfully captured market share by offering various fan and air coolers previously unavailable in Infanta.

To gather data on the supply of fan and air cooler appliances, the main strategy involved researching the store's facility and activity, observing physical product displays, and conducting indirect interviews.

Table 3. *Air cooler appliance historical supply (2026 - 2035)*

Year	Historical Supply
2016	185
2017	198
2018	215
2019	432
2020	710
2021	754
2022	769
2023	813
2024	973
2025	1017

Source: Suppliers in Infanta, Quezon

Table 4 shows the supply landscape of air cooler appliances, which underwent a significant transformation during the 2016–2025 period, evolving from severe undersupply to improved market availability. The market disruption

occurred in late 2019 with the entry of two new competitors, resulting in a post-2019 compound annual growth rate (CAGR) of approximately 18.6%

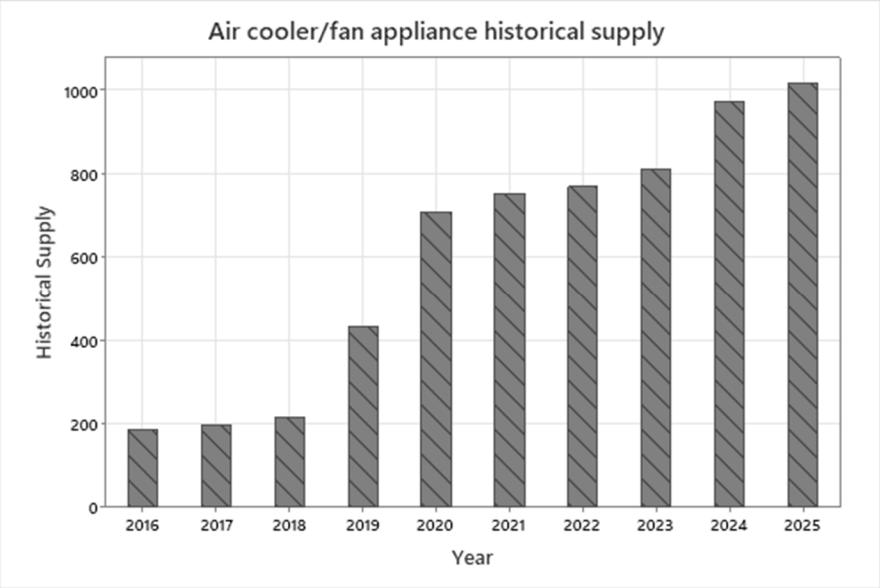


***Figure 3**: Air cooler appliance projected demand (2026 - 2035)*

. Figure 2 above shows the historical supply trend of the three competitors which includes, Rendezvous Trading, Angela Shopping Mall, and Royal Star Appliance Marketing Inc., at Infanta, Quezon.

Major Producers of the Product

***Table 4.** Major Producers of the Air Cooler Appliances*

Major Brands	Product Category	Description	Market Position & Competitive Advantages
Asahi	Electric Fans & Air Coolers	Long-established Philippine brand producing durable electric fans and air coolers. Products are widely available in many local appliance stores in the Philippines	Strengths: Extensive local distribution network, strong brand recognition for durability. Weaknesses: Limited smart features, basic design.
Hanabishi	Electric Fans & Evaporative Air Coolers	Filipino brand offering a diverse range of fan types and evaporative coolers. Products are widely available in many local appliance stores in the Philippines	Strong local brand loyalty, competitive pricing Weaknesses: Limited technology innovation.
Midea	Smart Cooling Appliances	A Fortune 500 company partnered with Concepcion Industrial Corporation. Produces smart fans and air circulators with Wi-Fi connectivity, app control, and dual oscillation features.	Strengths: Advanced smart home integration, energy-efficient technology, strong R&D capabilities, international brand recognition. Weaknesses: Lack of niche products related to air coolers

Sources: Brands available in Infanta, Quezon. Description from Independent product reviews and market analysis from ph.my-best.com (2025)

Projected Supply

Four distinct forecasting methods were applied to the available supply data to ensure reliable projections. This supply projection study selects the Statistical Straight-Line method as the one with the lowest standard deviation.

Table 5. *Air Cooler Appliance Projected Supply (2026 - 2035)*

Year	Projected Supply
2026	1,172
2027	1,275
2028	1,377
2029	1,480
2030	1,583
2031	1,686
2032	1,789
2033	1,891
2034	1,994
2035	2,097

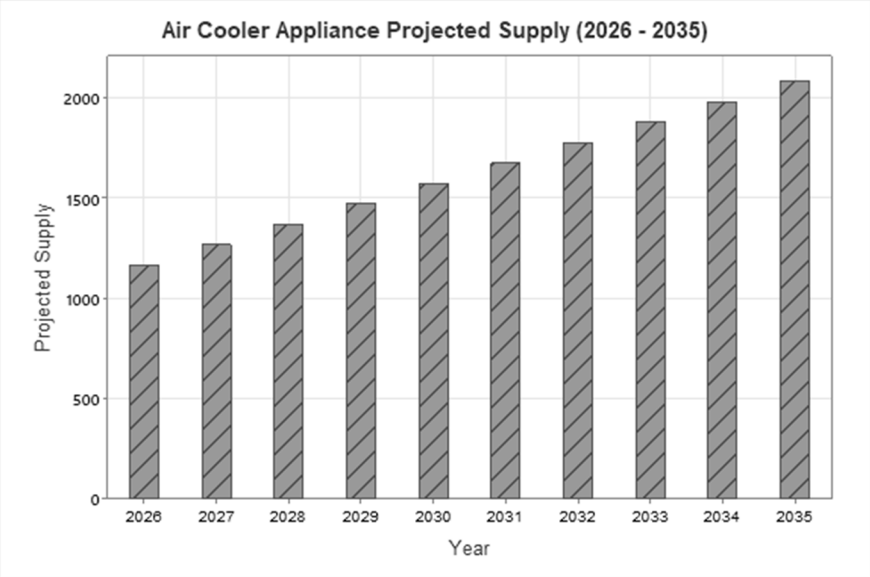


***Figure 4**: Air Cooler Appliance Projected Demand (2026 - 2035)*

The projected supply growth indicates rapid expansion in the first two years, followed by steady growth through 2035, which aligns with household formation rates.

Demand-Supply Gap Analysis

***Table 6**. Air cooler appliance demand-supply gap*

Year	Projected Demand (Households)	Projected Supply (Units)	Projected Demand - Projected Supply	Percentage of Households Willing to Purchase	Demand-Supply Gap
2026	18,580	1,172	17,408	86%	14,971
2027	18,772	1,275	17,497	86%	15,047
2028	18,963	1,377	17,586	86%	15,124
2029	19,154	1,480	17,674	86%	15,200
2030	19,346	1,583	17,763	86%	15,276
2031	19,537	1,686	17,851	86%	15,352
2032	19,728	1,789	17,939	86%	15,428
2033	19,920	1,891	18,029	86%	15,505
2034	20,111	1,994	18,117	86%	15,581
2035	20,302	2,097	18,205	86%	15,656

***Formula:** Demand-Supply Gap = (Projected Demand - Projected Supply) × %*

Yes

Table 8 highlights an increasing demand-supply gap in the Infanta home cooling fan appliance market. This widening gap underscores significant market potential for the Hybrid Air Cooling Fan, as the current supply channels in Infanta are inadequate to meet household demand.

Using random sampling, surveys determined that the percentage of potential buyers was 86% (see Appendix A). This demand-supply gap analysis

offers essential insights for business planning, including aggressive market-entry strategies that avoid displacing existing suppliers and the potential for expansion without risking market saturation.

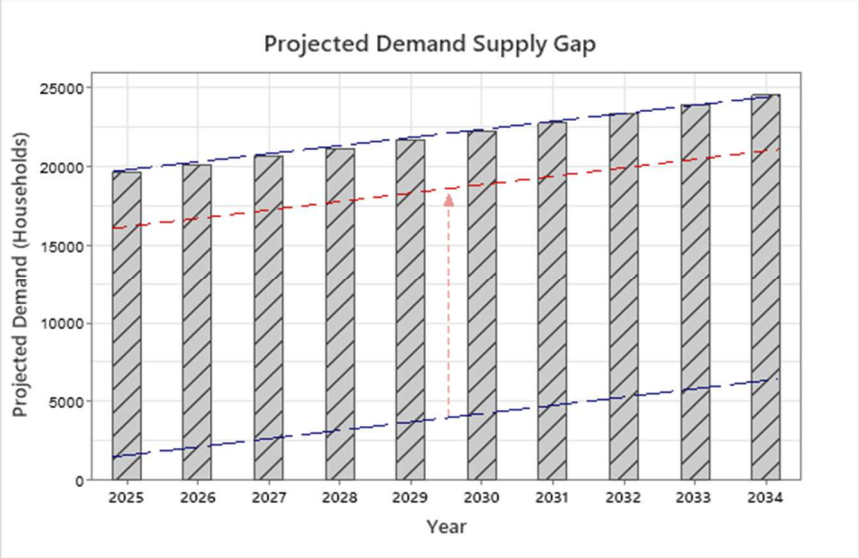


***Figure 5**: Air cooler appliance projected demand-supply gap*

Figure 4 illustrates the ongoing and expanding imbalance between demand and supply over the 10-year projection period. The diverging trend lines between demand and supply indicate that market forces alone are insufficient to close the gap, creating a sustained opportunity for new entrants in the market. The Hybrid Air Cooling Fan is strategically positioned to capitalize on this unmet demand through its innovative cooling technology and competitive pricing.

Production Capacity

The feasibility assessment focuses on establishing the manufacturing capacity to determine whether the venture can realistically meet its target market demand. As outlined in the Technical Study, the “AeroFusion” manufacturing facility is designed with 4 workstations balanced to 35 minutes cycle time each under normal operating conditions. This was determined through a systematic analysis of workflow optimization and resource allocation, which is discussed in detail in the subsequent technical chapter.

The available production time of 450 minutes per day reflects 7.5 productive hours after accounting for a one-hour lunch break during the standard eight-hour shift. This time allocation provides adequate rest periods for workers while maintaining productivity standards consistent with Philippine manufacturing practices. The preventive maintenance schedule allocates 6 days annually to equipment calibration, cleaning, and minor repairs, ensuring sustained equipment reliability without excessive production interruptions.

Table 8: *Annual Production Capacity*

Year	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
No. of days per year	365	365	366	365	365	365	366	365	365	365
Less no. of holidays	15	15	15	15	15	15	15	15	15	15
Less weekends	104	104	104	104	104	104	104	104	104	104

Less Downtime for Preventive Maintenance	6	6	6	6	6	6	6	6	6	6
Total Annual Operation Days	240	240	241	240	240	240	241	240	240	240
Available Production Time (min) per day	450	450	450	450	450	450	450	450	450	450
Production Cycle Time (min)	35	35	35	35	35	35	35	35	35	35
Daily Capacity/Line (units)	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9
No. of Production Lines	1	1	1	1	1	1	1	1	1	1
Theoretical Annual Capacity	3086	3086	3099	3086	3086	3086	3099	3086	3086	3086
Efficiency Rate	81%	82%	83%	84%	85%	86%	87%	88%	89%	90%
Annual Production Capacity	**2499**	**2530**	**2572**	**2592**	**2623**	**2654**	**2696**	**2715**	**2746**	**2777**
Daily demand (units/day)	10	10	10	10	10	11	11	11	11	11

The company's annual production capacity highlights its ability to meet expected market demand while maintaining sustainable operations. In Year 1, the facility will produce 2,499 units at an operational efficiency rate of 81%. This figure accounts for operational constraints, such as the initial learning curve of the production team, minor equipment adjustments, material-handling processes, and

quality control requirements typical of new manufacturing operations. An 81%-90% overall efficiency rate was applied as a production learning curve involving estimated calculation of 90-95% availability, 90-95% Performance and 100% Quality trend for the 10-year period. This cautious approach provides a buffer for product delivery to customers during the crucial startup phase.

By Year 10, the projected capacity is expected to grow to 2,777 units, reflecting natural productivity gains as workers gain expertise and processes are optimized. The theoretical maximum capacity is 3,086 units per year, based on 240 operating days, offering significant potential for future expansion. This could include adding production shifts, investing in automation, or increasing line speeds in response to growing market demand.

Market Share

Market share indicates a company's production capacity as a percentage of the identified demand-supply gap in its target market. This metric highlights AeroFusion's ability to seize available market opportunities in Infanta, Quezon without directly competing for the existing market volume held by established players.

Table 8: *Market Share for the Next 10 Years*

Year	Demand-Supply Gap	Annual Production Capacity	Market Share (%)

2026	14,971	2499	16.70%
2027	15,047	2530	16.82%
2028	15,124	2572	17.00%
2029	15,200	2592	17.05%
2030	15,276	2623	17.17%
2031	15,352	2,654	17.29%
2032	15,428	2,696	17.47%
2033	15,505	2,715	17.51%
2034	15,581	2746	17.63%
2035	15,656	2777	17.74%

Table 18 shows the progression of market share for single-shift operations over the 10-year period. The data indicates that the market share of AeroFusion Air Cooler will capture 15.03% of the market demand-supply gap.

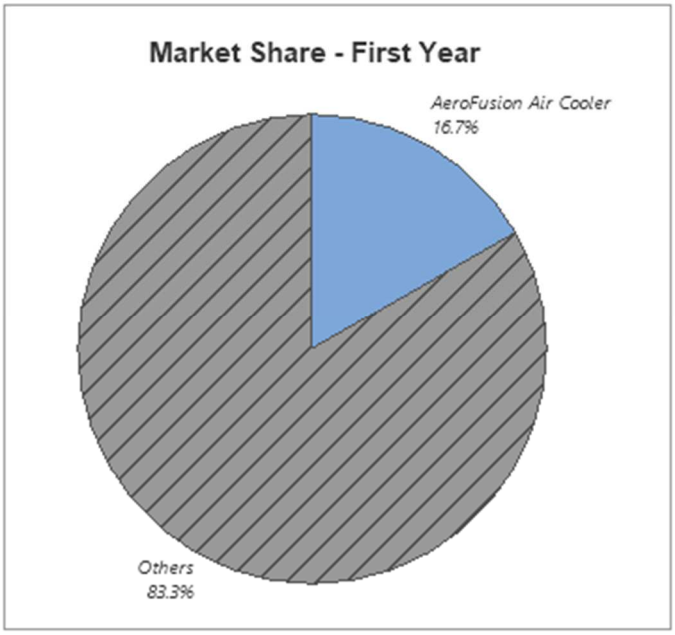


***Figure 6**: AeroFusion Market Share for the first year*

Figure 5 illustrates Hybrid Cooling Fan Manufacturing's market position relative to its competitors in the first year of market entry. The production capacity

of 2,508 units, having a first-mover advantage for Aerofusion's “hybrid cooling”, represents the aggressive market penetration of around 15% due to an unmet market demand with only three retailers of fans and air coolers in the target area from Rendezvous Trading, Angela Shopping Mall, and Royal Star Marketing Inc.

Pricing

The pricing strategy for the “AeroFusion” air cooler appliance is based on a cost-plus, which considers all direct and indirect costs along with the markups applied during manufacturing and retail. The following breakdown reflects the optimal suggested retail price of ₱6,056.14.

Table 7: *Unit Selling Price of “Hybrid” Air Cooling Fan Appliance*

Cost Component	Amount (₱)
Direct Materials	1,863.00
Direct Labor	349.92
Indirect Materials	179.92
Indirect Labor	390.51
Other Manufacturing Overhead	105.53
Administrative Expenses	649.33
Selling & Distribution	216.85
Manufacturer's Markup (20%)	751.01
Manufacturer's Selling Price (MSP)	4,506.06
Retailer's Markup (20%)	901.21
Retail Price (Before VAT)	**5,407.27**
Value Added Tax (VAT 12%)	648.87
Launch promotion price with 1,000 discount vouchers available to the first 500 customers	₱5,056.14
SUGGESTED RETAIL PRICE (Regular)	**₱6,056.14**

Marketing Strategies

The marketing strategy for AeroFusion is based on the comprehensive 7Ps framework, ensuring all aspects of the marketing mix are strategically aligned with the needs of Infanta, Quezon's target market and the company's business objectives.

Product, Price, and Place.

The primary product is the "AeroFusion Hybrid" Air Cooler, a locally manufactured appliance specifically designed for the frequently high-index climate in Infanta, Quezon. This product features dual-cooling technology that combines evaporative cooling with a heat exchanger—a unique aspect not found in competing products. The product comes with a comprehensive 2-year warranty, customizable color panels (white and blue), and eco-friendly recyclable housing. The pricing strategy utilizes a penetration pricing model, with a regular suggested retail price of ₱6,056.14, inclusive of 12% VAT. A launch promotion offers the first 500 units at ₱5,056.14 through direct channels. The Manufacturer's Selling Price to retail partners is ₱4,506.06, allowing for a 34% retail markup. Payment options include cash and 3–6-month installment plans facilitated through partnerships with

a consumer finance provider such as Home Credit PH. Distribution employs a hybrid model, with 45% of sales through direct channels (a permanent showroom in Poblacion and mobile demonstration units visiting 2-3 barangays weekly) and 55% through retail partnerships with Rendezvous Trading, Angela Shopping Mall, and Royal Star Appliance Marketing Inc.

Promotion and People

The promotional strategy allocates a total budget of ₱542,000 for Year 1, with the majority dedicated to an aggressive launch promotion offering discount vouchers to the first 500 customers. This substantial investment in introductory pricing aims to quickly build initial market penetration and generate early word-of-mouth referrals within Infanta's close-knit community. The remaining ₱42,000 supports ongoing marketing communications: ₱36,000 is allocated for monthly social media advertising on TikTok and Facebook to maintain a digital brand presence and engage younger household segments, while ₱6,000 is earmarked for the semi-annual production of 250 full-color brochures distributed through retail partners and mobile demonstration units. This promotion-heavy approach prioritizes rapid customer acquisition in Year 1, with plans for a shift toward sustained brand-building activities in subsequent years once initial market presence is established. The people strategy focuses on local hiring exclusively from Infanta, with all personnel completing a mandatory 40-hour training program

covering product technology, customer service, and safety protocols. Customer support includes a dedicated hotline and Facebook Messenger channel, with a commitment to resolving inquiries within 48 hours, and direct involvement from the General Manager for escalated concerns.

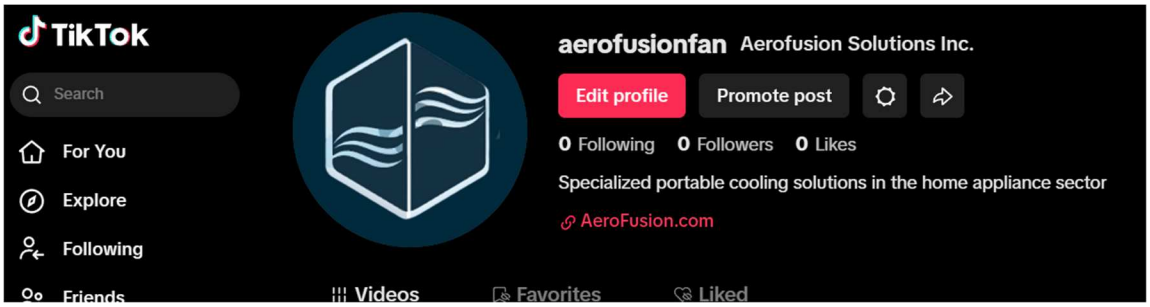


***Figure 7**: TikTok Social Media Business Account*

Process and Physical Evidence

Standardized processes ensure consistent service delivery through a streamlined purchase process that includes needs assessment, live demonstrations, transparent pricing, and flexible payment options. Physical evidence reinforces brand credibility through a modern showroom in Poblacion with working demonstration units and visible DTI certification, premium product packaging with bilingual manuals and warranty documentation, a professional digital presence including an e-commerce website and active social media

accounts, and standardized documentation for all customer transactions, including detailed quotations, service reports, and satisfaction surveys.

Factors Affecting the Market

The SWOT analysis framework helps evaluate an organization's strengths and weaknesses compared to external market conditions. Figure 6 shows the SWOT matrix, which outlines key strategic factors in four areas.

S	Strengths	Weaknesses	W
	• Hybrid cooling (evaporative + coil) with stronger cooling than ordinary fans. • Designed for coastal, high-humidity conditions in Infanta, Quezon. • Local manufacturing with fast parts and service support. • Energy-efficient operation versus air conditioners. • 2-year warranty and patent protection filed for the technology	• Higher upfront price compared with conventional fans. • New brand with low initial awareness and trust. • Dependence on a few retail partners and limited working capital. • Narrow promotional tools (social media + brochures + launch discount only)	
O	**Opportunities**	**Threats**	**T**
	• Rising temperatures and high heat index driving stronger cooling needs. • Growing middle-income households in Infanta with improving purchasing power. • Higher electricity costs making efficient alternatives attractive versus AC. • No direct hybrid cooling competitors; clear gap between fans and AC units. • Potential institutional buyers (health centers, day care centers, schools)	• Strong loyalty to established fan brands (Standard, Asahi, Hanabishi). • Inflation and economic uncertainty reducing ability to buy mid-priced appliances. • Seasonal demand peaks creating off-season underutilization and cash-flow risk. • Resistance to new technology among older and very price-sensitive consumers	

Figure 8. *SWOT Analysis*

The product's main strengths include its hybrid evaporative-and-coil cooling technology, design optimized for coastal humid conditions, local manufacturing featuring easily accessible parts and service, and energy-efficient operation compared to traditional air conditioners. Additionally, customers benefit from a 2-year warranty and patent protection for the technology.

However, several internal weaknesses require careful management. The unit's higher upfront price compared to conventional fans may deter price-sensitive households. Furthermore, AeroFusion is a new brand with limited recognition and relies on only a few retail partners. It also faces challenges due to constrained working capital and a narrow range of promotional tools, including social media, brochures, and a launch discount, which could initially limit its market reach.

Externally, the product benefits from several strong opportunities. Rising temperatures and high heat index levels, a growing middle-income segment in Infanta, and increasing electricity costs make efficient alternatives to air conditioning more attractive. Additionally, the absence of direct hybrid competitors creates further potential demand from institutional buyers such as health centers, daycare centers, and schools. However, these opportunities are balanced by potential threats. Established fan brands have strong customer loyalty, while inflation and economic uncertainty create challenges. Seasonal demand peaks

also pose cash-flow risks, and there may be resistance to new technology among older and highly price-sensitive consumers.

Channels of Distribution

The distribution channels are essential to help companies to reach new customers. For AeroFusion, the distribution architecture optimizes market coverage by maximizing the available channels in the market.

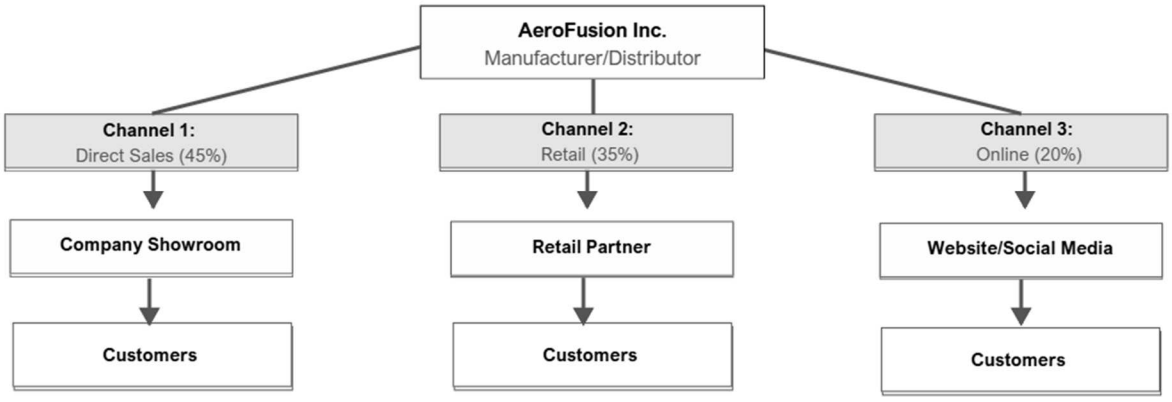


Figure 9: *Distribution of Channels Diagram Flow Chart*

AeroFusion employs a multi-channel distribution strategy to optimize market coverage in Infanta, Quezon, while ensuring consistent service quality and managing channel margins. As shown in Figure 9, sales are distributed across three main channels.

The first channel is direct sales, which represents 45% of the projected volume. This includes sales at the company's flagship showroom in Poblacion and

through mobile demonstration units that visit different barangays each week. The direct sales channel offers the highest profit margin, provides complete control over the customer experience, and is crucial for educating consumers about the new hybrid cooling technology.

The second channel comprises retail partnerships, contributing 35% of total sales. Strategic alliances with established local retailers, such as Royal Star Appliance Marketing Inc. and Angela Shopping Mall, allow for immediate market access and enhance brand credibility. These partnerships operate on a consignment basis with retailer margins of 15–20%, ensuring profitability while maintaining consistent suggested retail prices (SRPs) across all locations.

The third channel is online and social commerce, expected to account for 20% of sales. This includes the company website, Facebook Marketplace, and future expansion to platforms like Lazada and Shopee. Online sales provide 24/7 access to products and extend reach to customers in more remote barangays.

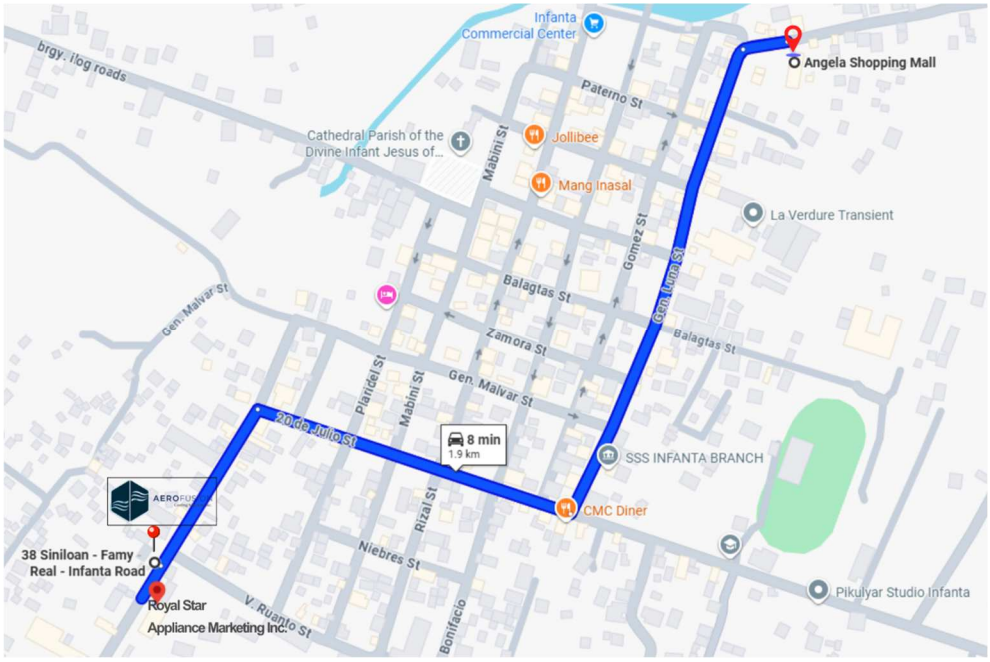


Figure 10. *Distribution Map*

Figure 10 shows the proposed distribution map of the retailer partners, Royal Star Appliance Inc,. and Angela Shopping Center. This includes the company showroom in which the product will also be showcase for sale. Product deliveries are handled by third-party local vehicles, including tricycles, motorcycles, and rental vans, with an average transportation cost of ₱60 per unit. This flexible logistics model minimizes the capital investment in delivery vehicles while ensuring reliable service.

The distribution network covers all 36 barangays of Infanta and extends to nearby municipalities, within a 40-kilometer radius. Delivery standards aim for

same-day fulfillment for customers in Poblacion, while barangay locations can expect delivery within 1 to 3 days. An installation team of two technicians is available, capable of completing up to eight installations each day.

Conclusion

This market study confirms the commercial viability of introducing the “AeroFusion Hybrid-cooling” air cooler to Infanta, Quezon. The combination of climate necessity, technological innovation, and significant unmet demand creates a strong opportunity for market entry and growth over the next decade.

Analysis reveals a substantial need for effective cooling solutions in Infanta, a first-class municipality with a population of 77,676 (2024 census) across 36 barangays. The identified demand-supply gap allows for a conservative production target of 2,499 units in Year 1, which accounts for 16.70% of that gap. The gap is supported by an 86% positive intent among surveyed households and the absence of innovative air coolers in the area.

The AeroFusion's hybrid-cooling technology effectively addresses the limitations of conventional fans in Infanta’s coastal, high-humidity environment. With a retail price of ₱6,056.14 SRP, it targets middle to upper-income households seeking enhanced cooling options.

The distribution strategy includes 45% of sales through direct channels, 35% through retail partners such as Royal Star Appliance Marketing Inc. and Angela Shopping Mall, and 20% via online platforms. This approach maximizes market penetration.

A SWOT analysis indicates manageable internal weaknesses, such as limited production capacity and higher upfront pricing compared to fans. However, external opportunities, rising heat, escalating electricity costs, and a growing middle-income population, outweigh the threats from established brands.

In summary, the AeroFusion aligns well with market needs and conditions, establishing a solid foundation for proceeding with the next feasibility assessments.

Chapter II

TECHNICAL STUDY

Introduction

This Technical Study evaluates the engineering feasibility, production requirements, and operational parameters necessary for manufacturing the “AeroFusion” air cooler in Infanta, Quezon. This chapter examines the product's technical specifications, manufacturing processes, facility requirements, and essential quality control measures for establishing sustainable production operations. The analysis demonstrates that the proposed hybrid cooling technology can be successfully manufactured using locally available resources, existing production equipment, and a skilled workforce within the target market area.

Product Description

The “AeroFusion hybrid-cooling” system means integrating two complementary cooling technologies to produce significantly cooler air with less humidity. The first stage is the direct cooling that uses a copper tube heat exchanger to directly reduce air temperature through sensible heat transfer. This stage cools air without adding any mositure. The system operates using chilled water circulation or refrigerant gel ice packs. The second stage is the indirect

cooling, which incorporates traditional evaporative cooling via high-density cellulose cooling pads. This provide additional cooling capacity and an additional temperature reduction via the latent heat of vaporization. The system features a portable high speed pump to optimize the cooling-to-humidity ratio and can be manually adjusted based on ambient conditions.

The combination of these two cooling mechanisms enables the AeroFusion system to achieve a higher efficiency cooling solution and extended climate range. This performance significantly outperforms conventional evaporative coolers in environments with high heat index levels, such as Infanta, Quezon.

Product Logo

The AeroFusion product logo as shown in Figure 7, features a distinctive hexagonal design incorporating flowing air wave elements. The hexagonal geometry symbolizes stability and efficiency, while the wave patterns represent the continuous flow of cooled air and the integration of the dual cooling technologies. The color palette uses cool blue tones that transition to white, visually communicating the product's temperature-reduction capability and clean air output. This design effectively communicates the system's core technological innovation through a single, recognizable visual element.

***Figure 7**. Product logo design for the AeroFusion Air Cooler Fan*

Company Logo

AeroFusion Cooling Solutions Inc. has a corporate identity that ensures visual consistency with its product logo while establishing a professional brand presence. The design as shown in Figure 8, features a hexagonal motif and symbols of airflow, emphasizing the company's dedication to innovative cooling solutions. The typography uses a clean, modern sans-serif font that reflects technological sophistication and reliability. Together, these visual elements create a cohesive brand identity, ensuring consistent recognition across marketing materials, product packaging, and corporate communications.

***Figure 8**. Company logo design for the AeroFusion Cooling Solutions Inc.*

Product Drawing

Understanding the physical dimensions and form factor of the “AeroFusion” Air Cooler is essential for assessing its manufacturability, transportation logistics, and compatibility with typical household spaces. Figure 9 presents the dimensional specifications of the AeroFusion Hybrid Air Cooler, displaying the front, side, and back views with measurements. This technical drawing establishes the product's physical form factor and spatial requirements, ensuring the unit fits within typical Filipino household spaces. The compact tower design measures 290mm × 290mm at the base and 1200mm tall, optimizing vertical air circulation while minimizing floor area.

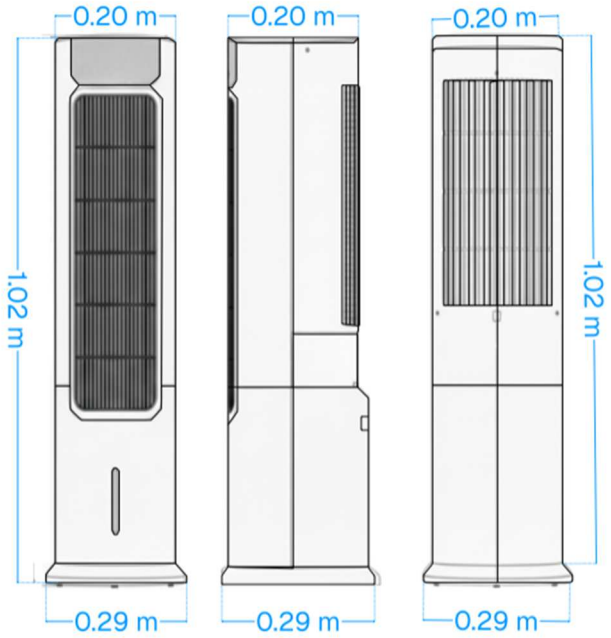
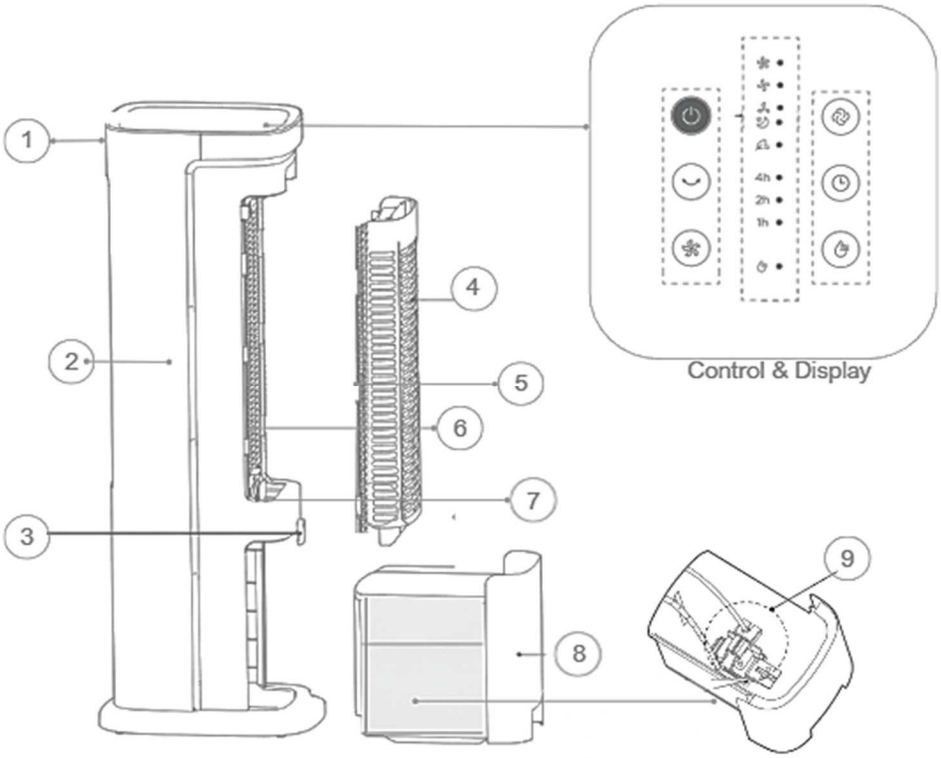


Figure 9. *Product Orthographic view drawing*



1	Temperature Display
2	Body (ABS plastic)
3	Water Tank Temperature Control
4	Rear Grill
5	Heat Exchanger (Hybrid Operation)
6	Motor + Impeller
7	Drain Pan
8	Water Tank
9	Water Pump

Figure 10. *Product assembly drawing*

Figure 10 illustrates the internal component architecture and key operational systems of the AeroFusion Hybrid Air Cooler. The diagram identifies nine essential components: (1) Temperature Display providing real-time

monitoring, (2) Body constructed from ABS plastic for durability and lightweight operation, (3) Water Tank Temperature Control for optimized cooling, (4) Rear Grill for air intake with safety cover, (5) Heat Exchanger featuring the hybrid evaporative and cooling coil system that delivers improved cooling efficiency, (6) Motor and Impeller for air circulation, (7) Drain Pan for water management, (8) Insulated Water Tank for maintaining cooled water and supporting gel ice pack operation, and (9) Water Pump for continuous circulation through the heat exchange system. The control and display panel shows the operational interface with temperature monitoring and humidity display, allowing users to adjust settings and track real-time performance. This integrated component design demonstrates how the hybrid cooling technology is seamlessly incorporated into a compact, user-friendly system optimized for high-humidity environments.

Product Specification

Table 11 outlines the technical specifications of the AeroFusion Air Cooler, detailing its operational capabilities and performance characteristics. These specifications showcase design optimization aimed at balancing cooling efficiency, energy consumption, and manufacturing feasibility while complying with local market requirements.

***Table 11**. Product Specifications*

Specification	Value	Remarks
Dimensions	290mm × 290mm × 1200mm (H)	Compact tower design for typical household spaces
Weight (Empty/Full)	12-15kg / 20-27kg	Portable with an insulated tank system
Operating Voltage	220V, 50Hz	Standard Philippine electrical compatibility
Power Consumption	80-120W	Fan (50W) + circulation pump (40W) + controls
Heat Exchanger	Evaporative pads + copper tube cooling system	Hybrid cooling for increased efficiency
Tank Capacity	8 liters	Removable, double-wall insulated design
Cooling Duration	2-4 hours per ice load	Extended operation with gel ice pack
Temperature Reduction	3-6°C below ambient	Consistent performance regardless of humidity
Effective Coverage	15-20 sqm	Optimized for typical Filipino room sizes
Cooling Range	Up to 10 meters	Variable-speed circulation pump control
Air Volume	454m³/h	High-velocity air circulation
Air Supply Angle	80° wide-angle	Enhanced room coverage
Noise Level	<50dB	Quiet operation for residential use

Economic Uses of the Product

The AeroFusion Hybrid Air Cooler is designed for multiple applications in Infanta, Quezon, providing cost-effective cooling solutions for both residential and institutional settings. Its compact design and operational efficiency make it an economically viable option for a variety of customers and use cases.

In household environments, the AeroFusion boasts an airflow capacity of 454 cubic meters per hour and an effective coverage of 10 meters, ensuring efficient cooling of standard bedrooms and living rooms. With a continuous operation time of 2 to 4 hours per full ice load, it effectively addresses typical residential cooling needs, particularly during afternoon heat peaks (12 p.m. to 6 p.m.). With lower operating costs compared to air conditioning units and greater cooling capacity than traditional fans, the AeroFusion offers middle-income households a practical balance between cooling performance and energy efficiency.

In addition to residential use, institutional buyers such as barangay health centers and daycare centers represent a secondary market opportunity. These facilities cater to vulnerable populations, including infants, young children, and elderly patients, who are particularly susceptible to heat-related stress. The AeroFusion's safe design make it suitable for healthcare and childcare environments. Moreover, its open environment operation compared to air conditioning systems makes bulk deployment feasible for municipal health programs.

Manufacturing Process

The manufacturing process for the hybrid air-cooling fan transforms raw materials into finished products through systematic assembly operations across four workstations. This section documents the complete production sequence using standard work study measurement methodologies and ASME process charting convention. The process design emphasizes lean manufacturing principles, incorporating continuous flow concepts and cellular manufacturing arrangements to minimize work-in-process inventory and reduce production lead times.

Time and Motion Study Methodology

To establish standard times, identify potential bottlenecks, and optimize worker movements, each operation has been analyzed through simulated time-and-motion studies, which is a systematic analysis that combines the measurements of how long tasks take with motion observation or physical movements workers perform to identify inefficiencies, bottlenecks, and process optimization opportunities. The methodology begins by selecting critical operations with improvement potential, such as AeroFusion's assembly workstations and observing the complete workflow in detail, documenting precise start and end points for each task element. Time data is collected using a time-study tool with stopwatches across multiple repetitions which is typically 10-30 cycles, to establish

reliable averages. Then it is analyzed by calculating performance ratings and applying standard allowances around 5-15% each for personal time, fatigue, and delays. The resulting standard times enable identification of improvement opportunities through elimination of non-value-adding activities, combination of redundant steps, simplification of complex procedures, or resequencing for better flow. Finally, improvements are implemented through updated Standard Operating Procedures, worker training, and continuous monitoring to ensure sustained results.

However, we acknowledged that a scheduled real-production validation, usually on a quarterly basis will be needed to refine these standards through continuous improvement initiatives targeting waste elimination, task combination, and ergonomic optimization.

Process Flow Chart

The resulting manufacturing process flow chart presented is presented in Figure 11 below. This employs standard ASME symbols to document all process elements from raw material storage through finished goods, comprising 13 operations, 7 inspections, 7 storage points, and 7 sets of transportation activities, totaling 140 minutes of process time.

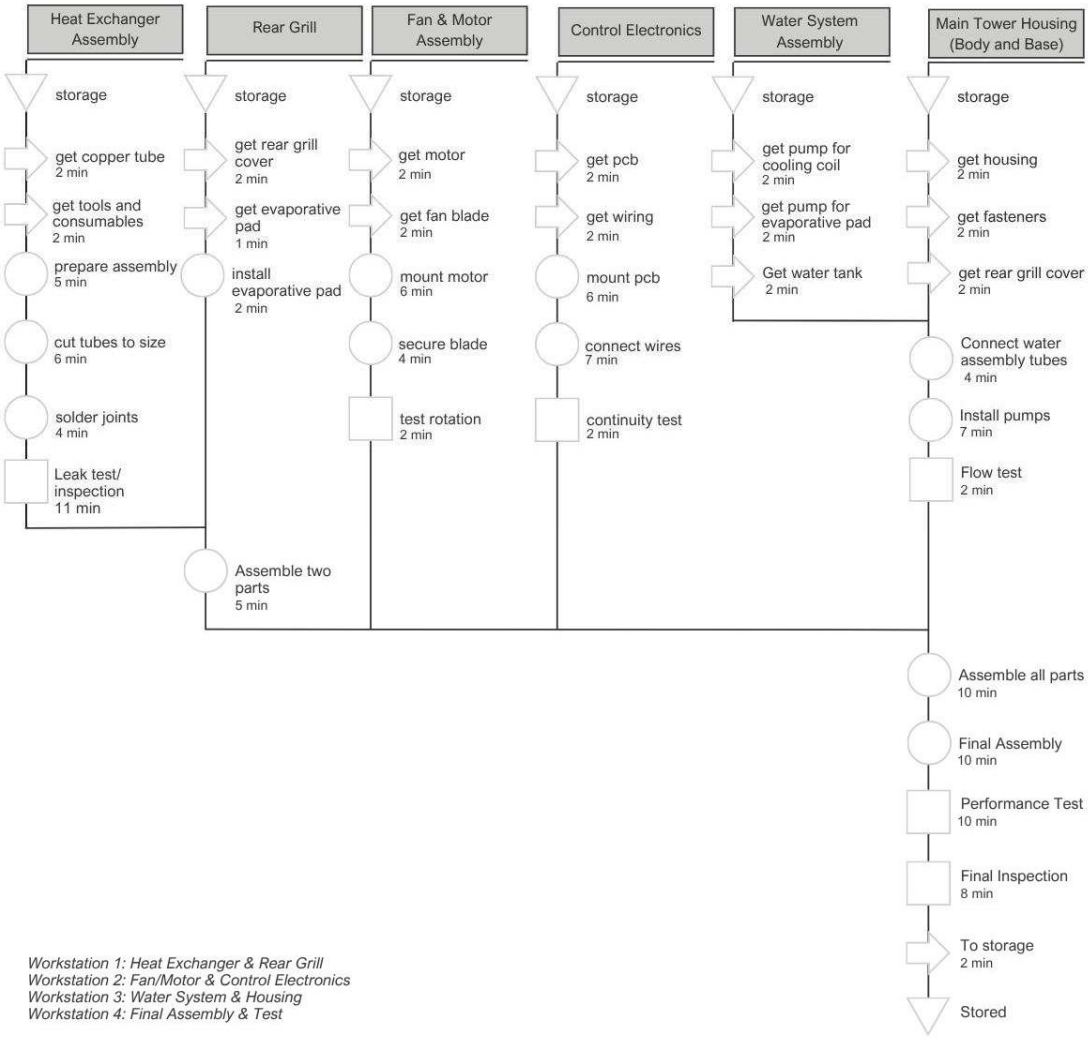
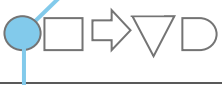
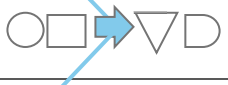
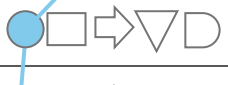
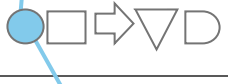
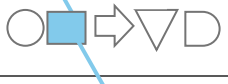
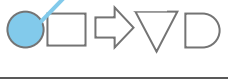


***Figure 11**. Operations Process Chart*

Table 15: *Process Flow Chart Table*

Process	Symbol	Description	Cycle Time (min)	Workstation Assignment
Raw Material Storage		Store copper tubes, aluminum fins, motors, PCBs, pumps, tanks in designated areas	-	-
Material Retrieval 1		W1 retrieves heat exchanger components from storage	2	W1
Component Preparation		Cutting copper tubes to size	10	W1
Heat Exchanger Assembly		Soldering tubes, attaching fins, leak testing	23	W1
Material Retrieval 2		W2 retrieves fan and electronic components	2	W2
Fan Motor Assembly		Mounting motor, securing blade, balance testing	18	W2
Electronics Installation		Mounting PCB, connecting wires, continuity test	15	W2
Sub-assembly Transfer		Move completed sub-assemblies to Station 3	0	Auto
Water System Assembly		Connect pump, install tank, attach tubing	20	W3
Packaging Preparation		Prepare labels, manuals, packaging materials	8	W3
Pre-inspection		Check sub-assembly quality and completeness	5	W3
Transfer to Final Assembly		W3 moves assembly to Station 4	2	W3
Final Assembly		Integrate all sub-assemblies into main housing	20	W4

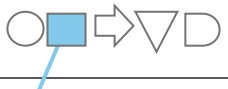
Performance Testing		Test cooling performance, water flow, electrical function	10	W4
Final Packaging		Place unit in box with accessories and documentation	3	W4
Transfer to Warehouse		W4 moves packaged units to finished goods	2	W4
Finished Goods Storage		Store completed units ready for distribution	-	-

Table 15 outlines the manufacturing operations across four workstations with specific worker assignments. It provides detailed task time allocations that sum to a total process time of 140 minutes per unit, with the line balanced at approximately 35 minutes per workstation for capacity planning and production scheduling. Each process element is categorized by symbol type in accordance with ASME standards, with operations representing value-adding transformations, inspections ensuring quality conformance, storage indicating controlled inventory locations, transportation tracking material movement, and delays highlighting potential improvement opportunities. The heat exchanger assembly at Station 1 is assigned on soldering and leak-testing capabilities to ensure reliable cooling performance. At Station 2, parallel processing of the fan motor and electronics assembly maximizes resource utilization by allowing simultaneous work on mechanically independent subassemblies. The convergence at Station 3 integrates the water circulation system while preparing packaging materials, with quality inspection strategically positioned before final assembly. Finally, Station 4

completes performance testing and final assembly activities, and after line balancing the maximum workstation time is 35 minutes, establishing the line cycle time used in the production schedule and resulting in a theoretical capacity of approximately 12.9 units per day based on 450 available minutes per shift.

Process Flow Chart Symbols & Description

Table 16: *Process Symbols and Total Time Summary*

Symbol	Description	Time (min)	Definition
	Operation	76	Physical or chemical change adding value
	Inspection	37	Quality verification against standards
	Storage	0	Controlled holding of materials/products
	Transportation	27	Material movement between locations
	Delay	0	Unplanned waiting time

Table 16 outlines the five standard ASME symbols used throughout the process documentation, providing a visual language for analyzing and optimizing the manufacturing sequence. These symbols enable the systematic identification of value-adding activities versus non-value-adding but necessary operations, supporting continuous improvement efforts. The process has no delay symbols, suggesting theoretical continuous flow. However, actual production may inevitably encounter minor delays, requiring effective buffer management strategies.

Detailed Production Flow Diagram

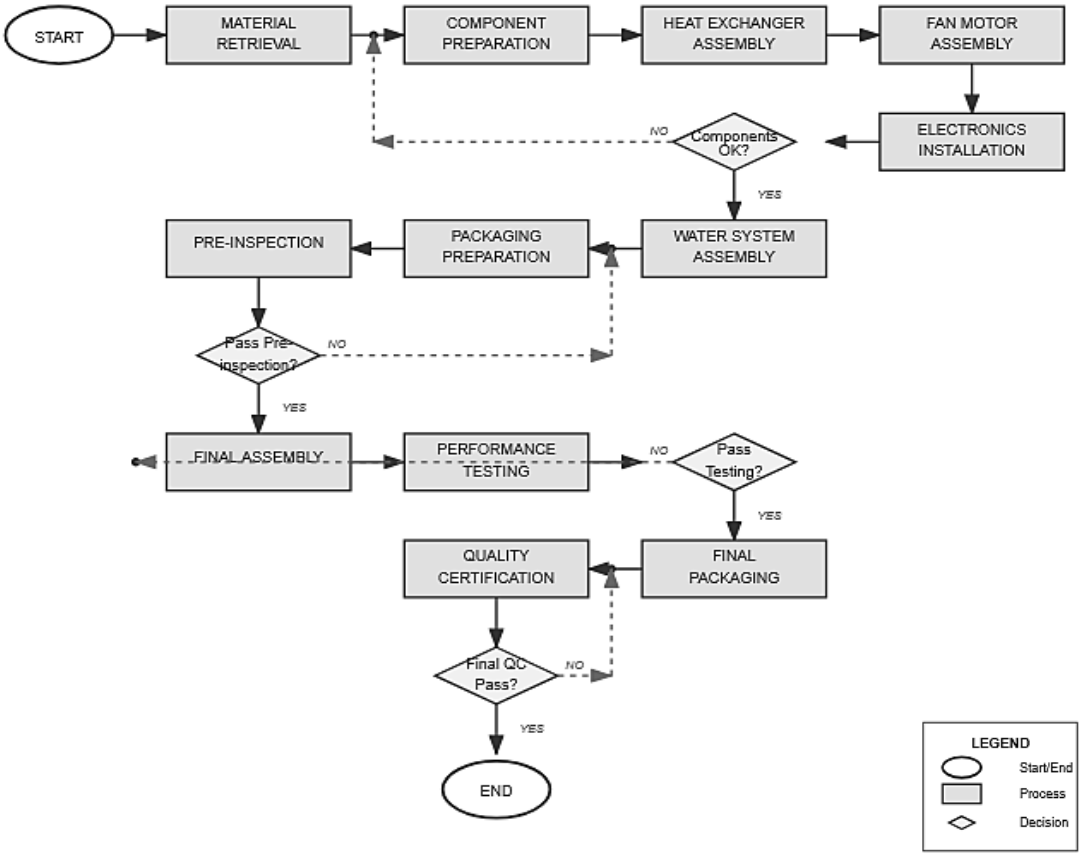


Figure 17: *Detailed Production Flow Diagram*

Figure 11 presents a detailed production flow diagram outlining the complete manufacturing sequence from material retrieval to the release of the finished product. The diagram includes four critical quality control decision points strategically placed to prevent defect propagation and ensure product reliability.

The quality control framework employs both preventive and detective controls. Specifically, component verification prevents defective materials from entering the assembly process, pre-inspection identifies integration issues before final assembly, performance testing validates that functional specifications are met, and final quality certification ensures customer satisfaction. Rework loops are clearly defined, with return paths indicated by dashed lines, allowing for the rapid correction of identified defects while maintaining the continuity of the production flow.

Production Cycle Time Summary

Table 17: *Production Cycle Time Summary (Balanced)*

Station	Worker	Operations	Time Breakdown	Total Time
1	W1	Heat Exchanger Assembly	Material handling*: 2 min* Component prep: *10 min* Heat exchanger: *23 min*	35 min
2	W2	Fan & Electronics	Material handling*: 2 min* Fan assembly: *18 min* Electronics: *15 min*	35 min
3	W3	Water System & Pre-pack	Water system: *20 min* Pack preparation*: 8 min* Pre-inspection*: 5 min* Transfer*: 2 min*	35 min
4	W4	Final Assembly & Test	Final assembly*: 20 min* Performance test: *12 min* Packaging: *3 min*	35 min

Table 17 illustrates the balanced line design, ensuring that no single workstation becomes a bottleneck. Each of the four stations operates with a 35-minute cycle time. Task assignments were carefully optimized to group related processes while maintaining compatibility in skill sets. Consequently, all stations successfully achieve the target cycle time of 35 minutes. This synchronized flow design establishes a production pace of one unit every 35 minutes, facilitating a projected annual capacity of 2,499 units during single-shift operations.

Production Schedule

***Table 18**. Daily Production Schedule*

Time	Daily Activities	Hours	Type
7:30 AM – 9:30 AM	Production Time	2	Productive (Paid)
9:30 AM – 9:45 AM	Morning Break	0.25	Non-Productive (Paid)
9:45 AM – 12:00 PM	Production Time	2.25	Productive (Paid)
12:00 PM – 1:00 PM	Lunch Break	1	Non-Productive (Unpaid)
1:00 PM – 3:00 PM	Production Time	2	Productive (Paid)
3:00 PM – 3:15 PM	Afternoon Break	0.25	Non-Productive (Paid)
3:15 PM – 4:30 PM	Production Time	1.25	Productive (Paid)
Subtotal: Productive Time	-	7.5	(450 minutes)
Subtotal: Paid Breaks	-	0.5	(30 minutes)
Total Paid Workday	-	**8**	(Productive + Paid Breaks)
Full Onsite Shift	-	9	(Paid Workday + Unpaid Lunch)

Table 18 establishes the daily operational framework, allocating 7.5 productive hours across four production periods, with scheduled breaks strategically positioned to maintain worker efficiency while complying with Philippine labor standards. The schedule reflects ergonomic considerations and fatigue management principles, with shorter afternoon production periods that acknowledge the natural circadian rhythm's impact on worker alertness and precision.

The 15-minute morning preparation period ensures proper workstation setup, tool verification, and material staging, establishing conditions for efficient production flow. Two 15-minute breaks and a one-hour lunch period provide adequate recovery time, reducing fatigue-related errors while maintaining compliance with Department of Labor and Employment regulations. The end-of-day cleaning and maintenance allocation supports the implementation of the 5S methodology and preventive maintenance requirements.

Annual Production Schedule

Table 19 projects the ten-year production calendar from 2026 to 2035, establishing the operational framework for capacity planning and market supply. The schedule accounts for 240-241 operating days annually after deducting weekends, national holidays, and scheduled preventive maintenance.

Table 19: *Annual Production Schedule*

Metric	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Total Annual Operation Days	240	240	241	240	240	240	241	240	240	240
Available Production Time (min/day)	450	450	450	450	450	450	450	450	450	450
Production Cycle Time (min/unit)	35	35	35	35	35	35	35	35	35	35
Daily Theoretical Capacity (units)	12.86	12.86	12.86	12.86	12.86	12.86	12.86	12.86	12.86	12.86
Theoretical Annual Capacity (units)	3,086	3,086	3,099	3,086	3,086	3,086	3,099	3,086	3,086	3,086
Planned Efficiency Rate	81%	82%	83%	84%	85%	86%	87%	88%	89%	90%
Annual Production Capacity (Units)	2,499	2,530	2,572	2,592	2,623	2,654	2,696	2,715	2,746	2,777
Required Daily Output (units)	10.41	10.54	10.67	10.8	10.93	11.06	11.19	11.31	11.44	11.57
Takt Time (min/unit)	43.21	42.69	42.06	41.67	41.18	40.7	40.12	39.77	39.33	38.89
Time Buffer vs. Cycle Time (%)	19.00 %	17.90 %	16.80 %	16.00 %	15.00 %	14.00 %	12.80 %	12.00 %	10.90 %	9.90%

The progressive efficiency improvement from 81% in Year 1 to 90% in Year 10 reflects anticipated learning curve effects, process optimization, and workforce skill development. Annual production targets increase from 2,499 units in 2026 to 2,777 units in 2035, demonstrating scalability within existing facility constraints. The time buffer provides operational flexibility for material delays, quality rework, and equipment maintenance while maintaining the 35-minute cycle time.

Raw Materials

Table 20 details the bill of direct materials comprising the core components of the “AeroFusion” Air Cooler, with unit costs reflecting negotiated prices from qualified suppliers. Annual requirements are calculated based on projected production volumes.

Table 20: *Bill of Direct Materials*

Description	Qty/Unit	UOM	Unit Cost (₱)	Cost/Unit (₱)	Annual Cost (₱)
Copper tubes	1	roll	700.00	233.00	582,366.86
Cooling pads	1	sheet	110.00	110.00	274,937.14
Fan motor	1	unit	335.00	335.00	837,308.57
Fan blade	1	P c	125.00	125.00	312,428.57
PCB control board	1	unit	180.00	180.00	449,897.14
Wiring harness	1	set	95.00	95.00	237,445.71
Water pump (cooling)	1	unit	165.00	165.00	412,405.71
Water pump (evaporative)	1	unit	110.00	110.00	274,937.14
Water tank (8L)	1	unit	140.00	140.00	349,920.00
Tubing and connectors	2	meters	35.00	70.00	174,960.00
Housing/casing	1	set	240.00	240.00	599,862.86
Fasteners and hardware	1	set	60.00	60.00	149,965.71
TOTAL			2,295.00	**1,863.00**	**4,656,435.43**

Direct material costs of ₱1,863 per unit represent 30.7% of the suggested retail price of ₱6,073.44, maintaining healthy gross margins while ensuring

component quality. Strategic supplier relationships with primary and backup vendors for critical components mitigate supply chain risks. Electronic components are sourced from established manufacturers with proven quality systems, while mechanical components are sourced from local suppliers to reduce lead times and transportation costs.

Table 21: *Consumable Indirect Materials*

Description	Qty/Unit	UOM	Unit Cost (₱)	Cost/Unit (₱)	Annual Cost (₱)
Solder Wire	0.1	kg	850.00	85.00	213,180.00
Test solutions	0.05	liter	250.00	12.50	31,350.00
Packaging box	1	pc	35.00	35.00	87,780.00
Protective foam	1	set	15.00	15.00	37,620.00
User manual	1	pc	8.00	8.00	20,064.00
Warranty card	1	pc	2.00	2.00	5,016.00
Cable ties	5	pcs	0.50	2.50	6,270.00
TOTAL				**160.00**	**401,280.00**

Table 21 identifies consumable materials required for the assembly process but not incorporated into the finished product. These materials represent ongoing operational expenses essential for maintaining production quality and efficiency.

Indirect material costs of ₱160 per unit represent 2.6% of the suggested retail price. These materials play critical roles in ensuring reliable solder joints, proper electronic assembly testing, and professional product presentation.

Procurement strategies include bulk purchasing of stable-consumption items, such as solder wire, while maintaining just-in-time delivery of packaging materials to minimize storage requirements.

Machineries and Equipment

***Table 22**: Production Equipment and Tools*

Item	Description	Qty	Unit Price (₱)	Total Cost (₱)
Soldering Station	Temperature-controlled for heat exchanger assembly	2	18,500.00	37,000.00
Assembly Workbenches	Ergonomic with ESD protection	4	25,000.00	100,000.00
Digital Multimeters	For electronics testing	4	3,500.00	14,000.00
Torque Wrenches	Precision fastening	4	2,800.00	11,200.00
Air Flow Meter	Fan performance testing	1	28,000.00	28,000.00
Power Supply Units	Variable for testing	2	15,000.00	30,000.00
Hand Tools Set	Complete assembly tools	4	8,500.00	34,000.00
Material Handling Carts	For component movement	3	12,000.00	36,000.00
Storage Racks	Component organization	6	15,000.00	90,000.00
Air Compressor	For cleaning and testing	1	35,000.00	35,000.00
Air Conditioning unit 2hp	For Admin Office	1	35,000.00	35,000.00
TOTAL				**450,200.00**

Table 22 presents the production equipment portfolio required to establish complete manufacturing capability, with selections based on precision requirements, production volume projections, and reliability considerations. The ₱585,200 total investment provides comprehensive assembly and testing

capabilities while maintaining flexibility for future product variations or capacity expansion.

Equipment selection prioritizes precision and reliability over automation, reflecting the semi-skilled labor availability and moderate production volumes characteristic of the target market. Temperature-controlled soldering stations ensure consistent joint quality critical for heat exchanger reliability, while the performance test chamber validates cooling capacity under controlled conditions. The investment in quality testing equipment, representing 30% of total equipment cost, demonstrates commitment to product reliability and customer satisfaction.

Furniture and Fixture

Table 23: *Furniture and Fixtures*

Item	Qty	UOM	Unit Cost (₱)	Annual Cost (₱)
Desktop computers	3	units	28,000.00	84,000.00
Printer/Scanner	2	units	15,000.00	30,000.00
Office desks	5	units	8,500.00	42,500.00
Office chairs	8	units	3,500.00	28,000.00
Filing cabinets	3	units	12,000.00	36,000.00
TOTAL			**67,000.00**	**220,500.00**

Table 23 details the office furniture and administrative equipment necessary to support management, engineering, and clerical functions within the manufacturing facility. The ₱220,500 investment establishes a professional work environment

conducive to productivity and employee satisfaction while maintaining cost efficiency.

The furniture selection balances functionality with durability, emphasizing ergonomic designs for production planning workstations where personnel spend extended periods analyzing data and preparing reports. Desktop computers specified with appropriate processing power support CAD software for product development, ERP systems for production planning, and standard office applications for administrative tasks.

Office Supplies

Table 24: *Office Supplies and Administrative Materials*

Item	Qty	UOM	Unit Cost (₱)	Annual Cost (₱)
Bond paper	8	reams/month	200.00	1,600.00
Printer ink	3	sets/month	800.00	9,600.00
Ballpens	5	boxes/month	125.00	500.00
Folders	20	pcs/month	25.00	100.00
Staple wire	5	boxes/month	45.00	540.00
TOTAL			1,195.00	12,340.00

Table 24 itemizes recurring office supply requirements supporting administrative operations, documentation management, and internal communications. The annual budget of ₱12,340.00 covers essential consumables

while maintaining cost discipline through bulk purchasing and consumption monitoring.

Office supply management implements a par stock system with monthly replenishment cycles, ensuring availability while minimizing inventory investment. Digital documentation initiatives reduce paper consumption where feasible, though hard copy requirements for government compliance and quality records necessitate continued paper-based systems.

Depreciation Cost of Machineries and Equipment

Asset depreciation represents the systematic allocation of equipment costs over their productive lives, reflecting wear and obsolescence from daily operations. This section calculates the annual depreciation expense for all capital assets using the straight-line method, allocating acquisition costs systematically over their useful lives estimates to match expenses with revenue-generating periods.

Table 25 below, presents the depreciation schedules for each asset category, with varying useful life estimates that reflect how long each asset will realistically contribute to operations.

Table 25: *Equipment Depreciation Schedule*

Item	Original Cost (₱)	Residual Value (%)	Residual Value (₱)	Depreciable Amount (₱)	Useful Life (years)	Annual Depreciation (₱)
MANUFACTURING EQUIPMENT						
Soldering Stations	37,000.00	10%	3,700.00	33,300.00	5	6,660.00
Assembly Workbenches	100,000.00	10%	10,000.00	90,000.00	10	9,000.00
Testing & Measuring Equipment	107,000.00	10%	10,700.00	96,300.00	7	13,757.00
Hand Tools and Equipment	34,000.00	0%	-	34,000.00	5	6,800.00
Material Handling Equipment	126,000.00	5%	6,300.00	119,700.00	10	11,970.00
Manufacturing Subtotal	404,000.00		30,700.00	373,300.00		48,187.00
ADMINISTRATIVE EQUIPMENT						
Computers and Printers	114,000.00	0%	-	114,000.00	3	38,000.00
Office Furniture	106,500.00	5%	5,325.00	101,175.00	10	10,118.00
Air Conditioning Unit (1hp Inverter)	35,000.00	5%	1,750.00	33,250.00	7	4,750.00
Administrative Subtotal	255,500.00		7,075.00	248,425.00		52,868.00
TOTAL	659,500.00		37,775.00	621,725.00		101,055.00

We calculate annual depreciation using the straight-line formula: Annual Depreciation = (Original Cost – Residual Value) ÷ Useful Life. The total annual depreciation expense of ₱101,055 represents a significant non-cash charge against operations, reducing taxable income while providing for asset replacement. Since we're a pre-operating business without actual disposal history, we used the Percentage of Cost Method with differentiated rates based on each asset type's characteristics. This requires management to estimate what each asset could realistically be sold for at the end of its useful life. The depreciation

schedule serves both financial reporting and capital budgeting purposes, establishing replacement timing to maintain operational capabilities.

Housekeeping and Cleaning Supplies

Table 26. *Housekeeping and Cleaning Supplies*

Item	Qty	UOM	Unit Cost (₱)	Annual Cost (₱)
Multi-purpose cleaner	4	gallons/month	185.00	8,880.00
Reusable cleaning gloves	8	pairs	85.00	680.00
Microfiber cloth (yellow)	12	pieces	45.00	540.00
Microfiber cloth (red)	12	pieces	45.00	540.00
Trash bags (Large)	10	packs/month	125.00	15,000.00
Brooms and dustpans	4	sets	250.00	1,000.00
Mops and buckets	2	sets	450.00	900.00
Hand soap and dispensers	3	dispensers + 12 refills/year	1,200.00	3,600.00
Color Coded Waste Bin Set (Year 1 only)	1	sets	7,800.00	7,800.00
Toilet paper	8	packs/month	180.00	17,280.00
TOTAL				**56,220.00**

Table 26 outlines the housekeeping supplies required to maintain a clean, safe, and professional manufacturing environment. The year 1 budget of 56,220 supports daily cleaning operations, periodic deep cleaning, waste segregation, and compliance with good manufacturing practices. The cleaning supply specification emphasizes industrial-grade products suitable for manufacturing environments, with multi-purpose cleaners addressing diverse surface types and microfiber cloths

color-coded to prevent cross-contamination. Monthly consumption estimates reflect single-shift operations with weekly deep-cleaning schedules, which are adjustable based on actual usage patterns.

Medical Supplies

Table 27. *Medical Supplies*

Item	Qty	UOM	Unit Cost (₱)	Annual Cost (₱)
First Aid Kit	2	complete sets	1,850.00	3,700.00
Surgical gloves	4	boxes/quarter	385.00	6,160.00
Face masks	10	boxes/quarter	125.00	5,000.00
Alcohol (70%)	2	gallons/month	195.00	4,680.00
TOTAL				**19,540.00**

Table 27 details the medical supplies required to address minor workplace injuries and maintain compliance with occupational health requirements. The ₱19,540 annual budget provides comprehensive first aid capabilities while supporting preventive health measures.

Medical supply management follows Department of Health guidelines for workplace first-aid stations, with quarterly replenishment to ensure supply freshness and availability. The specification includes both emergency response items for injury treatment and preventive supplies, such as masks and alcohol, to

maintain workplace hygiene. Regular inventory audits verify expiration dates and consumption patterns, enabling procurement optimization.

Personal Protective Equipment

Table 28: *PPE Supplies*

Item	Qty/Year	UOM	Unit Cost (₱)	Annual Cost (₱)
Safety glasses	8	pieces	180.00	1,440.00
Work gloves (assembly)	48	pairs	65.00	3,120.00
Dust masks	100	pieces	25.00	2,500.00
Ear plugs	50	pairs	15.00	750.00
Safety vests	6	pieces	280.00	1,680.00
TOTAL				**9,490.00**

Table 29 specifies personal protective equipment requirements based on job hazard analyses for each work position, ensuring worker safety while maintaining productivity. The ₱9,490 annual budget provides comprehensive protection against identified workplace hazards.

PPE selection reflects specific hazards associated with electronics assembly operations, including eye protection for soldering activities, hand protection for material handling, and hearing protection for areas exceeding 85 decibels. Usage rates account for replacement frequencies based on wear patterns and manufacturer recommendations, with safety equipment inspection protocols ensuring continued effectiveness.

Advertising and Promotions Expense

***Table 29**. Marketing Costs*

Activity	Description	Frequency	Cost (₱)	Annual Cost (₱)
Social Media Advertising	Facebook/Tiktok ads	Monthly	3,000.00	36,000.00
Brochures	250 copies, full color	Semi-annual	3,000.00	6,000.00
Promotional Discount (Launch Promo)	Discount Voucher for first 500 customers	Year 1	500,000.00	500,000.00
TOTAL			506,000.00	**542,000.00**

Table 29 outlines the marketing communication budget allocation across various promotional channels, supporting brand awareness development and demand generation within the target market. The annual investment focuses on promotional vouchers and digital marketing, supplemented by traditional print materials, to support local market penetration.

The marketing strategy emphasizes social media platforms popular among Filipino consumers, particularly Facebook and TikTok, where targeted advertising enables precise demographic reach at minimal cost. Brochure and flyer production supports retail partner requirements and trade show participation, providing tangible materials for customer education. The allocation reflects a 0.5% of revenue marketing spend, conservative for a startup but appropriate given the focused geographic market.

Table 36: *Signage Setup Cost*

Signage Component	Description	Amount (₱)
1. Main Exterior Sign	Medium-sized lighted sign for the showroom facade	5,000.00
2. Installation & Permit Fees	Labor for the main sign and LGU signage permit	5,000.00
TOTAL ESTIMATED SIGNAGE COST		10,000.00

As part of advertising expenses**,** signage investment totals ₱10,000. This investment is a critical component of our brand establishment strategy and customer acquisition efforts. The main exterior sign provides high-visibility brand presence at the showroom location, serving as a 24-hour marketing tool that attracts walk-in customers and reinforces brand recognition in the target market.

Repairs and Maintenance Expense

Table 30*. Maintenance Costs*

Item	Maintenance Type	Annual Cost (₱)
Manufacturing R&M		
Production Equipment	Preventive Maintenance	15,000.00
		15,000.00
Administrative R&M		
Air Conditioning (1 unit)	Preventive Maintenance	3,000.00
Basic General Pest Control	Pest Control	1,000.00
Emergency Repairs Fund	Contingency	15,000.00
		19,000.00
TOTAL		**34,000.00**

Table 30 outlines the repair and maintenance budget allocation. The ₱34,000 Year 1 budget mostly prioritize the preventive maintenance of manufacturing equipment, pest control service, and admin air-conditioning cleaning. The ₱15,000 budget are assigned for repairs that may occur as part of the annual preventive maintenance plan.

Utilities

***Table 31**: Utility Expenses*

Description	Monthly Consumption	Rate	Monthly Cost (₱)	Annual Cost (₱)
Electricity (kWh)				
Production				
Production Equipment	150 kWh	10.56	1,584.00	19,008.00
Admin				
Office and Lighting	100 kWh	10.56	1,056.00	12,672.00
Air Conditioning	420 kWh	10.56	4,435.20	53,222.40
Subtotal Electricity	2,300 kWh		7,075.20	84,902.40
Water (cu.m)				
Production Use	15 cu.m	35.00	525.00	6,300.00
Office Use	10 cu.m	35.00	350.00	4,200.00
Subtotal Water	25 cu.m		875.00	10,500.00
Telecommunications (fixed)				
Internet (Fiber)	1 line	Fixed	1,699.00	20,388.00
Subtotal Telecom			1,699.00	20,388.00
TOTAL UTILITIES			**9,649.20**	**115,790.40**

The ₱115,790 annual utility expense reflects current Quezon Electric Cooperative (QUEZELCO) and Infanta Quezon Water District (IQWD) charges. Electricity consumption accounts for 73.3% of total utility costs, driven by production equipment and air conditioning. Energy management initiatives, including LED lighting, variable-frequency drives, and production scheduling optimization, offer cost-reduction opportunities. Water consumption supports cooling system testing and facility maintenance.

Rent Expense

Table 32. *Facility Rental Costs*

Description	Facility Area (sqm)	Rate/sqm (₱)	Monthly (₱)	Annual (₱)
Industrial space rental	220	85.00	18,700.00	224,400.00
Security deposit (2 months)	-	-	37,400.00	-
Advance rent (1 month)	-	-	18,700.00	-
Initial Payment			**74,800.00**	
Annual Rent				**224,400.00**

Table 26 documents the facility lease arrangement for the 220-square-meter open industrial open space in Infanta's designated industrial zone. The ₱224,400 annual rent represents an average pricing for the local market while providing adequate space for current operations leasehold improvements and expansion.

The lease terms will be set for a 5-year term, with escalation clauses of 5% starting in year 3. The location selection balances rental costs with accessibility, workforce availability, and infrastructure requirements. The initial payment of ₱74,800, covering the security deposit and advance rent, represents a significant upfront investment recovered through operational savings compared to alternative locations.

Insurance Expense

Table 33. *Detailed Insurance Expense Computation*

Component	Amount (₱)
A. Asset Value for Property Insurance	
1. Machinery & Equipment	585,200.00
2. Office Furniture & Fixtures	220,500.00
3. Estimated Inventory Value	300,000.00
Total Sum Insured	1,105,700.00
B. Annual Premium Calculation	
1. Property Insurance Premium	16,586.00
2. Fire Code Premium Tax	332.00
Gross Property Insurance Cost	16,918.00
3. CGL & Product Liability Premium	25,000.00
4. Supplemental Workers' Comp.	16,000.00
Total Annual Insurance Expense	57,918.00

Table 27 presents the comprehensive annual insurance expense of ₱57,918, providing critical financial protection for manufacturing assets and operational continuity. The insurance portfolio includes property coverage for ₱1,105,700 in combined assets (machinery, equipment, furniture, and inventory), protecting against fire, natural disasters, and theft. The ₱25,000 Commercial General Liability and Product Liability policy safeguards against third-party claims and product-related incidents, while ₱16,000 in workers' compensation coverage ensures employee protection and regulatory compliance. The total insurance cost represents 1.3% of annual revenue, demonstrating prudent risk management while maintaining cost efficiency. This insurance framework ensures business continuity and stakeholder confidence in the venture's financial stability.

Tax and Licenses Expense

Table 34. *Government Fees and Permits*

SEC Registration	Amount (₱)
Name verification	200.00
Articles and by-laws	1,700.00
Filing fee	2,000.00
Notarial fees	500.00
Stock and transfer book	350.00
Legal research fee	100.00
Documentary stamp	200.00
SEC Subtotal	**5,050.00**

BIR Registration	Amount (₱)
Registration fee (0601)	500.00
Documentary stamp	200.00
Books of accounts	500.00
Certification fee	100.00
BIR Subtotal	**1,300.00**
Business Permit (Infanta, Quezon)	**Amount (₱)**
Barangay permit	500.00
Business tax	3,500.00
Mayor's permit	2,500.00
Business plate	350.00
Tax clearance certification	100.00
Community tax certificate	150.00
Sanitary inspection fee	300.00
Sanitary permit	500.00
Fire safety clearance	1,500.00
Occupancy permit	1,000.00
Environmental protection fee	500.00
Garbage fee	1,200.00
Local Permits Subtotal	**12,100.00**
TOTAL YEAR 1	**18,450.00**
Annual Renewal (Years 2+)	**13,400.00**

Table 34 provides a detailed overview of the government fees and permits necessary for legal operation, differentiating between one-time establishment costs and recurring annual expenses. The initial expense in the first year is ₱18,450, followed by annual renewal costs of ₱13,400, ensuring full regulatory compliance.

The requirements for registration and permits span various regulatory jurisdictions, including national SEC registration and local barangay permits, each serving specific compliance purposes. The documentation process requires

careful coordination and management of timelines, as some permits depend on the prior approval of others. Through experience, the annual renewal processes have been streamlined, reducing time requirements and ensuring continuous authorization to operate.

Product Testing & Certification Expense

Table 35: *DTI Product Testing & Certification Expense*

Expense Component	Amount (₱)
A. PS License Application Fees	
1. Application Fee	300.00
2. Quality Manual Review Fee	5,000.00
3. Original License Fee	7,500.00
Subtotal: License Fees	12,800.00
B. Assessment & Testing Fees	
1. Factory Audit Fee	2,400.00
2. Product Testing Fee	20,000.00
Subtotal: Assessment Fees	22,400.00
TOTAL ESTIMATED CERTIFICATION COST	35,200.00

Table 35 outlines the Department of Trade and Industry (DTI) product certification expenses totaling ₱35,200. This amount represents a critical one-time investment necessary for regulatory compliance and market entry. The certification

process consists of two main components: the PS License application fees, totaling ₱12,800 and covering administrative processing, quality manual review, and initial licensing; and the assessment and testing fees, totaling ₱22,400, which include a factory audit and a comprehensive product performance evaluation.

Obtaining this certification ensures that the “AeroFusion” Air Cooler complies with Philippine National Standards for safety, quality, and performance, thereby enabling legal market distribution and boosting consumer confidence. The ₱20,000 product testing fee validates the cooler's cooling capacity, electrical safety, and water system integrity through independent laboratory analysis. Additionally, the ₱2,400 factory audit verifies adherence to quality management standards during the manufacturing process.

Although these expenses are incurred before operations begin, this certification provides a competitive advantage through official DTI recognition. It is vital for securing retail partnerships and fostering consumer trust in the marketplace.

Logistics

The logistics strategy for product distribution leverages third-party logistics providers for delivery to retail partners and direct customers, eliminating the need to invest in delivery vehicles during the startup phase. However, as noted in the financial study, the acquisition of company vehicles may be warranted as volumes

increase, and such vehicles would be capitalized as assets with appropriate depreciation schedules. Delivery scheduling optimizes route efficiency while meeting customer service-level agreements, with real-time tracking via logistics partner systems.

Table: Logistics Expense

Logistics Method	Average Annual Sales Volume (Units)	Average Cost per Unit (₱)	Total Annual Transportation Expense (₱)
Third-party local vehicles	2,640	68	179,547.20
			179,547.20

Waste Management

This section outlines a comprehensive waste management plan for the responsible, cost-effective disposal of all waste generated during the assembly, testing, and packaging of the AeroFusion Hybrid Air Cooler. The plan ensures full compliance with Republic Act (RA) 6969 (Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990) and its implementing rules under Department Administrative Order (DAO) 2013-22 (Revised Procedures and Standards for the Management of Hazardous Wastes), as well as the Ecological Solid Waste Management Act (RA 9003).

Table 37. *Waste Management Plan*

Waste Type	Source / Description	DENR Classification	Disposal Plan
Production Rejects			
Defective Plastic Parts	Rejected tower housings, fan blades, or other plastic components.	Non-hazardous solid waste	Segregated for collection by a local plastics recycling facility.
Defective Electronic Components	Rejected PCBs, motors, pumps, or wiring that contain hazardous components such as lead or cadmium.	M506(WEEE)	Collected quarterly by a DENR-accredited e-waste treatment facility.
Defective Metal Components	Rejected heat exchangers or other metal parts.	Non-hazardous solid waste	Sold to a local accredited scrap metal dealer.
Facility Waste			
Busted Lamps	Spent LED bulbs from facility lighting.	M507 (Special Waste)	Segregated in labeled containers. Collected by a DENR-accredited TSD facility.
Used Chemical Containers	Empty containers from any cleaning solvents, adhesives, or other chemicals used.	J201(Containers with toxic substances)	Triple-rinsed (if applicable) and collected by an accredited TSD facility.
Packaging Waste			
Cardboard & Paper	Boxes and inserts from the delivery of sourced components.	Non-hazardous solid waste	Collected and sold or provided to a local paper recycling facility.
General Waste			

General Production & Office Waste	Non-recyclable materials from the assembly line and office operations.	Non-hazardous solid waste	Disposed of via scheduled municipal waste management service.

Waste segregation at source, using color-coded bins (e.g., red for hazardous, yellow for recyclables) at strategic facility locations, facilitates recycling and recovery while preventing cross-contamination of hazardous materials. Hazardous wastes, such as e-waste (M506) and chemical containers (J201), require the generator to bear the full cost of proper handling, transportation, and treatment through DENR-accredited TSD facilities (91 nationwide as of 2023, with expansions ongoing); haulers and TSD operators charge fees to the generator, not vice versa, as mandated by DAO 2013-22. Non-hazardous recyclables, such as metals, plastics, and paper, generate revenue to offset costs, while general waste is managed in accordance with RA 9003.

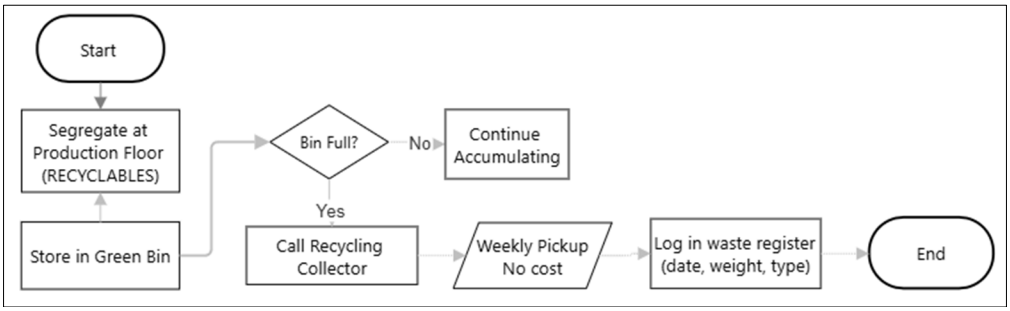


***Figure 37**. Recyclables (Green Bin) Waste Management Process Flow*

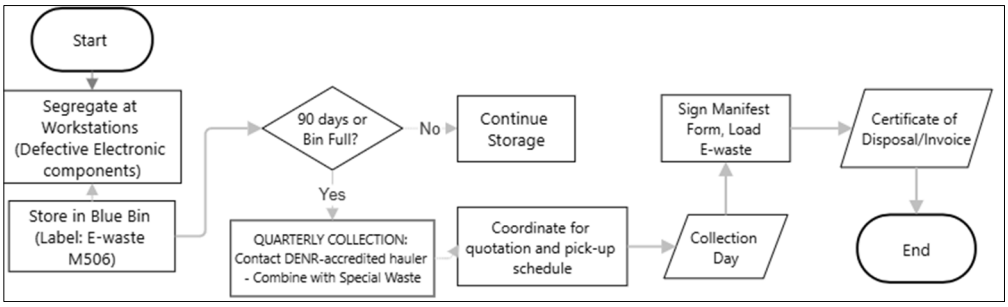


***Figure 37**. Special Hazardous Waste (Blue Bin) Waste Management Process Flow*

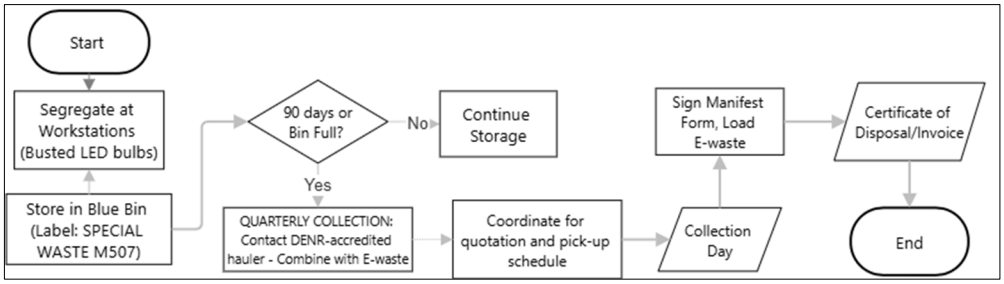


***Figure 37**. Electronic Waste (Blue Bin) Waste Management Process Flow*

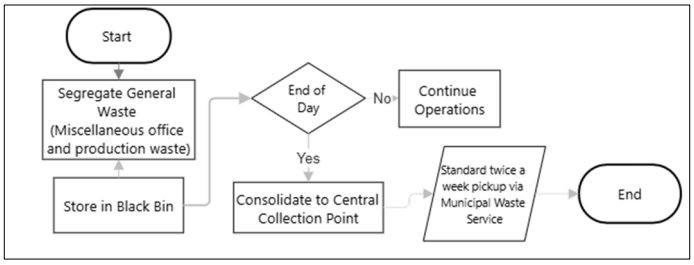


***Figure 37**. Electronic Waste (Blue Bin) Waste Management Process Flow*

Figure shows the process flow as a guide for the waste management of each

As a registered Hazardous Waste Generator (HWG), the company will obtain a Hazardous Waste Generator ID (HWG ID) from the DENR-Environmental Management Bureau (EMB), conduct regular waste audits for classification,

implement source segregation using color-coded bins, limit hazardous waste storage to 90 days, utilize DENR-accredited transporters and Treatment, Storage, and Disposal (TSD) facilities, and track shipments via the Online Hazardous Waste Manifest System. Quarterly Self-Monitoring Reports (SMR) and an Annual Hazardous Waste Accomplishment Report will be submitted to maintain compliance, prioritizing recycling to minimize environmental impact and generate revenue offsets.

Plant Location

The selection of the manufacturing facility location was determined through a weighted factor rating analysis comparing three potential sites within Quezon province. Table 38 presents the evaluation framework incorporating eight non-cost factors critical to manufacturing operations, with weights assigned based on their impact on production efficiency, operational costs, and long-term sustainability.

Table 38: *Factor Rating Analysis for Plant Location*

Item No.	Non-Cost Factor in Plant Selection	Weight	Infanta, Quezon	Lucena City, Quezon	Atimonan, Quezon
1	Proximity to Raw Materials	0.15	75	90	80
2	Market Accessibility	0.10	85	95	80
3	Transportation Infrastructure	0.10	75	90	75
4	Labor Availability and Costs	0.15	90	75	85
5	Energy Availability and Costs	0.10	85	90	85
6	Rental/Land Costs	0.15	95	65	85

7	Distribution Efficiency	**0.20**	**95**	**60**	**75**
8	Local Government Support & Business Climate	0.05	90	85	88
	Weighted Score		**87.00**	**78.25**	**80.90**

Infanta emerged as the optimal location with a weighted score of 87.00, significantly outperforming Lucena City (78.25) and Atimonan (80.90). The analysis assigned the highest weight (0.20) to Distribution Efficiency, recognizing that finished goods logistics represent a recurring operational expense that directly impacts unit economics and customer service capabilities. This co-location strategy reduces finished goods logistics expenses by an estimated ₱60 per unit compared to manufacturing in Lucena City, which would require 60-kilometer transport of completed units to Infanta. Additionally, manufacturing on-site enables same-day delivery to customers, rapid after-sales service response, and direct quality control oversight through customer feedback loops. Lucena scored 60 due to the substantial outbound logistics burden, while Atimonan received 75, reflecting its 30-kilometer distance creating moderate distribution overhead. While Market Accessibility (Item 2) evaluates regional connectivity and expansion potential, where Lucena scores highest (95) due to its position as the provincial capital with superior highway networks, Distribution Efficiency (Item 7) specifically measures last-mile delivery performance to the established target market. Infanta's score of 85 on Market Accessibility acknowledges its adequate connectivity via the

Marikina-Infanta Highway while recognizing Lucena's superior position as a regional logistics hub.

Leasehold Facility Selection Criteria

As the company plans to lease rather than purchase a facility, establishing clear selection criteria is essential to identify properties that support the planned manufacturing operations while ensuring financial viability. The evaluation framework focuses on both the functional requirements necessary for production efficiency and compliance considerations needed for regulatory approval. These criteria have been developed through an analysis of operational needs and industry best practices, providing objective parameters for comparing potential facilities. This approach ensures that the selected property can accommodate both current operations and medium-term expansion plans.

The selection process takes into account that leasehold improvements require significant pre-operating investments, making it crucial to carefully evaluate landlord flexibility and lease terms. Properties that offer existing infrastructure closely aligned with operational requirements are preferred, as this can minimize fit-out costs and expedite the start of operations. However, given the limited availability of suitable industrial properties in Infanta's designated manufacturing

zones, pragmatic compromises between ideal specifications and market realities may be necessary.

***Table 39**. Leasehold Facility Selection Criteria*

Category	Criterion	Minimum Requirement	Justification
Commercial	Lease Term	Minimum 3 years with renewal option	Provides operational stability and ROI on improvements
	Rental Escalation	Maximum 5% annual increase	Maintains cost predictability for financial planning
	Security Deposit	Not exceeding 3 months rent	Minimizes initial capital requirements
	Restoration Clause	Reasonable wear and tear accepted	Avoids excessive restoration costs at lease termination
	Landlord Flexibility	Permits minor reversible improvements	Enables workspace optimization and operational efficiency enhancements
	Sublease Rights	Permitted with landlord consent	Provides exit strategy flexibility if required
Location	Distance from Highway	Within 2 km of main road	Ensures accessibility for logistics and workforce
	Distance from Residential	Minimum 100m buffer zone	Minimizes community complaints about noise or operations
	Flood Risk	Above 5-year flood level	Protects assets and ensures operational continuity
Functional	Total Area	200-250 sq. meters	Accommodates production, storage, office, and quality control areas with 15% expansion space
	Clear Ceiling Height	Minimum 3.5 meters	Enables vertical storage systems and overhead material handling equipment installation

	Floor Load Capacity	500 kg/sqm minimum	Supports production equipment, loaded storage racks, and material handling equipment
	Column Spacing	6 meters minimum	Provides unobstructed production flow and flexible layout configuration
	Loading Bay	Ground-level or dock-height access	Facilitates efficient material receiving and finished goods dispatch
Utilities	Power Supply	3-phase, 100-amp minimum service	Supports production equipment with 30% reserve capacity for expansion
	Water Supply	10 cu.m daily capacity	Meets production testing and facility maintenance requirements
	Internet Connectivity	Fiber-optic capable	Enables ERP system implementation and e-commerce operations
	Backup Power Provision	Generator transfer switch installed	Allows rapid deployment of backup power during outages
Environmental	Ventilation	Natural cross-ventilation or mechanical	Maintains air quality standards for electronics assembly
	Temperature Control	Capable of maintaining 25-30°C	Protects electronic components and ensures worker comfort
	Drainage System	Separate storm and sanitary lines	Prevents flooding and ensures proper waste management
Compliance	Zoning Classification	Light industrial or commercial	Permits manufacturing operations under local ordinances
	Fire Safety Compliance	Valid Fire Safety Inspection Certificate	Demonstrates compliance with fire code requirements
	Building Permits	Updated occupancy permit for industrial use	Confirms legal authorization for manufacturing activities
	Environmental Clearance	No pending violations or restrictions	Ensures operations can proceed without regulatory delays

Zoning Requirements

The facility complies with Infanta Municipal Ordinance No. 2018-07 for light manufacturing operations in designated industrial zones. Required documentation includes, Barangay Clearance from Barangay Poblacion 38, Zoning Clearance from Municipal Planning and Development Office, Environmental Compliance Certificate for electronics assembly, and Building and Occupancy Permits for 220 sqm industrial space. The landlord's written consent for minor office improvements has been secured, with provisions for restoration upon lease termination clearly documented in Addendum A of the lease agreement

Vicinity Map

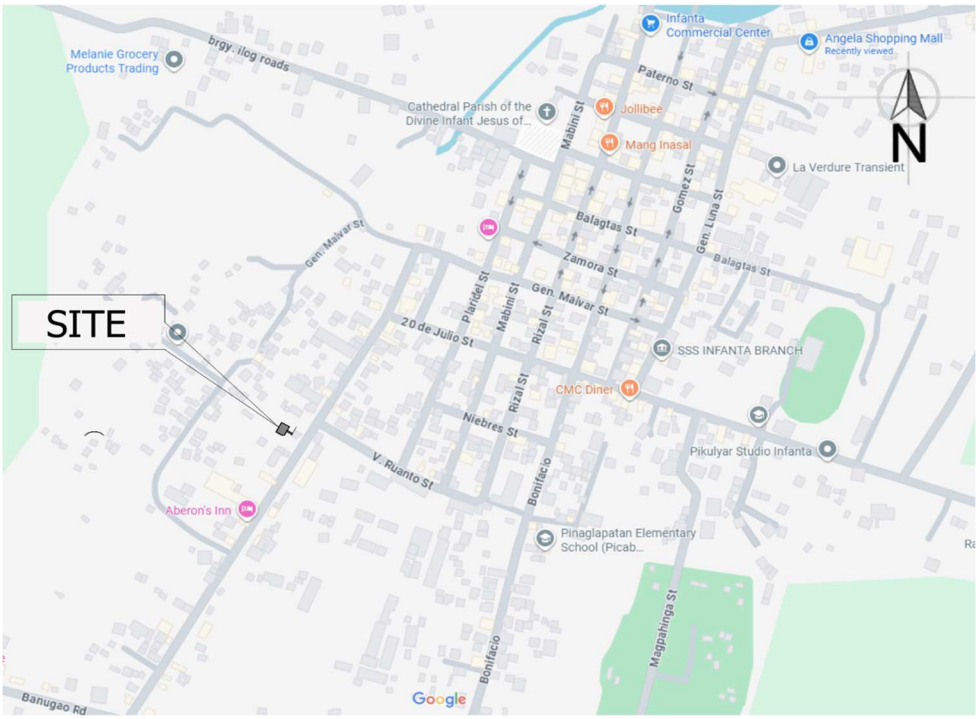


Figure 18. *Vicinity Map - Infanta, Quezon Facility Location*

Figure 12 illustrates the strategic positioning of the manufacturing facility along the Infanta-Real Road, providing optimal accessibility for both material delivery and product distribution. The location benefits from proximity to the municipal center while avoiding congestion associated with the public market area.

The 2-kilometer distance from the town proper ensures convenient access for workers using public transportation while maintaining sufficient separation from residential areas to comply with zoning requirements. Major landmarks including the Infanta Public Market, Real-Infanta Highway Junction, and Infanta District Hospital provide reference points for suppliers and customers. The site's elevation of 8 meters above sea level provides natural protection against flooding, a critical consideration given the coastal location's vulnerability to typhoons and storm surges.

Plant Layout

The plant layout establishes the physical arrangement of all functional areas needed to manufacture the AeroFusion Hybrid Air Cooler within the 220-square-meter leased facility, ensuring efficient workflow, safe circulation, and effective supervision. This section presents the overall facility configuration and

the detailed production-area arrangement to demonstrate how materials and work-in-process move logically from receiving and storage, through incoming inspection and sequential assembly workstations, and finally to quality assurance, packaging, finished goods storage, and outbound dispatch. Figures 19 and 20 illustrate how the layout supports a linear production flow, minimizes handling distance through defined aisles and work zones, and allocates space for production, quality control, storage, and administrative functions without disrupting material movement

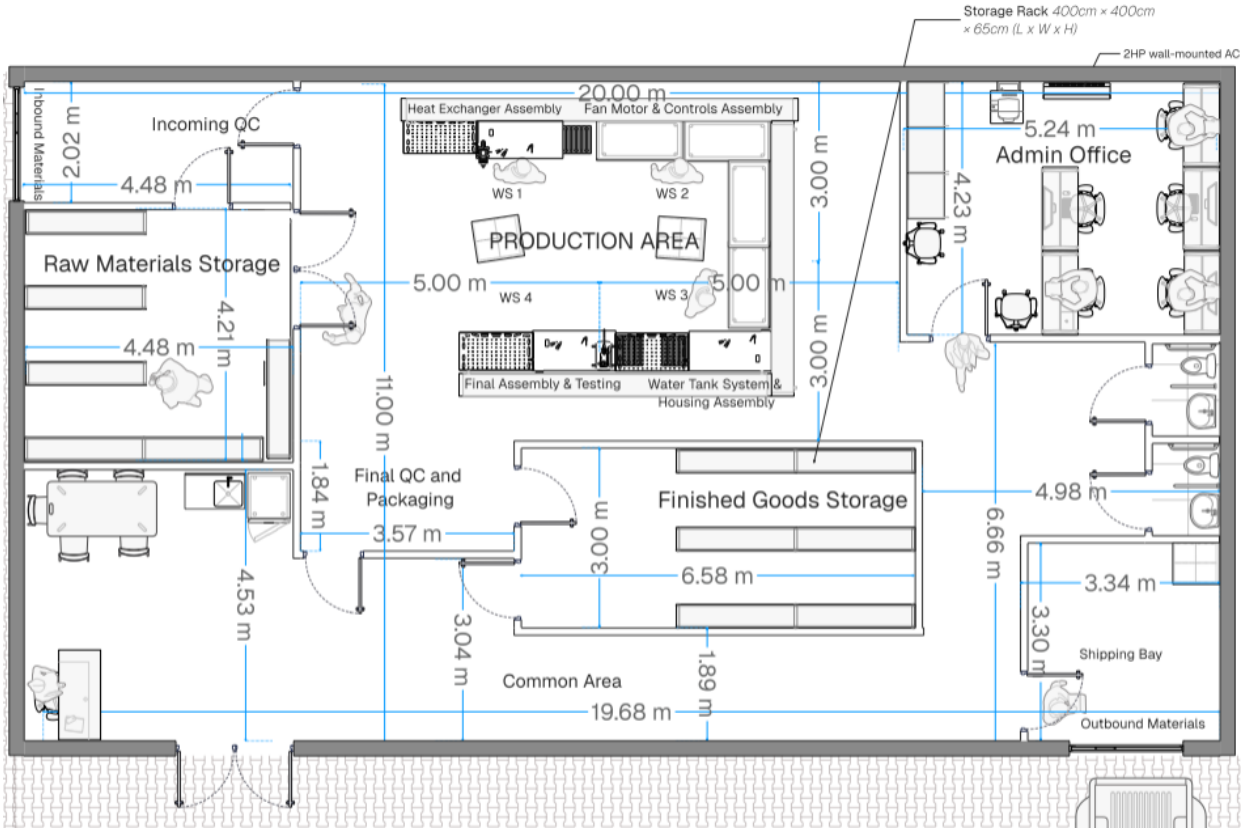


***Figure 19**: Proposed facility layout design*

Figure 19 presents the proposed 220-square-meter facility layout designed to support a smooth, linear material flow from inbound receipt to outbound dispatch. The arrangement groups Raw Materials Storage and Incoming Quality Control on the receiving side, then feeds approved components into the central production area where assembly proceeds through the defined workstations before moving to Final QC and Packaging. Finished units are transferred to Finished Goods Storage and directed to the Shipping/Loading area, while the Administrative Office is placed on the periphery to allow supervision and support without interrupting production movement, consistent with the circulation allowance (1.2–1.5 m aisles) required for safe material handling

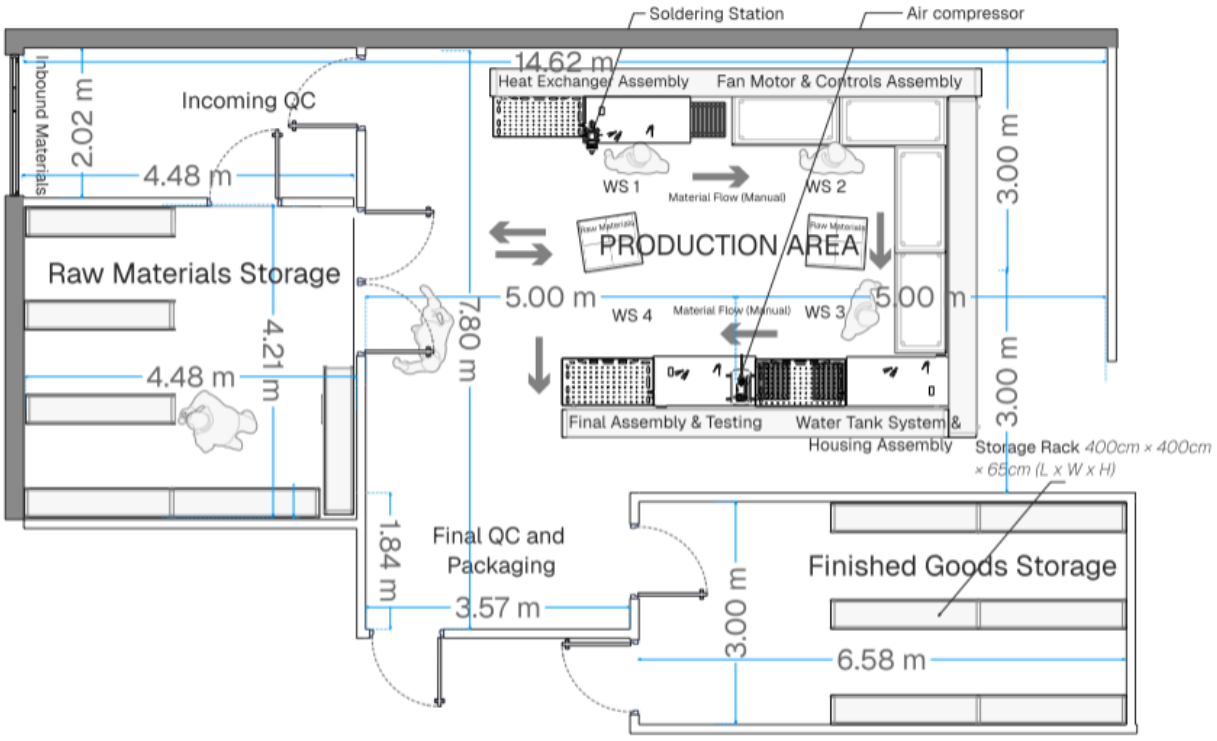


***Figure 20**: Proposed Production Plan Layout*

Figure 20 focuses on the proposed production plan layout, detailing the workstation configuration that supports the AeroFusion manual assembly sequence and balanced line design. The four workstations (WS1 heat exchanger assembly, WS2 fan motor and controls assembly, WS3 water tank system and housing assembly, and WS4 final assembly and testing) are positioned to maintain a clear “line-of-flow” and minimize manual transfer distance between stations, matching the intended 35-minute cycle per station. The central movement path allows operators and material handlers to perform controlled retrieval and transfer activities between stations and toward Final QC/Packaging, supporting continuous flow while reducing congestion and unnecessary walking during assembly operations

Occupancy Plan

Role	Headcount	Primary Work Area
Production Assemblers	4	Work-in-Progress Area (2 per shift)
Quality Assurance Technician	1	Incoming QC & Final QA
Warehouse Staff	2	Raw Materials, Finished Goods, Loading

Production Supervisor	1	Production Floor / Admin Office
Administrative Officer	1	Admin Office
Procurement Officer	1	Admin Office
Housekeeper/Utility	1	Entire Facility
General Manager	1	Admin Office
Security Officer	1	Entrance/Lobby Area
TOTAL	13	

Table 40. *Occupancy Plan*

Table 23 details the organizational structure and workforce deployment across functional areas, establishing clear responsibilities and reporting relationships. The initial workforce of 13 personnel provides adequate capacity for projected production volumes while maintaining flexibility for demand fluctuations.

Facility Area Allocation

The 220-square-meter facility accommodates all operational requirements through systematic space allocation based on production volume projections, equipment dimensions, and workflow requirements. Each department's area assignment reflects careful analysis of functional needs, with production areas receiving priority allocation while support functions utilize remaining space efficiently. The allocation includes circulation space to ensure safe material movement and compliance with emergency egress requirements.

Table 41: *Summary of Facilities*

Department	Dimensions (m)	Area (sqm)	% of 220 sqm
Raw Materials Storage	4.21 × 4.48	18.86	8.57%
Incoming QC	4.48 × 2.02	9.05	4.11%
Production Area (Workstations 1 - 4)	4 × (5.00 × 3.00)	60	27.27%
Final QC & Packaging	3.57 × 1.84	6.57	2.99%
Finished Goods Storage	3.00 × 6.58	19.74	8.97%
Admin Office	5.24 × 4.23	22.17	10.08%
Shipping Bay	3.34 × 3.30	11.02	5.01%
Common / Circulation / Allowance		72.59	33%
TOTAL FACILITY	**20.00 × 11.00**	**220**	**100%**

**Common areas include restrooms, pantry, and lobbies*

The facility occupies a total floor area of 220 square meters, which is systematically allocated to support production, quality control, storage, shipping, and administrative functions within a single integrated layout. As shown in Figure 19 and detailed in Table 41, the arrangement provides designated spaces for Raw Materials Storage and Incoming Quality Control, followed by a central production zone composed of four workstations, and downstream areas for final inspection and packaging, finished goods storage, and dispatch through the shipping bay. The administrative office is positioned as a separate enclosed area to support management and documentation activities while maintaining efficient access to

operational areas. The remaining floor area is assigned to common and circulation spaces, which include restrooms, pantry, lobby areas, and access paths required for safe movement and functional connectivity between departments.

Facility Relationship Analysis

The systematic evaluation of inter-departmental relationships provides the quantitative foundation for optimized layout design through the CORELAP algorithm. Each departmental pair receives a relationship classification ranging from 'A' (absolutely necessary) to 'X' (undesirable), based on material flow requirements, communication needs, supervision requirements, and environmental considerations. These alphabetic classifications translate to numerical weights, enabling mathematical optimization of the facility arrangement.

***Table 42**.: Department relationship using Corelap algorithim*

											A	E	I	O	U	X		
Department	1.	2,	3.	4.	5.	6.	7.	8.	9.	10	*125*	*25*	*5*	*1*	*0*	*-125*	**TCR**	**Placement**
1. Raw Materials	-	A	E	I	I	I	I	I	U	U	1	1	5	0	2	0	175	8
2. Incoming QC	A	-	A	E	I	I	I	U	U	U	2	1	3	0	3	0	290	6
3. Workstation 1	E	A	-	A	E	I	I	U	U	U	2	2	2	0	3	0	310	5
4. Workstation 2	I	E	A	-	A	E	I	U	U	U	2	2	2	0	3	0	310	4

5. Workstation 3	I	I	E	A	-	A	E	U	U	U	2	2	2	0	3	0	310	3
6. Workstation 4	I	I	I	E	A	-	A	U	E	U	2	2	3	0	2	0	315	2
7. Final QC	I	I	I	I	E	A	-	E	A	U	2	2	4	0	1	0	320	1
8. Finished Goods	I	U	U	U	U	U	E	-	A	O	1	1	1	1	5	0	156	9
9. Shipping Bay	U	U	U	U	U	E	A	A	-	U	2	1	0	0	6	0	275	7
10. Admin Office	U	U	U	U	U	U	U	O	U	-	0	0	0	1	8	0	1	10

Relationship Legend:

- A = Absolutely necessary (weight: 125) - Critical material flow or shared operations
- E = Especially important (weight: 25) - Frequent interaction or supervision needs
- I = Important (weight: 5) - Occasional interaction or secondary flow
- O = Ordinary importance (weight: 1) - Minimal interaction
- U = Unimportant (weight: 0) - No operational relationship
- X = Undesirable (weight: -125) - Requires separation (not applicable in this facility)

The Total Closeness Rating (TCR) calculation sums all weighted relationships for each department, establishing placement priority in the CORELAP algorithm. The layout starts with Final QC around the center as it achieves the highest TCR of 320 due to its central role in quality verification and connections to both production and shipping operations. The workstations (WS1-4) demonstrate consistently high

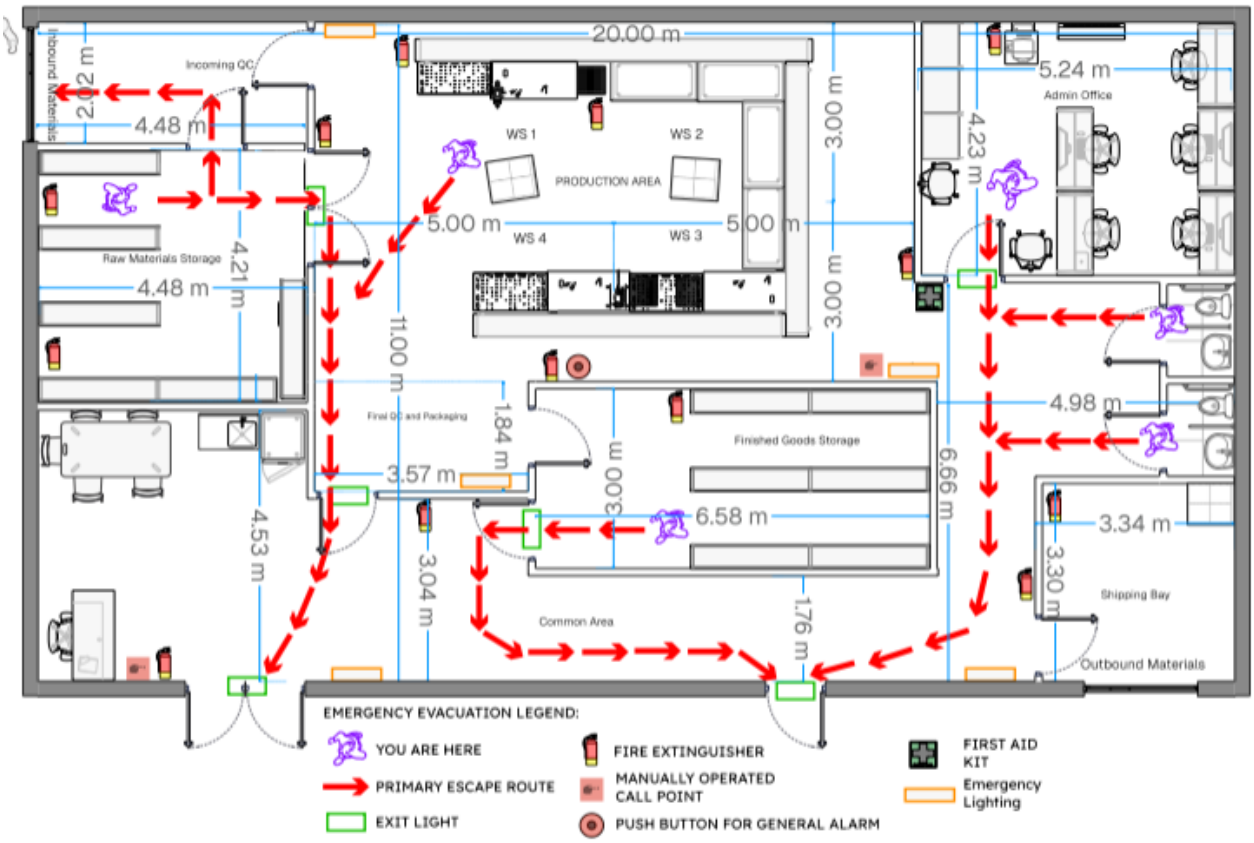
TCRs ranging from 310-315, reflecting their sequential dependencies and material flow requirements. Administrative office, with minimal operational interactions, appropriately receives the lowest TCR of 1, positioning it peripherally to avoid disrupting production flow.

Figure 20: *Operations Schematic block layout*

Evacuation Plan

The emergency evacuation plan ensures a complete facility evacuation within 3 minutes through clearly marked primary and secondary routes, in compliance with the National Building Code of the Philippines (PD 1096) and the Fire Code of the Philippines (RA 9514). Evacuation routes are illuminated by emergency lighting with a 2-hour battery backup, installed at intervals of no more

than 15 meters along corridors and exits to maintain visibility during power failures. Primary evacuation routes lead directly to three assembly points located 50 meters from the building perimeter, positioned upwind and clear of potential hazards,



Assembly point locations are marked with weather-resistant signage visible from evacuation routes

The facility's 220-square-meter footprint and single-level construction facilitate rapid evacuation, with maximum travel distance to exits of 25 meters from any work area. The layout ensures all personnel can reach safety within the 3-

minute benchmark, exceeding the Fire Code requirement of 4.5 minutes for similar occupancies

In terms of Evacuation Responsibilities**,** the Production Supervisor serves as floor warden, conducting roll call at assembly points using the occupancy roster from Table 23. The General Manager acts as the incident commander, coordinating with fire safety personnel and documenting evacuation times. Housekeeper/Utility staff perform final sweeps of restrooms and support facilities before exiting. Designated personnel are assigned to secure the raw materials storage and finished goods areas, preventing unauthorized access during emergencies.

Leasehold Improvements

Table: *Leasehold Improvement Cost*

Description	Unit	Unit Cost (₱)	Amount (₱)
Partition Wall (32 sqm)	1 set	180,000.00	180,000.00
- Gypsum board & steel stud framing		80,000.00	80,000.00
- Door & hardware	1 unit	35,000.00	35,000.00
- Electrical modifications	1 job	40,000.00	40,000.00
- Labor & installation	1 job	25,000.00	25,000.00
Total Leasehold Improvements			**180,000.00**

Given the proposed facility plant layout, facility modifications are needed for minor architectural improvements that enable functional separation of operational areas while maintaining capital efficiency. The primary requirement is the construction of a partition wall to separate the 32-square-meter administrative office from the production floor, providing noise isolation, and document security for business records. The partition design utilizes standard gypsum board construction with steel stud framing, measuring 8 meters in length and 2.5 meters in height, with a single hinged door for personnel access between the office and production areas. The total cost of ₱180,000 covers materials, labor, electrical wiring modifications for office lighting and outlets, and basic finishing work including paint and door hardware. This improvement will be capitalized as a leasehold asset and amortized over the 5-year initial lease term, resulting in an annual non-cash amortization expense of ₱36,000. The lease agreement specifies that all improvements become the property of the landlord upon lease termination, consistent with standard commercial leasing practices in the Philippines.

Chapter III

MANAGEMENT STUDY

Introduction

This chapter details the management and organizational structure of AeroFusion Cooling Solutions, Inc., establishing the legal framework, organizational hierarchy, personnel requirements, and compensation policies necessary for effective governance and regulatory compliance

Vision, Mission, and Core Values

The company establishes strategic direction through clearly articulated principles that guide operational decisions and organizational culture. Table 25 presents the vision, mission, and core values that underpin corporate identity and stakeholder engagement.

Table 43. *Company Vision, Mission, and Core Values*

Principle	Statement / Description
Vision	To enhance the daily comfort and quality of life for Filipino families by setting new innovations in accessible home cooling
Mission	To pioneer accessible, refrigerant-free cooling solutions that harness advanced evaporative technology and thermal innovation to deliver superior comfort in extreme heat, while minimizing energy use and environmental impact for households worldwide

Core Values	**Innovation:** We are committed to research and development to create smart, practical, and effective solutions for real-world cooling challenges.
	Operational Excellence: We are driven by efficiency, seeking to optimize our operations to deliver maximum value and affordability.
	Continuous Improvement: We foster a culture of constant learning and refinement in our products, processes, and services to achieve long-term excellence.
	Quality: We are dedicated to the highest standards of product quality and reliability, from sourcing components to final assembly.
	Integrity: We conduct our business with unwavering honesty, transparency, and respect for our employees, partners, and customers.

The emphasis on innovation and quality supports the product's unique dual-cooling mechanism, while operational excellence ensures competitive positioning at a suggested retail price of ₱ 6,073.44 (with introductory pricing of ₱ 5,073.44 for the first 500 units), making advanced cooling technology accessible to middle-income Filipino households.

Type and Form of Organization

AeroFusion Cooling Solutions, Inc. is organized as a stock corporation registered with the Securities and Exchange Commission (SEC) under the Revised Corporation Code of the Philippines (RA 11232), with five incorporators who also serve as the initial Board of Directors, each holding at least one share in their name in compliance with incorporator and director qualifications. Immediately after

incorporation, the Board will formally organize and elect the mandatory corporate officers required by law: a President who is a director, a Treasurer who is a Philippine resident, and a Corporate Secretary who is both a Filipino citizen and resident, alongside any additional officers defined in the bylaws to support day-to-day operations. The five founder-shareholders collectively own 100% of the subscribed capital, ensuring alignment between ownership, governance, and executive management while maintaining full compliance with SEC rules on board composition, officer qualifications, and disclosure of capital structure in the Articles of Incorporation.

Organizational Chart

The organizational structure adopts a functional design appropriate for a small-scale manufacturing startup, with clear reporting lines and defined areas of responsibility. Figure 15 presents the organizational hierarchy, which is designed to be lean and efficient for initial production while allowing for future growth. The structure is intentionally flat, with only one layer of management between the General Manager and the frontline staff. This simple hierarchy ensures fast communication and quick decision-making, which is critical for a new company adapting to market demands.

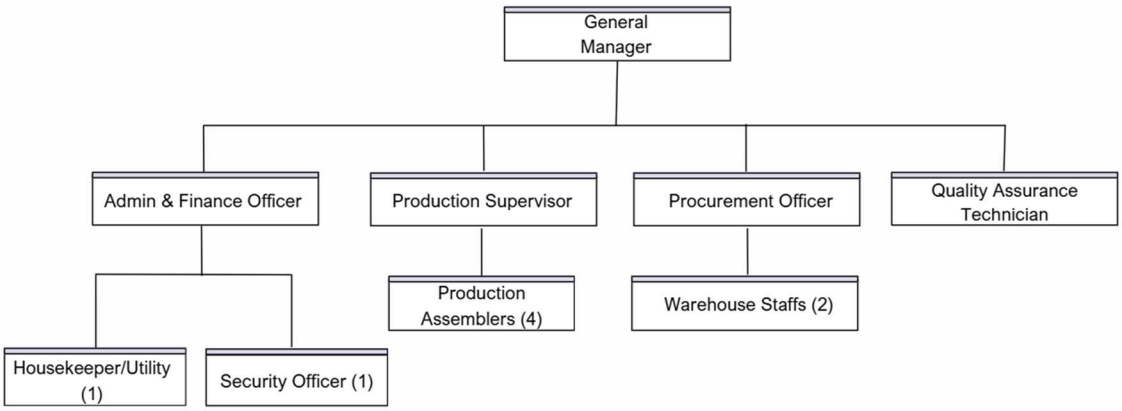


Figure 15. *Organizational Chart*

Each department has a clear purpose. The Production Supervisor oversees the four Production Assemblers and manages day-to-day manufacturing operations on the factory floor. The Procurement Officer and two Warehouse Staff are responsible for ordering raw materials and managing inventory, ensuring the assembly line never runs out of parts. The Quality Assurance Technician reports directly to the General Manager, giving them independent authority to approve incoming materials and inspect finished products, ensuring high standards are met without pressure from production targets. Finally, the Admin & Finance Officer handles all non-production tasks, including HR, payroll, and accounting, as well as supervising the Housekeeper/Utility worker and security officer.

This design provides a clear span of control, with no manager supervising more than four direct reports, enabling effective supervision and employee support. As the company grows, this structure can easily scale by adding more assemblers or creating a second shift under the same supervision, without needing a major reorganization.

Officers and Key Personnel

The company requires 13 positions for initial operations, grouped into 4 categories based on functional responsibilities and skill requirements. Management positions, including General Manager, Admin & Finance Officer, Production Supervisor, and Procurement Officer, require bachelor's degrees in relevant fields with 2-7 years of industry experience. Technical positions, including Quality Assurance Technician roles, require specialized training in electronics or engineering, with quality control experience. Production positions, including four Assemblers and two Warehouse Staff, require a high school education with relevant vocational training preferred. A support position for Housekeeper/Utility Worker requires elementary education and housekeeping experience.

Table 44. *Detailed Position Qualifications*

Role	Key Responsibilities	Minimum Qualifications
General Manager – Leads overall business direction, results, and cross-functional execution.	- Set business strategy and plans (incl. marketing)	- Bachelor's degree (MBA preferred)
	- Manage revenue targets and overall performance	- 5–7 years management experience (manufacturing)
	- Lead cross-functional teams and key stakeholder relationships	- Competencies: strategic planning, financial management, leadership
Production Supervisor – Runs daily manufacturing operations and ensures safe, efficient production.	- Supervise day-to-day production on the factory floor	- Bachelor's degree in Industrial/Mechanical Engineering
	- Implement lean/5S and drive continuous improvement	- 3+ years supervisory manufacturing experience
	- Ensure quality and safety compliance targets are met	- Competencies: lean manufacturing, team leadership, safety knowledge
Admin & Finance Officer – Manages finance, HR, payroll, and administrative support for operations.	- Handle HR administration, payroll, and accounting activities	- Bachelor's degree in Accounting (or equivalent)
	- Manage non-production administrative requirements and records	- 2+ years relevant experience
	- Supervise facility support staff (housekeeper/utility)	- Competencies: Philippine tax/labor compliance, accounting software proficiency
Procurement Officer – Secures materials/services and supports uninterrupted production supply.	- Source and purchase raw materials based on production needs	- Bachelor's degree in Business (or related)
	- Coordinate with warehouse/inventory to prevent stockouts	- 3+ years relevant experience
	- Negotiate with suppliers and manage supply continuity	- Competencies: negotiation, supply chain management, vendor relations
QA Technician – Provides independent quality control for incoming materials and finished goods.	- Inspect/approve incoming materials and components	- Diploma in Electronics (or related technical training)
	- Inspect finished products to ensure standards are met	- 2+ years QA/QC experience
	- Maintain QA documentation and ensure compliance	- Competencies: testing procedures, documentation, attention to detail
Production Assembler – Builds product sub-assemblies and completes final assembly to standard.	- Perform assembly tasks across workstations (mechanical/electrical integration)	- High School graduate; vocational training preferred

	- Follow standard procedures and technical instructions/work specs	- 1+ year assembly/production experience
Warehouse Staff – Controls raw material and finished goods flow to support production and dispatch.	- Receive/store raw materials and issue parts to production as needed	- High School graduate
	- Manage inventory records and support loading/shipping activities	- 1+ year warehouse/inventory experience
	- Maintain accuracy and orderly storage for efficient operations	- Competencies: inventory management, basic computer skills, accuracy
Housekeeper/Utility – Maintains cleanliness, sanitation, and basic facility support across areas.	- Perform daily cleaning and housekeeping across the facility	- High School graduate
	- Follow cleaning procedures and maintain reliable attendance	- 6 months housekeeping/utility experience
	- Support workplace safety/organization through routine upkeep	- Competencies: cleaning procedures, reliability, attention to detail
Security Officer – Ensures facility security, protects company assets, and supports a safe workplace environment.	- Control access to premises (visitor logbook, ID verification, gate/entry monitoring).	- Filipino citizen; at least high school graduate.
	- Conduct routine patrols and security inspections; report hazards, suspicious activity, and incidents.	- Completed the required Pre-Licensing Training Course (150 hours) and passed the PNP-SOSIA licensure examination; must hold a valid License to Exercise Security Profession (LESP) to work legally as a security guard.
	- Prevent loss/theft/damage of equipment, materials, and finished goods; coordinate immediate response during security incidents.	- Physically and mentally fit; must have passed neuro-psychiatric and drug tests (as required for private security personnel).
	- Support emergency response (alarms, evacuation assistance) and maintain security records (incident reports, daily log).	- Within PNP-SOSIA eligibility range (commonly at least 18 years old).
		- Has required clearances/documentation typically required for licensing and employment

Table 44 details the specific qualifications for each position, ensuring alignment between human resource capabilities and operational requirements.

Each position requires specific qualifications aligned with operational responsibilities and performance expectations. The General Manager must possess a bachelor's degree in business administration or industrial engineering, with an MBA preferred, plus a minimum of five years of management experience in the manufacturing sector. Required competencies include strategic planning, financial management, leadership, and knowledge of the appliance industry. The position requires developing business strategies, including marketing, managing revenue targets, leading cross-functional teams, and maintaining stakeholder relationships.

The Production Supervisor requires a bachelor's degree in industrial or mechanical engineering with three years of supervisory experience in manufacturing. Critical qualifications include knowledge of lean manufacturing principles, understanding of electronics assembly, and safety certification. The role requires managing the daily production, maintaining a 98% quality acceptance rate, implementing 5S workplace organization, and ensuring safety compliance.

Table 3 details the specifications for technical and operational positions essential for production quality and efficiency. These roles provide direct value creation through manufacturing excellence and quality assurance.

The Quality Assurance Technician position is critical for establishing brand reputation through consistent product performance. Production Assemblers, supporting retention and skill development essential for quality manufacturing.

Salary Computation

The computation for monthly and annual salary is based on the production schedule of 240 annual operating days. The compensation structure for AeroFusion Cooling Solutions, Inc. aims to be competitive within the manufacturing sector of the CALABARZON region with the Production Assemblers having ₱650 daily wage. The total projected annual salary expense for the initial workforce of twelve employees is ₱2,310,000, as detailed in Table 23. All daily wage rates align with the regional minimum wage, thus ensuring compliance with local labor regulations.

***Table 45**: Salary Expenses for AeroFusion Cooling Solutions*

PERSONNEL	QTY	Daily Wage (₱)	Monthly Salary/ Workers (₱)	Annual Salary (₱)
Administrative				
General Manager	1	2,000.00	40,000.00	480,000.00
Admin & Finance Officer	1	950.00	19,000.00	228,000.00
Procurement Officer	1	950.00	19,000.00	228,000.00

Total	3	*4,227.27*	*78,000.00*	*936,000.00*
Indirect Labor				
Production Supervisor	1	800.00	16,000.00	192,000.00
QA Technician	1	750.00	15,000.00	180,000.00
Warehouse Staff	2	525.00	21,000.00	252,000.00
Housekeeper/Utility	1	525.00	10,500.00	126,000.00
Security Officer	1	750.00	15,000.00	180,000.00
Total	5	*3,350.00*	*77,500.00*	*930,000.00*
Direct Labor				
Production Assemblers	4	700.00	56,000.00	672,000.00
Total	4	*700.00*	*56,000.00*	*672,000.00*
GRAND TOTAL	13	8,277.27	211,500.00	2,538,000.00

Benefits of the Employees

In addition to basic salaries, the company will provide all government-mandated employee benefits in accordance with Philippine law. The employer's contribution to the Social Security System (SSS) is calculated at 10% of the applicable Monthly Salary Credit (MSC), capped at ₱20,000. Additionally, there is a ₱30 premium for Employees' Compensation (EC) and the Mandatory Provident Fund (MPF), a mandatory retirement savings program for some Social Security System (SSS) members that exceeds ₱20,000 with a monthly salary credit (MSC). The total projected annual employer contribution for SSS is ₱326,520. The monthly

salary credit (MSC) is based on the 365 annual days and not on the computed annual operation schedule.

***Table 46**. Employee Benefits - Social Security System Contribution*

Position	Daily Wage (₱)	MSC (Monthly Basic, ₱)	Capped MSC (SSS) (₱)	Employer Share 10% (₱/mo)	EC (₱/mo)	Employer Monthly Total (₱)	Employer Yearly Total (₱)
Administrative							
General Manager	2,000.00	60,833.33	20,000.00	2,000.00	30.00	2,030.00	24,360.00
Admin & Finance Officer	950.00	28,895.83	20,000.00	2,000.00	30.00	2,030.00	24,360.00
Procurement Officer	950.00	28,895.83	20,000.00	2,000.00	30.00	2,030.00	24,360.00
							73,080.00
Indirect Labor							
Production Supervisor	800.00	24,333.33	20,000.00	2,000.00	30.00	2,030.00	24,360.00
QA Technician	750.00	22,812.50	20,000.00	2,000.00	30.00	2,030.00	24,360.00
Warehouse Staff 1	525.00	15,968.75	16,000.00	1,600.00	30.00	1,630.00	19,560.00
Warehouse Staff 2	525.00	15,968.75	16,000.00	1,600.00	30.00	1,630.00	19,560.00
Housekeeper/Utility	525.00	15,968.75	16,000.00	1,600.00	30.00	1,630.00	19,560.00
Security Officer	750.00	22,812.50	20,000.00	2,000.00	30.00	2,030.00	24,360.00
							131,760.00
Direct Labor							
Production Assembler 1	700.00	21,291.67	20,000.00	2,000.00	30.00	2,030.00	24,360.00
Production Assembler 2	700.00	21,291.67	20,000.00	2,000.00	30.00	2,030.00	24,360.00
Production Assembler 3	700.00	21,291.67	20,000.00	2,000.00	30.00	2,030.00	24,360.00
Production Assembler 4	700.00	21,291.67	20,000.00	2,000.00	30.00	2,030.00	24,360.00
							97,440.00
GRAND TOTAL	10,575.00	321,656.25	248,000.00	24,800.00	390.00	25,190.00	302,280.00

For PhilHealth, the employer's share is 2.5% of the actual monthly basic salary, with contributions calculated on salaries ranging from a floor of ₱10,000 to a ceiling of ₱100,000. The estimated total annual employer contribution for PhilHealth is ₱118,453.13.

Pag-IBIG Fund contributions are computed at 2% of the monthly basic salary, contributed equally by both the employer and the employee, but capped at a maximum fund salary of ₱10,000. This results in a monthly employer contribution of ₱200 per employee.

***Table 47**. Benefits and Compensation Cost - Philhealth and Pag-ibig Contribution*

Position	Daily Wage (₱)	MSC (Monthly Basic, ₱)	PhilHealth Employer 2.5% (₱/mo)	Capped Pag-IBIG MSC (SSS) (₱)	Pag-IBIG Employer 2% (₱/mo)	Total Employer Monthly (₱)	Employer Yearly Total (₱)
Administrative							
General Manager	2,000.00	60,833.33	1,520.83	10,000.00	200.00	1,720.83	20,650.00
Admin & Finance Officer	950.00	28,895.83	722.40	10,000.00	200.00	922.40	11,068.75
Procurement Officer	950.00	28,895.83	722.40	10,000.00	200.00	922.40	11,068.75
							42,787.50
Indirect Labor							
Production Supervisor	800.00	24,333.33	608.33	10,000.00	200.00	808.33	9,700.00
QA Technician	750.00	22,812.50	570.31	10,000.00	200.00	770.31	9,243.75
Warehouse Staff 1	525.00	15,968.75	399.22	10,000.00	200.00	599.22	7,190.63
Warehouse Staff 2	525.00	15,968.75	399.22	10,000.00	200.00	599.22	7,190.63

Housekeeper/Utility	525.00	15,968.75	399.22	10,000.00	200.00	599.22	7,190.63
Security Officer	750.00	22,812.50	570.31	10,000.00	200.00	770.31	9,243.75
							49,759.37
Direct Labor							
Production Assembler 1	700.00	21,291.67	532.29	10,000.00	200.00	732.29	8,787.50
Production Assembler 2	700.00	21,291.67	532.29	10,000.00	200.00	732.29	8,787.50
Production Assembler 3	700.00	21,291.67	532.29	10,000.00	200.00	732.29	8,787.50
Production Assembler 4	700.00	21,291.67	532.29	10,000.00	200.00	732.29	8,787.50
							35,150.00
Grand Total	10,575.00	321,656.25	8,041.41	130,000.00	2,600.00	10,641.41	127,696.88

***Table 48**. Employee Benefits - 13th-Month, Service Incentive Leaves & Regular Holiday*

Position	Daily Wage (₱)	Annual Basic Salary (₱)- *prorated to 240 operating days*	13th-Month Pay (1/12 Basic, ₱)	SIL (5 Days × Daily × Qty, ₱)	Total Employer Yearly (₱)
Administrative					
General Manager	2,000.00	480,000.00	40,000.00	10,000.00	50,000.00
Admin & Finance Officer	950.00	228,000.00	19,000.00	4,750.00	23,750.00
Procurement Officer	950.00	228,000.00	19,000.00	4,750.00	23,750.00
Admin Subtotal	3,900.00	936,000.00	78,000.00	19,500.00	97,500.00
Indirect Labor					
Production Supervisor	800.00	192,000.00	16,000.00	4,000.00	20,000.00
QA Technician	750.00	180,000.00	15,000.00	3,750.00	18,750.00

Warehouse Staff 1	525.00	126,000.00	10,500.00	2,625.00	13,125.00
Warehouse Staff 2	525.00	126,000.00	10,500.00	2,625.00	13,125.00
Housekeeper/Utility	525.00	126,000.00	10,500.00	2,625.00	13,125.00
Security Officer	750.00	180,000.00	15,000.00	3,750.00	18,750.00
Indirect Subtotal	3,875.00	930,000.00	77,500.00	19,375.00	96,875.00
Direct Labor					
Production Assembler 1	700.00	168,000.00	14,000.00	3,500.00	17,500.00
Production Assembler 2	700.00	168,000.00	14,000.00	3,500.00	17,500.00
Production Assembler 3	700.00	168,000.00	14,000.00	3,500.00	17,500.00
Production Assembler 4	700.00	168,000.00	14,000.00	3,500.00	17,500.00
Direct Subtotal	2,800.00	672,000.00	56,000.00	14,000.00	70,000.00
Grand Total	10,575.00	2,538,000.00	211,500.00	52,875.00	264,375.00

Table 48 details the computation of mandatory employee benefits required under Philippine labor law. The 13th-month pay, mandated by Presidential Decree No. 851, provides each employee with one-twelfth (1/12) of their annual basic salary, totaling ₱196,500 for the organization. Service incentive leave (SIL) grants five (5) compensated days annually for employees with at least one year of service, as prescribed under Article 95 of the Labor Code, amounting to ₱49,125 across all positions. Additionally, the compensation structure includes regular holiday pay for the fifteen (15) national holidays under Republic Act No. 9492, as amended. Employees receive 100% of their daily wage for these holidays even when no work

is performed, ensuring compliance with labor standards and totaling ₱147,375 annually. The combined annual cost of these three statutory benefits is ₱393,000, representing essential non-salary compensation that supports employee welfare while maintaining full regulatory compliance in the manufacturing sector.

Training Programs

AeroFusion Cooling Solutions, Inc. has implemented a comprehensive training program designed to enhance workforce capability, ensure regulatory compliance, and achieve key performance indicators. This program is divided into two main components: internal skills-based training and external certification-based training, with an initial annual investment of ₱12,300.

The detailed training matrix in Table 26 outlines the various modules, target participants, duration, and associated costs.

Table 49. *Annual Training Program*

Training Type	Module	Participants	Duration / Frequency	Cost (₱)
Internal	Company Orientation	All New Hires	8 hours (Onboarding)	-
	Product Knowledge Training	All New Hires	8 hours (Onboarding)	-
	OSH/General Safety	All Staff	24 hours (2h/month)	-
	Mandatory Workers' OSH Seminar	All Staff	8 hours (Onboarding)	-
	Assembly Procedures	Production Staff	40 hours (Initial)	-

	Quality Training	All Staff	16 hours (Bi-annual)	-
External	BOSH Certification (SO2)	Production Supervisor	40 hours (One-time)	3,500.00
	First Aid & CPR (BLS/AED)	2 employees (Rotational)	16-32 hours (Every 3 Years)	4,500.00
	Pollution Control Officer (PCO)	General Manager	40 hours (Every 3 Years)	6,500.00
TOTAL				14,500.00

Internal training focuses on foundational knowledge and operational skills, conducted by in-house experts to maximize cost-efficiency. All new hires participate in an onboarding program that includes company orientation and thorough product knowledge training. Ongoing training consists of monthly safety talks to reinforce the company's commitment to Occupational Safety and Health (OSH). Additionally, targeted sessions on assembly procedures and quality control methods aim for a 98% quality rate, a 20% reduction in defects, and a 10% improvement in production efficiency, thereby providing measurable returns on the training investment.

External training is designed to ensure compliance with national regulations. This includes a 40-hour Basic Occupational Safety and Health (BOSH) course for the designated Safety Officer 2, in compliance with Department of Labor and Employment (DOLE) Order No. 198-18. A certified Pollution Control Officer (PCO) will also complete a separate 40-hour training program to manage

environmental compliance as mandated by the Department of Environment and Natural Resources (DENR). Furthermore, designated employees will receive annual First Aid and CPR certification to serve as qualified workplace emergency responders.

Compensation

AeroFusion Cooling Solutions, Inc. adopts a compensation philosophy that balances competitive wages with long-term financial sustainability, ensuring all positions are compensated at rates exceeding the regional minimum wage as mandated by the Department of Labor and Employment. Monthly salaries are disbursed bi-monthly on the 15th and 30th of each month through direct bank transfer or cash payment. Overtime compensation is governed by the Labor Code of the Philippines, with rates of 125% of the regular hourly wage for work exceeding eight hours daily, 130% for work on rest days, and 200% for work performed on regular holidays.

Table 50. *Total Annual Compensation Summary*

Compensation Component	Annual Amount (₱)
Basic Salaries	2,538,000.00
13th Month Pay	211,500.00

Government Contributions	429,976.88
Leave Benefits	52,875.00
Training Investment	12,300.00
Total Investment	3,244,651.88

This comprehensive compensation structure ensures compliance with Philippine labor laws while creating a supportive work environment that attracts and retains qualified personnel. The total annual investment of **₱3,012,298** represents approximately 20% of projected Year 1 revenues, positioning the company competitively within the regional manufacturing sector.

Articles of Incorporation

The Articles of Incorporation establish the legal foundation for AeroFusion Cooling Solutions, Inc. as a domestic stock corporation registered with the Securities and Exchange Commission (SEC). The document defines the corporate name, purpose, capital structure, and governance framework in accordance with the Revised Corporation Code of the Philippines (Republic Act No. 11232).

ARTICLES OF INCORPORATION

AeroFusion Cooling Solutions, Inc.

KNOW ALL MEN BY THESE PRESENTS:

Pursuant to the provisions of the Revised Corporation Code of the Philippines (Republic Act No. 11232), the undersigned Filipino citizens, all of legal age and residents of Infanta, Quezon, Philippines, do hereby associate themselves to form a corporation and adopt the following Articles of Incorporation:

ARTICLE I: NAME AND LOCATION

Section 1. Corporate Name

The name of the corporation is AEROFUSION COOLING SOLUTIONS, INC.

Section 2. Principal Office

The principal office of the Corporation shall be located at: Barangay Poblacion, Infanta, Quezon 4301, Philippines

The Board of Directors may establish branch offices as needed.

ARTICLE II: CORPORATE PURPOSE

The primary purpose of the Corporation is to manufacture, assemble, distribute, and sell cooling appliances and related products, including hybrid cooling fans and air conditioning appliances.

ARTICLE III: TERM

The Corporation shall have perpetual existence unless sooner dissolved in accordance with law.

ARTICLE IV: CAPITAL STOCK

Section 1. Authorized Capital Stock

The authorized capital stock of the Corporation is TWENTY MILLION PESOS (₱20,000,000.00), divided into TWO HUNDRED THOUSAND (200,000) shares with a par value of ONE HUNDRED PESOS (₱100.00) per share.

Section 2. Subscribed and Paid-Up Capital

The subscribed and paid-up capital is FIVE MILLION PESOS (₱5,000,000.00), divided into FIFTY THOUSAND (50,000) shares with a par value of ONE HUNDRED PESOS (₱100.00) per share. All subscribed shares are fully paid in cash.

ARTICLE V: INCORPORATORS AND INITIAL STOCKHOLDERS

The incorporators and their shareholdings are as follows:

Table 51. *List of Incorporators and Initial Stock Subscription*

Name	Nationality	Address	Shares (₱)	Amount (₱)
Mark Angelo Taniegra	Filipino	Calabarzon, PH	10,000.00	1,000,000.00
Mcgyver Lee Lorayes	Filipino	Calabarzon, PH	10,000.00	1,000,000.00
Mary Ann Prado	Filipino	Calabarzon, PH	10,000.00	1,000,000.00
Eric Infante	Filipino	Calabarzon, PH	10,000.00	1,000,000.00
Crystal Alcasabas	Filipino	Calabarzon, PH	10,000.00	1,000,000.00
TOTAL			**50,000.00**	**5,000,000.00**

Each incorporator is a stockholder holding at least one (1) share and shall subscribe to and pay for their respective shares upon incorporation.

ARTICLE VI: BOARD OF DIRECTORS

Section 1. Number and Composition

The Corporation shall be governed by a Board of Directors composed of FIVE (5) members, all of whom shall be stockholders and residents of the Philippines.

Section 2. First Board of Directors

The names, nationalities, and addresses of the first Board of Directors are:

Table 52. *List of Board of Directors*

Name	Nationality	Address
Mark Angelo Taniegra	Filipino	Calabarzon, PH
Mcgyver Lee Lorayes	Filipino	Calabarzon, PH
Mary Ann Prado	Filipino	Calabarzon, PH
Eric Infante	Filipino	Calabarzon, PH
Crystal Alcasabas	Filipino	Calabarzon, PH

Section 3. Term of Office

The first Directors shall hold office until their successors are duly elected and qualified. Subsequent Directors shall be elected annually by the stockholders.

ARTICLE VII: CORPORATE OFFICERS

Section 1. Required Officers

The Board of Directors shall elect the following officers required by the Revised Corporation Code:

- **President** – must be a Director
- **Treasurer** – must be a Philippine resident
- **Corporate Secretary** – must be a Philippine resident and citizen

Section 2. Election and Term

Corporate officers shall be elected by the Board of Directors and shall hold office for such term as the Board determines, or until their successors are duly elected and qualified.

Section 3. Additional Officers

The Board may appoint such other officers as it deems necessary for the operations of the Corporation.

ARTICLE VIII: AMENDMENTS

These Articles of Incorporation may be amended by the affirmative vote of at least two-thirds (2/3) of the outstanding capital stock at a duly convened stockholders meeting, with notice given in accordance with the Revised Corporation Code.

ARTICLE IX: DISSOLUTION

Upon dissolution, the assets of the Corporation shall be liquidated and distributed to stockholders in proportion to their shareholdings, after payment of all debts and liabilities.

ARTICLE X: COMPLIANCE

The Corporation shall comply with all applicable provisions of the Revised Corporation Code of the Philippines and other relevant laws.

VERIFICATION AND CERTIFICATION

IN WITNESS WHEREOF, we have hereunto set our hands this _____ day of _____, 2025, at Infanta, Quezon, Philippines.

INCORPORATORS:

MARK ANGELO TANIEGRA _____

Signature over Printed Name

MCGYVER LEE LORAYES _____

Signature over Printed Name

MARY ANN PRADO _____

Signature over Printed Name

ERIC INFANTE _____

Signature over Printed Name

CRYSTAL ALCASABAS _____

Signature over Printed Name

ACKNOWLEDGMENT BEFORE NOTARY PUBLIC

REPUBLIC OF THE PHILIPPINES)

PROVINCE OF QUEZON) S.S.

BEFORE ME, a Notary Public in and for the Province of Quezon, Philippines, personally appeared the above-named incorporators, all known to me to be the same persons who executed the foregoing Articles of Incorporation, and they acknowledged that they executed the same as their free and voluntary act and deed.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my notarial seal at Infanta, Quezon, this _____ day of _____, 2025.

_____
Notary Public
License No. _____
PTR No. _____
MCLE Compliance No. _____
Doc. No. _____
Page No. _____
Book No. _____
Series of 2025

Chapter IV

FINANCIAL STUDY

Introduction

This chapter aims to evaluate the company's projected financial position. Its objective is to provide insights into the company's performance and changes in its financial position, helping a variety of users make informed economic decisions about the proposed product. Additionally, this chapter will help assess whether the company has sufficient resources and how those resources can be converted into earnings.

A financial analysis was conducted to examine how the company's resources and business investments will generate income and profits. This chapter will cover AeroFusion Cooling Solutions Inc.'s investment sources, financial assumptions, financial statements, and the ensuing financial analysis, along with interpretations and explanations. Furthermore, detailed information on the proposed product's progress over time will be provided.

Financial Assumptions

The financial projections indicate, to the best of Management's knowledge and belief, the expected financial position, operating performance, and cash flows for the projected period. Accordingly, projections represent Management's

judgment as of the projection date, including the expected conditions and courses of action. There will usually be differences between the projected and actual results because events and circumstances frequently do not occur as expected, and those differences may be material.

The key financial assumptions are as follows:

1. The project will be funded by an initial capital allocation of ₱5,000,000, drawn from the corporation's total paid-up capital of ₱10,000,000. The full paid-up capital was contributed by the four founders in equal amounts of ₱2,500,000 each.
2. The operation will run for 8 hours per day and 5 working days per week.
3. There will be an average of 240-241 operating days in a year, accounting for weekends (104 days), national holidays (15 days), and scheduled preventive maintenance (6 days).
4. The straight-line depreciation method is used in the computation of depreciation based on each asset's useful life, as detailed in the Technical Study, resulting in an annual depreciation expense of ₱122,835.
5. The business year will start on January 1, 2026.
6. Annual production capacity is based on efficiency rate improvements from 81% in Year 1 to 90% in Year 10, as detailed in the Production Capacity Plan.

7. Production will commence at 2,499 units in Year 1 (2026).
8. The volume of purchases will increase by 1%
9. Direct and indirect materials are purchased on supplier credit terms (30 days)
10. The price of direct and indirect materials will increase by 3% annually due to inflation.
11. The selling price per unit in Year 1 is ₱6,073.44, based on the cost-plus pricing strategy outlined in the Market Study.
12. There will be a 3% annual increase in the selling price to account for inflation.
13. Sales will be 100% on a cash basis to maintain liquidity.
14. Rent expense is ₱224,400 annually, with a 5% increase every two years based on typical lease escalation clauses.
15. Utilities expense will increase by 3% annually based on historical rate adjustments.
16. Salaries expense will increase by 2.5% annually to reflect performance-based increments and anticipated wage adjustments.
17. Total annual benefits will include 13th-month salary, SSS, PAG-IBIG, and PhilHealth contributions, as detailed in the Management Study.
18. Equipment, furniture, and fixtures will be purchased on a cash basis.

19. The company will be subject to an income tax rate of 25% for all taxable income, following current Philippine corporate tax regulations.
20. Working capital equivalent to three months of operating expenses will be maintained to ensure operational continuity.
21. Total annual personnel costs are ₱2,358,000 as detailed in the Management Study.

Total Project Cost

The total project cost represents the total estimated capital required to bring the AeroFusion project from its pre-operational phase to the start of its normal operations. This amount comprises fixed capital investment, initial working capital, and pre-operating costs. The project will be financed entirely through the proponents' equity contributions.

Table 51: *Total Project Cost*

Investment Category	Amount (₱)	Subtotal (₱)
Fixed Capital Investment		
Production Equipment & Machinery	450,200.00	
Office Furniture & Fixtures (including computers)	220,500.00	
Subtotal Fixed Investment		**670,700.00**
Initial Working Capital (3 months)		

Direct Materials	1,164,108.86	
Indirect Materials	100,320.00	
Salaries & Wages	634,500.00	
Employee Benefits	173,587.97	
Training & Development	12,300.00	
Utilities	28,947.60	
Rent	56,100.00	
Office Supplies	3,085.00	
Repairs & Maintenance	8,500.00	
Insurance	57,918.00	
Advertising & Promotion	135,500.00	
Transportation	44,886.80	
Subtotal Working Capital		**2,419,754.23**
Pre-Operating Expenses		
Government Fees and Permits	18,450.00	
Prepaid Rent (2+1 months)	74,800.00	
Product Testing & Certification	35,200.00	
Company Setup Costs	35,000.00	
Leasehold Improvement	180,000.00	
Initial SafetyTraining (Safety Officers)	3,500.00	
Subtotal Pre-Operating		**346,950.00**
Total Initial Investment		**3,437,404.23**
Contingency Fund (10%)		343,740.42
TOTAL PROJECT COST		**3,781,144.65**

Pre-Operating Expenses

Pre-operating expenses are the one-time costs incurred before the start of business operations. These include expenses for business registration, government permits, licenses, initial product testing and certification, and other essential setup activities. The total pre-operating expense amounts to ₱166,950.00,

Table 52: *Pre-Operating Expenses*

Expense Category	Amount (₱)	Purpose
Regulatory Compliance		
Government Fees and Permits	18,450.00	*Municipal, BIR, DOLE permits, SEC Corporate registration*
Product Testing & Certification	35,200.00	*DTI Safety and quality standards*
Facility Setup		
Prepaid Rent (2+1 months)	74,800.00	*Advance and deposit*
Company Setup Costs	35,000.00	*Signage, initial supplies*
Leasehold Improvement	180,000.00	*Fit-out renovation of leased area*
Training & Safety		
BOSH Safety Training	3,500.00	*Safety officer certification*
Total Pre-Operating	**346,950.00**	

Working Capital

Initial working capital is the fund required to finance the day-to-day operations of the business until it generates sufficient revenue to cover these costs. As stated in the financial assumptions, the company will maintain a working

capital level equivalent to three months of initial operating expenses to ensure smooth operations. The total initial working capital requirement is ₱2,356,385.86.

Table 53: *Working Capital Requirements (3 Months)*

Particulars	Amount (₱)
Direct Operating Costs	
Direct Materials	1,164,108.86
Indirect Materials	100,320.00
Subtotal Materials	1,264,428.86
Personnel Costs (3 months)	
Salaries & Wages	589,500.00
Employee Benefits (SSS, PhilHealth, PAG-IBIG)	160,500.00
Training & Development	12,300.00
Subtotal Personnel Costs	762,300.00
Occupancy and Utilities (3 months)	
Rent	56,100.00
Utilities (Electric, Water, Telecom)	28,948.00
Subtotal Occupancy	85,048.00
Operating Supplies and Services	
Office Supplies	3,085.00
Repairs & Maintenance	8,500.00
Insurance	57,918.00
Transportation	39,606.00
Advertising & Promotion	135,500.00
Subtotal Operating Supplies	244,609.00
Subtotal Initial Working Capital	**2,356,385.86**

Financial Statements

Income Statement

The Projected Income Statement provides an overview of expected sales, costs, and expenses for the ten-year projection period (2026–2035). This

statement shows the company's ability to generate revenue and convert it into profit over time based on production capacity and cost assumptions

Table 54: *Ten-Year Projected Income Statement*

Particulars	2026	2027	2028	2029	2030
SALES REVENUE					
Units Sold	2,499	2,530	2,572	2,592	2,623
Selling Price per Unit (₱)	6,073.44	6,255.64	6,443.31	6,636.61	6,835.71
Gross Sales	15,177,526.56	15,826,773.34	16,571,118.84	17,196,875.05	17,925,270.43
Less: Sales Returns (1%)	(151,775.27)	(158,267.73)	(165,711.19)	(171,968.75)	(179,252.70)
Net Sales	**15,025,751.29**	**15,668,505.61**	**16,405,407.65**	**17,024,906.30**	**17,746,017.73**
Less: COST OF GOODS SOLD					
Direct Materials	4,656,435.00	4,853,235.33	5,084,076.99	5,238,015.11	5,431,634.80
Direct Labor	874,590.00	899,191.07	930,076.47	951,073.49	978,819.53
Factory Overhead	1,716,668.00	1,768,168.04	1,821,213.08	1,875,849.47	1,932,124.96
Total COGS	**7,247,693.00**	**7,520,594.44**	**7,835,366.54**	**8,064,938.07**	**8,342,579.29**
Gross Profit	**7,778,058.29**	**8,147,911.17**	**8,570,041.11**	**8,959,968.23**	**9,403,438.44**
Gross Profit Margin	**51.77%**	**52.00%**	**52.19%**	**52.59%**	**52.99%**
Less: OPERATING EXPENSES					
Admin Salaries, Wages & Benefits	1,149,367.00	1,178,099.00	1,207,551.00	1,237,740.00	1,268,684.00
Rent Expense	224,400.00	224,400.00	235,620.00	235,620.00	247,401.00
Utilities	109,490.00	112,774.70	116,157.94	119,642.68	123,231.96
Depreciation	53,370.00	53,370.00	53,370.00	53,370.00	53,370.00
Office Supplies	12,340.00	12,709.00	13,090.00	13,483.00	13,887.00

Repairs & Maintenance	19,000.00	19,570.00	20,157.10	20,761.81	21,384.67
Insurance	57,918.00	59,655.54	61,445.21	63,288.56	65,187.22
Advertising & Promotion	542,000.00	43,260.00	44,557.80	45,894.53	47,271.37
Transportation	158,424.00	163,176.72	168,072.02	173,114.18	178,307.61
Total Operating Expenses	**2,326,309.00**	**1,867,014.96**	**1,919,991.07**	**1,962,914.77**	**2,018,724.82**
Operating Income	**5,451,749.29**	**6,280,896.21**	**6,650,050.04**	**6,997,053.46**	**7,384,713.61**
Operating Profit Margin	**36.28%**	**40.09%**	**40.55%**	**41.08%**	**41.63%**
Income Before Tax	**5,451,749.29**	**6,280,896.21**	**6,650,050.04**	**6,997,053.46**	**7,384,713.61**
Less: Income Tax (25%)	(1,362,937.32)	(1,570,224.05)	(1,662,512.51)	(1,749,263.37)	(1,846,178.40)
Net Income	4,088,811.97	4,710,672.16	4,987,537.53	5,247,790.10	5,538,535.21
Net Profit Margin	27.21%	30.06%	30.40%	30.82%	31.21%

Particulars	2031	2032	2033	2034	2035
SALES REVENUE					
Units Sold	2,654	2,696	2,715	2,746	2,777
Selling Price per Unit (₱)	7,040.78	7,252.00	7,469.56	7,693.65	7,924.46
Gross Sales	18,690,000.06	19,550,404.18	20,277,860.27	21,124,357.39	22,004,610.60
Less: Sales Returns (1%)	(186,900.00)	(195,504.04)	(202,778.60)	(211,243.57)	(220,046.11)
Net Sales	**18,503,100.06**	**19,354,900.14**	**20,075,081.67**	**20,913,113.82**	**21,784,564.49**
Less: COST OF GOODS SOLD					
Direct Materials	5,662,836.41	5,885,862.00	6,039,890.34	6,242,504.60	6,450,233.19
Direct Labor	1,008,126.96	1,041,836.43	1,065,492.20	1,098,804.83	1,130,593.59

Factory Overhead	1,990,088.71	2,049,791.37	2,111,285.11	2,174,623.66	2,239,862.37
Total COGS	**8,661,052.08**	**8,977,489.80**	**9,216,667.65**	**9,515,933.09**	**9,820,689.15**
Gross Profit	**9,842,047.98**	**10,377,410.34**	**10,858,414.02**	**11,397,180.73**	**11,963,875.34**
Less: OPERATING EXPENSES					
Admin Salaries, Wages & Benefits	1,300,401.00	1,332,911.00	1,366,234.00	1,400,390.00	1,435,399.75
Rent Expense	247,401.00	259,771.05	259,771.05	272,759.60	272,759.60
Utilities	126,928.92	130,736.79	134,658.89	138,698.66	142,859.62
Depreciation	53,370.00	53,370.00	53,370.00	53,370.00	53,370.00
Office Supplies	14,304.00	14,733.00	15,175.00	15,630.00	16,099.00
Repairs & Maintenance	22,026.21	22,687.00	23,367.61	24,068.63	24,790.69
Insurance	67,142.84	69,157.12	71,231.84	73,368.79	75,569.86
Advertising & Promotion	48,687.51	50,148.14	51,652.58	53,202.16	54,798.22
Transportation	183,656.84	189,166.54	194,841.54	200,686.78	206,707.39
Total Operating Expenses	**2,063,918.31**	**2,122,680.64**	**2,170,302.51**	**2,232,174.63**	**2,282,354.12**
Operating Income	**7,778,129.67**	**8,254,729.70**	**8,688,111.51**	**9,165,006.10**	**9,681,521.22**
Income Before Tax	**7,778,129.67**	**8,254,729.70**	**8,688,111.51**	**9,165,006.10**	**9,681,521.22**
Less: Income Tax (25%)	(1,944,532.42)	(2,063,682.43)	(2,172,027.88)	(2,291,251.53)	(2,420,380.31)
Net Income	**5,833,597.25**	**6,191,047.27**	**6,516,083.63**	**6,873,754.57**	**7,261,140.91**
Net Profit Margin	**31.53%**	**31.99%**	**32.46%**	**32.87%**	**33.33%**

The Projected Income Statement demonstrates strong, sustainable financial performance over the 10-year forecast period. Net Sales grow from ₱15.0 million in 2026 to ₱21.8 million in 2035, driven by annual production capacity increasing from 2,499 to 2,777 units and efficiency rates improving from 81% to 90%.

The company maintains excellent cost control throughout the projection period. Gross Profit increases from ₱7.8 million to ₱12.0 million, with the Gross Profit Margin improving steadily as a result of operational efficiencies and economies of scale. Operating Expenses are well-managed, with the significant Year 1 launch promotion expense of ₱542,000 normalized to sustainable levels of ₱42,000–₱54,000 annually from Year 2 onwards.

Net Income demonstrates robust growth from ₱4.1 million in Year 1 to ₱7.3 million in Year 10, reflecting consistent profitability. The Net Profit Margin improves progressively from 27.21% to 33.33%, indicating increasing operational efficiency and strong return potential for the founding shareholders. The 25% corporate income tax expense ensures full compliance with Philippine tax regulations.

This financial performance confirms the AeroFusion project's capacity to generate substantial, growing profits while maintaining operational discipline, thereby supporting the overall feasibility of the manufacturing venture.

Balance Sheet

The Balance Sheet presents a snapshot of AeroFusion Cooling Solutions Inc.'s assets, liabilities, and shareholders' equity at the end of each fiscal year. This financial statement demonstrates the company's resource base, debt obligations, and net worth, providing critical insights into financial stability and capital structure. A good balance sheet demonstrates that assets are equal to the total liabilities and owner's equity

Table 55: *Projected Balance Sheet*

ASSETS	Pre-Operating	2026	2027	2028	2029	2030
CURRENT ASSETS						
Cash	3,982,350.00	8,053,661.97	12,752,963.13	17,729,130.66	22,965,550.76	28,496,715.97
Accounts Receivable	—	—	—	—	—	—
Raw Materials Inventory	—	388,036.25	404,436.28	423,673.08	436,501.26	452,636.23
Finished Goods Inventory	—	200,000.00	215,000.00	230,000.00	245,000.00	260,000.00
Prepaid Expenses	50,000	50,000	50,000	50,000	50,000	50,000
Total Current Assets	*4,032,350.00*	*8,691,698.22*	*13,422,399.41*	*18,432,803.74*	*23,697,052.02*	*29,259,352.20*
NON-CURRENT ASSETS						
Fixed Assets (at cost)						
Production Machinery & Equipment	450,200.00	450,200.00	450,200.00	450,200.00	450,200.00	450,200.00
Office Equipment & Furniture	220,500.00	220,500.00	220,500.00	220,500.00	220,500.00	220,500.00
Leasehold Improvements	—	—	—	—	—	—
Total Fixed Assets (Gross)	670,700.00	670,700.00	670,700.00	670,700.00	670,700.00	670,700.00
Less: Accumulated Depreciation	—	(53,370.00)	(106,740.00)	(160,110.00)	(213,480.00)	(266,850.00)
Net Fixed Assets	670,700.00	617,330.00	563,960.00	510,590.00	457,220.00	403,850.00
TOTAL ASSETS	4,703,050.00	9,309,028.22	13,986,359.41	18,943,393.74	24,154,272.02	29,663,202.20

CURRENT LIABILITIES						
Accounts Payable	—	388,036.25	404,436.28	423,673.08	436,501.26	452,636.23
Accrued Salaries & Wages Payable	—	95,780.58	98,174.60	100,628.97	103,145.19	105,723.82
Accrued Benefits Payable	—	49,125.00	50,394.79	51,696.45	53,031.11	54,399.39
Income Tax Payable	—	1,362,937.32	1,570,224.05	1,662,512.51	1,749,263.37	1,846,178.40
Total Current Liabilities	—	1,895,879.15	2,123,229.72	2,238,510.01	2,341,940.93	2,458,937.84
NON-CURRENT LIABILITIES	—	—	—	—	—	—
Total Liabilities	—	1,895,879.15	2,123,229.72	2,238,510.01	2,341,940.93	2,458,937.84
SHAREHOLDERS' EQUITY						
Paid-In Capital	5,000,000.00	5,000,000.00	5,000,000.00	5,000,000.00	5,000,000.00	5,000,000.00
Retained Earnings	(296,950.00)	2,413,149.07	6,863,129.69	11,704,883.73	16,812,331.09	22,204,264.36
Total Equity	4,703,050.00	7,413,149.07	11,863,129.69	16,704,883.73	21,812,331.09	27,204,264.36
TOTAL LIABILITIES & EQUITY	4,703,050.00	9,309,028.22	13,986,359.41	18,943,393.74	24,154,272.02	29,663,202.20

ASSETS	**2031**	**2032**	**2033**	**2034**	**2035**
CURRENT ASSETS					
Cash	34,258,402.22	40,372,078.49	46,805,290.12	53,593,672.69	60,766,440.60
Accounts Receivable	—	—	—	—	—
Raw Materials Inventory	471,736.48	490,407.11	503,490.38	520,436.52	537,382.66
Finished Goods Inventory	280,000.00	300,000.00	320,000.00	340,000.00	360,000.00
Prepaid Expenses	50,000	50,000	50,000	50,000	50,000
Total Current Assets	*35,060,138.70*	*41,212,485.60*	*47,678,780.50*	*54,504,109.21*	*61,713,823.26*
NON-CURRENT ASSETS					
Fixed Assets (at cost)					
Production Machinery & Equipment	450,200.00	450,200.00	450,200.00	450,200.00	450,200.00
Office Equipment & Furniture	220,500.00	220,500.00	220,500.00	220,500.00	220,500.00
Leasehold Improvements	—	—	—	—	—
Total Fixed Assets (Gross)	670,700.00	670,700.00	670,700.00	670,700.00	670,700.00

Less: Accumulated Depreciation	(320,220.00)	(373,590.00)	(426,960.00)	(480,330.00)	(533,700.00)
Net Fixed Assets	350,480.00	297,110.00	243,740.00	190,370.00	137,000.00
TOTAL ASSETS	35,410,618.70	41,509,595.60	47,922,520.50	54,694,479.21	61,850,823.26
CURRENT LIABILITIES					
Accounts Payable	471,736.48	490,407.11	503,490.38	520,436.52	537,382.66
Accrued Salaries & Wages Payable	108,366.72	111,075.89	113,852.79	116,699.11	119,616.59
Accrued Benefits Payable	55,802.11	57,239.72	58,712.16	60,220.21	61,764.71
Income Tax Payable	1,944,532.42	2,063,682.43	2,172,027.88	2,291,251.53	2,420,380.31
Total Current Liabilities	2,580,437.73	2,722,405.15	2,848,083.21	2,988,607.37	3,139,144.27
NON-CURRENT LIABILITIES	—	—	—	—	—
Total Liabilities	2,580,437.73	2,722,405.15	2,848,083.21	2,988,607.37	3,139,144.27
SHAREHOLDERS' EQUITY					
Paid-In Capital	5,000,000.00	5,000,000.00	5,000,000.00	5,000,000.00	5,000,000.00
Retained Earnings	27,830,180.97	33,787,190.45	40,074,437.29	46,705,871.84	53,711,678.99
Total Equity	32,830,180.97	38,787,190.45	45,074,437.29	51,705,871.84	58,711,678.99
TOTAL LIABILITIES & EQUITY	35,410,618.70	41,509,595.60	47,922,520.50	54,694,479.21	61,850,823.26

The tables display the statement of financial position, including current assets, noncurrent assets, total liabilities, and equity for the years 2026 to 2035. Current assets consist mainly of cash, raw materials inventory, and finished goods inventory. Notably, the cash balance shows a consistent upward trend, growing significantly from ₱8.2 million in 2026 to over ₱60 million by 2035, indicating strong liquidity and financial health. Noncurrent assets, such as production machinery and

office equipment, show a declining net book value due to accumulated depreciation, as is standard for fixed assets.

On the other side of the balance sheet, current liabilities include accounts payable and accrued expenses, which increase moderately in line with production growth. The company maintains a zero-debt position with no long-term liabilities. Partners' equity shows substantial growth, driven by the accumulation of retained earnings from profitable operations. The total equity increases from ₱7.5 million in 2026 to ₱58.8 million in 2035, demonstrating the company's ability to generate value for its shareholders and internally fund its expansion without relying on external borrowing. Overall, the total assets match total liabilities and equity, confirming the accuracy of the financial position.

Cash Flow Statement

The Projected Statement of Cash Flows is a crucial financial statement that summarizes a company's cash inflows and outflows over a specific period. It provides insights into how the company generates and uses cash, categorized into three main activities: operating, investing, and financing. This statement is essential for assessing the company's liquidity, solvency, and overall financial flexibility, as it reconciles the net income with the actual cash position by accounting for non-cash transactions and changes in working capital.

Table 56: *Cash Flow Statement*

Particulars	Pre-Operating	2026	2027	2028	2029	2030
Cash Flow from Operating Activities						
Net Income	—	4,088,811.97	4,710,672.16	4,987,537.53	5,247,790.10	5,538,535.21
Adjustments for Non-Cash Items:						
Depreciation Expense	—	53,370.00	53,370.00	53,370.00	53,370.00	53,370.00
Changes in Working Capital:						
(Increase) in Raw Materials Inventory	—	-388,036	-16,400	-19,237	-12,828	-16,135
(Increase) in Finished Goods Inventory	—	*-200,000.00*	*-15,000.00*	*-15,000.00*	*-15,000.00*	*-15,000.00*
Increase in Accounts Payable	—	388,036.25	16,400.03	19,236.80	12,828.18	16,134.97
Increase in Accrued Salaries Payable	—	95,780.58	2,394.02	2,454.37	2,516.22	2,578.63
Increase in Accrued Benefits Payable	—	49,125.00	1,269.79	1,301.66	1,334.66	1,368.28
Increase in Income Tax Payable	—	1,362,937.32	207,286.73	92,288.46	86,750.86	96,915.03
Net Cash from Operating Activities	—	5,450,024.87	4,959,992.70	5,121,952.02	5,376,761.84	5,677,767.15
Cash Flow from Investing Activities						
Purchase of Production Machinery & Equipment	(450,200.00)	—	—	—	—	—
Purchase of Office Equipment & Furniture	(220,500.00)	—	—	—	—	—
Net Cash from Investing Activities	-670,700.00	—	—	—	—	—

Cash Flow from Financing Activities						
Capital Contribution from Founders	5,000,000.00	—	—	—	—	—
Payment of Pre-Operating Expenses	(346,950.00)	—	—	—	—	—
Net Cash from Financing Activities	4,653,050.00	—	—	—	—	—
Net Increase (Decrease) in Cash	3,982,350.00	5,450,024.87	4,959,992.70	5,121,952.02	5,376,761.84	5,677,767.15
Add: Beginning Cash Balance	—	3,982,350.00	8,053,661.97	12,752,963.13	17,729,130.66	22,965,550.76
Ending Cash Balance	3,982,350.00	8,053,661.97	12,752,963.13	17,729,130.66	22,965,550.76	28,496,715.97

Particulars	2031	2032	2033	2034	2035
Cash Flow from Operating Activities					
Net Income	5,833,597.25	6,191,047.27	6,516,083.63	6,873,754.57	7,261,140.91
Adjustments for Non-Cash Items:					
Depreciation Expense	53,370.00	53,370.00	53,370.00	53,370.00	53,370.00
Changes in Working Capital:					
(Increase) in Raw Materials Inventory	-19,100	-18,671	-13,083	-16,946	-16,946
(Increase) in Finished Goods Inventory	*-20,000.00*	*-20,000.00*	*-20,000.00*	*-20,000.00*	*-20,000.00*
Increase in Accounts Payable	19,100.25	18,670.63	13,083.27	16,946.14	16,946.14
Increase in Accrued Salaries Payable	2,643.90	2,709.17	2,776.90	2,846.32	2,917.48
Increase in Accrued Benefits Payable	1,402.72	1,437.61	1,472.44	1,508.05	1,544.50
Increase in Income Tax Payable	98,354.02	119,150.01	108,345.45	119,223.65	129,128.78
Net Cash from Operating Activities	5,969,367.89	6,347,714.06	6,662,048.42	7,030,702.59	7,428,101.67

Cash Flow from Investing Activities					
Purchase of Fixed Assets	—	—	—	—	—
Net Cash from Investing Activities	—	—	—	—	—
Cash Flow from Financing Activities					
Capital Contributions / (Withdrawals)	—	—	—	—	—
Net Cash from Financing Activities	—	—	—	—	—
Net Increase (Decrease) in Cash	5,969,367.89	6,347,714.06	6,662,048.42	7,030,702.59	7,428,101.67
Add: Beginning Cash Balance	28,496,715.97	34,258,402.22	40,372,078.49	46,805,290.12	53,593,672.69
Ending Cash Balance	34,258,402.22	40,372,078.49	46,805,290.12	53,593,672.69	60,766,440.60
Add: Beginning Cash Balance	—	3,982,350.00	8,053,661.97	12,752,963.13	17,729,130.66
Ending Cash Balance	3,982,350.00	8,053,661.97	12,752,963.13	17,729,130.66	22,965,550.76

Cash from operating activities grew from ₱5.45 million in 2026 to ₱7.43 million in 2035, driven by higher profitability and more efficient working capital management. The addition of depreciation (a non-cash expense) back to net income and careful management of working capital changes ensure healthy operating cash flows.

All capital investments occur during the Pre-Operating period, totaling ₱670,700 for machinery, equipment, and furniture. No additional capital expenditures are projected over the next ten years, indicating that the initial equipment capacity is sufficient to support projected production growth through efficiency improvements.

The company is entirely equity-financed, with ₱5 million in founder contributions, and no debt financing is required. The absence of dividend payments or withdrawals means all profits are retained to strengthen the company's financial position.

The ending cash balance grows dramatically from ₱8.2 million in 2026 to ₱60.9 million in 2035, providing substantial liquidity for future growth opportunities, operational contingencies, or potential shareholder distributions. This strong cash position demonstrates the project's financial viability and its capacity to self-fund future expansion.

Break-Even Analysis

Break-even analysis is a financial tool used to determine the sales volume at which a business's total revenues equal its total costs, resulting in neither a profit nor a loss. This analysis, also known as Cost-Volume-Profit (CVP) analysis, identifies the point at which the contribution margin (selling price per unit minus variable cost per unit) is sufficient to cover all fixed costs. It is a critical component of business planning, providing valuable insights into the minimum sales level required to sustain operations and the company's sensitivity to cost and price changes.

Table 57: *Break-Even Analysis*

Particulars	2026	2027	2028	2029	2030
FIXED COSTS					
Salaries & Wages (Annual)	1,149,367.00	1,178,099.00	1,207,551.00	1,237,740.00	1,268,684.00
Employee Benefits	296,367.00	303,839.00	311,411.00	319,078.00	327,155.00
Rent Expense	224,400.00	224,400.00	235,620.00	235,620.00	247,401.00
Utilities Expense	109,490.00	112,775.00	116,158.00	119,643.00	123,232.00
Depreciation	53,370.00	53,370.00	53,370.00	53,370.00	53,370.00
Office Supplies	12,340.00	13,090.00	13,090.00	13,483.00	13,887.00
Repairs & Maintenance	19,000.00	19,570.00	20,157.00	20,762.00	21,385.00
Insurance	57,918.00	59,656.00	61,445.00	63,289.00	65,187.00
Advertising & Promotion	542,000.00	43,260.00	44,558.00	45,895.00	47,271.00
Transportation	158,424.00	163,177.00	168,072.00	173,114.00	178,308.00
TOTAL FIXED COSTS	2,622,676.00	2,171,836.00	2,231,432.00	2,281,984.00	2,346,400.00
VARIABLE COSTS					
Direct Materials (per unit)	1,863.45	1,891.44	1,974.22	2,019.93	2,071.59
Direct Labor (per unit)	350.04	354.67	362.05	368.63	373.51
Factory Overhead (per unit)	687.24	692.01	707.46	724.99	736.47
TOTAL VARIABLE COST (per unit)	2,900.73	2,938.12	3,043.73	3,113.55	3,181.57
Unit Metrics					
Selling Price (per unit)	6,073.44	6,255.64	6,443.31	6,636.61	6,835.71
Less: Variable Cost (per unit)	2,900.73	2,938.12	3,043.73	3,113.55	3,181.57
Contribution Margin (per unit)	3,172.71	3,317.52	3,399.58	3,523.06	3,654.14
Break-Even Calculation					
Total Fixed Costs	2,622,676.00	2,171,836.00	2,231,432.00	2,281,984.00	2,346,400.00
Divided by: Contribution Margin per unit	3,172.71	3,317.52	3,399.58	3,523.06	3,654.14
Break-Even in Units	827	654	656	647	642
Break-Even in Peso Sales					
Break-Even Units	827	654	656	647	642
× Selling Price per Unit	6,073.44	6,255.64	6,443.31	6,636.61	6,835.71

Break-Even Sales (₱)	5,026,752.68	4,091,188.36	4,227,597.36	4,294,381.67	4,390,386.82

Particulars	2031	2032	2033	2034	2035
FIXED COSTS					
Salaries & Wages (Annual)	1,300,401.00	1,332,911.00	1,366,234.00	1,400,390.00	1,435,399.75
Employee Benefits	335,635.00	344,329.00	353,280.00	362,412.00	371,722.00
Rent Expense	247,401.00	259,771.05	259,771.05	272,759.60	272,759.60
Utilities Expense	126,929.00	130,737.00	134,659.00	138,699.00	142,860.00
Depreciation	53,370.00	53,370.00	53,370.00	53,370.00	53,370.00
Office Supplies	14,304.00	14,733.00	15,175.00	15,630.00	16,099.00
Repairs & Maintenance	22,026.00	22,687.00	23,368.00	24,069.00	24,791.00
Insurance	67,143.00	69,157.00	71,232.00	73,369.00	75,570.00
Advertising & Promotion	48,688.00	50,148.00	51,653.00	53,202.00	54,798.00
Transportation	183,657.00	189,167.00	194,842.00	200,687.00	206,707.00
TOTAL FIXED COSTS	2,399,534.00	2,467,010.00	2,523,584.00	2,594,587.00	2,658,077.00
VARIABLE COSTS					
Direct Materials (per unit)	2,138.28	2,208.87	2,223.06	2,273.17	2,325.68
Direct Labor (per unit)	380.41	387.33	394.41	401.87	409.58
Factory Overhead (per unit)	754.24	772.19	790.57	809.68	829.5
TOTAL VARIABLE COST (per unit)	3,272.93	3,368.39	3,408.04	3,484.72	3,564.76
Unit Metrics					
Selling Price (per unit)	7,040.78	7,252.00	7,469.56	7,693.65	7,924.46
Less: Variable Cost (per unit)	3,272.93	3,368.39	3,408.04	3,484.72	3,564.76
Contribution Margin (per unit)	3,767.85	3,883.61	4,061.52	4,208.93	4,359.70
Break-Even Calculation					
Total Fixed Costs	2,399,534.00	2,467,010.00	2,523,584.00	2,594,587.00	2,658,077.00
Divided by: Contribution Margin per unit	3,767.85	3,883.61	4,061.52	4,208.93	4,359.70
Break-Even in Units	637	635	621	616	610

Break-Even in Peso Sales					
Break-Even Units	637	635	621	616	610
× Selling Price per Unit	7,040.78	7,252.00	7,469.56	7,693.65	7,924.46
Break-Even Sales (₱)	4,484,536.86	4,604,760.00	4,638,590.76	4,739,207.40	4,834,121.60

The break-even point starts at 827 units in 2026 and decreases to 610 units by 2035, indicating a significant improvement in financial efficiency. This declining trend reflects, increasing contribution margins as the company scales production, Growing operational efficiency and cost management and Improving profitability relative to fixed costs.

The required break-even sales revenue decreases from ₱5.03 million in 2026 to ₱4.83 million in 2035 on an inflation-adjusted basis, demonstrating the company's enhanced ability to cover fixed costs.

With a projected production capacity of 2,499–2,777 units annually and break-even requirements of only 610–827 units, AeroFusion maintains a substantial safety margin of 67%-75%. This indicates that the company can absorb significant market fluctuations while remaining profitable.

The contribution margin per unit increases from ₱3,172.71 in 2026 to ₱4,359.70 in 2035, reflecting improved unit economics and pricing strength. This growth outpaces cost increases, enhancing profitability.

The break-even analysis confirms that AeroFusion possesses strong operational leverage and financial resilience. The company can comfortably exceed its break-even point throughout the projection period, providing substantial protection against market uncertainties and supporting the project's financial feasibility

Financial Ratio Analysis

Financial analysis is essential for AeroFusion to assess its sustainability, stability, and profitability. It encompasses examining the organization's financial planning, budgeting, monitoring, forecasting, and improvement procedures. This section provides an evaluation and assessment of AeroFusion Cooling Solutions Inc.'s future profitability, cash flows, and financial position to guide management in its commercial endeavors.

Financial ratio analysis involves computing and comparing ratios derived from the company's financial statements. These ratios are utilized to form judgments about the company's financial condition, operations, and investment appeal based on their status and historical trends.

A. Profitability Ratios

Profitability ratios are financial indicators used by analysts and investors to assess a company's capacity to generate earnings relative to its revenue, balance sheet assets, operating expenses, and shareholders' equity over a given period.

1. Return on Sales (Net Profit Margin)

Return on sales, also known as the net profit margin, measures the percentage of revenue that remains as profit after all expenses have been deducted. It indicates how efficiently a company converts sales into actual profit.

Table 58: *Return on Sales (Net Profit Margin)*

Year	Net Income	Net Sales	Return on Sales
2026	4,088,811.97	15,025,751.29	0.272 (27.2%)
2027	4,710,672.16	15,668,505.61	0.301 (30.1%)
2028	4,987,537.53	16,405,407.65	0.304 (30.4%)
2029	5,247,790.10	17,024,906.30	0.308 (30.8%)
2030	5,538,535.21	17,746,017.73	0.312 (31.2%)
2031	5,833,597.25	18,503,100.06	0.315 (31.5%)
2032	6,191,047.27	19,354,900.14	0.320 (32.0%)
2033	6,516,083.63	20,075,081.67	0.325 (32.5%)
2034	6,873,754.57	20,913,113.82	0.328 (32.8%)
2035	7,261,140.91	21,784,564.49	0.333 (33.3%)

The Return on Sales demonstrates strong and improving profitability throughout the projection period. In 2026, the company converted 27.2% of sales revenue into net profit, indicating efficient cost management and pricing strategy. By 2035, this ratio improves to 33.3%, reflecting the company's enhanced operational efficiency and economies of scale. This consistent improvement

demonstrates AeroFusion's capacity to generate increasing profits from each peso of sales revenue.

2. Return on Assets (ROA)

Return on assets (ROA) indicates how profitable a company is relative to its total assets. It gives an idea of how efficiently management uses its assets to generate earnings.

Table 59: *Return on Assets (ROA)*

Year	Net Income	Average Total Assets	Return on Assets
2026	4,088,811.97	7,186,039.11	0.57 (57%)
2027	4,710,672.16	11,827,693.81	0.40 (40%)
2028	4,987,537.53	16,644,876.58	0.30 (30%)
2029	5,247,790.10	21,728,832.88	0.24 (24%)
2030	5,538,535.21	27,088,737.11	0.20 (20%)
2031	5,833,597.25	32,716,910.45	0.18 (18%)
2032	6,191,047.27	38,640,107.15	0.16 (16%)
2033	6,516,083.63	44,896,058.05	0.15 (15%)
2034	6,873,754.57	51,488,499.86	0.13 (13%)
2035	7,261,140.91	58,452,651.24	0.12 (12%)

The Return on Assets shows a declining trend, which is actually a positive sign in this context. The decline reflects not deteriorating profitability but rather the rapid growth in total assets as cash accumulates. The ROA of 57% in 2026 represents exceptional asset efficiency during the early growth phase. Even as ROA moderates to 12% by 2035, the absolute dollar profits continue to grow substantially, indicating that the company is effectively deploying increased assets to generate proportionally higher profits.

3. Return on Investment (ROI)

Return on Investment (ROI) assesses management's efficiency in generating returns per unit of resources used in business operations. It serves as a performance metric to evaluate the effectiveness of an investment or to compare the efficiency of various investments. ROI measures the profit or loss of an investment relative to the amount invested.

Table 60: *Return on Investment (ROI)*

Year	Net Income After Tax	Initial Investment	ROI (%)
2026	4,088,811.97	5,000,000.00	81.78%
2027	4,710,672.16	5,000,000.00	94.21%
2028	4,987,537.53	5,000,000.00	99.75%
2029	5,247,790.10	5,000,000.00	104.96%
2030	5,538,535.21	5,000,000.00	110.77%
2031	5,833,597.25	5,000,000.00	116.67%
2032	6,191,047.27	5,000,000.00	123.82%
2033	6,516,083.63	5,000,000.00	130.32%
2034	6,873,754.57	5,000,000.00	137.48%
2035	7,261,140.91	5,000,000.00	145.22%

Table [XX] presents the return on investment outcomes, which evaluate the efficiency of the company's initial investment and demonstrate continuous growth. In the first year (2026), the ROI is 81.78%, indicating a substantial return on the initial capital of ₱5,000,000. This positive ROI suggests that the company generates significant profit immediately relative to its startup costs. By the tenth year (2035), the annual ROI reaches 145.22%, indicating that the company

generates nearly 1.5 times its initial investment in annual profit alone. The average annual ROI over the ten-year period is an impressive 114.50%, indicating a considerable gain and excellent financial performance.

4. Return on Equity (ROE)

Return on Equity (ROE) is a metric calculated by dividing a company's net income by its shareholders' equity. ROE serves as an indicator of a corporation's profitability and the efficiency with which it generates those profits.

Table 61: *Return on Equity (ROE)*

Year	Net Income After Tax	Average Total Equity	Return on Equity
2026	4,088,811.97	6,238,099.54	0.66 (66%)
2027	4,710,672.16	9,818,139.38	0.48 (48%)
2028	4,987,537.53	14,464,006.71	0.34 (34%)
2029	5,247,790.10	19,438,607.41	0.27 (27%)
2030	5,538,535.21	24,688,297.73	0.22 (22%)
2031	5,833,597.25	30,197,222.67	0.19 (19%)
2032	6,191,047.27	35,988,685.71	0.17 (17%)
2033	6,516,083.63	42,110,813.87	0.15 (15%)
2034	6,873,754.57	48,570,154.57	0.14 (14%)
2035	7,261,140.91	55,388,775.42	0.13 (13%)

The table shows the company's return on equity from 2026 to 2035. In 2026, the ROE is 0.66, indicating a 66% return on shareholders' equity. This signifies excellent profitability and efficient returns for shareholders. Although the ROE moderates over time to 0.13 (13%) by 2035 due to the accumulation of retained earnings, which increases the equity base, it remains above industry standards, demonstrating the company's sustained ability to enhance shareholder value.

5. Earnings per Share

Earnings Per Share (EPS) indicates how much a company earns per share of its stock and is a widely used metric for estimating corporate value.

Table 62: *Earnings per Share*

Year	Net Income After Tax	Number of Shares	Earnings Per Share (₱)
2026	4,088,811.97	50,000	81.78
2027	4,710,672.16	50,000	94.21
2028	4,987,537.53	50,000	99.75
2029	5,247,790.10	50,000	104.96
2030	5,538,535.21	50,000	110.77
2031	5,833,597.25	50,000	116.67
2032	6,191,047.27	50,000	123.82
2033	6,516,083.63	50,000	130.32
2034	6,873,754.57	50,000	137.48
2035	7,261,140.91	50,000	145.22

The table presents the Earnings Per Share (EPS) for the years 2026 to 2035. In 2026, the company generated ₱81.78 per share for investors. This amount steadily increases each year, reaching ₱145.22 per share by 2035. This consistent EPS growth reflects the company's increasing profitability and its ability to generate greater value for shareholders over time.

6. Operating Profit Margin

The operating margin quantifies the profit a company generates per peso of sales after covering variable production costs, such as wages and raw materials, but before accounting for interest or taxes.

Table 63: *Operating Profit Margin*

Year	Operating Income	Net Sales	Operating Profit Margin
2026	5,451,749.29	15,025,751.29	0.36 (36%)
2027	6,280,896.21	15,668,505.61	0.40 (40%)
2028	6,650,050.04	16,405,407.65	0.41 (41%)
2029	6,997,053.46	17,024,906.30	0.41 (41%)
2030	7,384,713.61	17,746,017.73	0.42 (42%)
2031	7,778,129.67	18,503,100.06	0.42 (42%)
2032	8,254,729.70	19,354,900.14	0.43 (43%)
2033	8,688,111.51	20,075,081.67	0.43 (43%)
2034	9,165,006.10	20,913,113.82	0.44 (44%)
2035	9,681,521.22	21,784,564.49	0.44 (44%)

The presented table outlines AeroFusion Cooling Solutions Inc.'s operating profit margin from 2026 to 2035. This metric is determined by dividing the company's operating income by its net sales. In 2026, the Operating Profit Margin is 36%, indicating that for every peso of sales, the company retained ₱0.36 as profit after covering all operating expenses. This suggests a healthy level of profitability and efficient management of operating costs. The margin improves to 44% by 2035, indicating enhanced operational efficiency and economies of scale as the company grows.

B. Financing or Leverage Ratios

Financing or leverage ratios evaluate a company's ability to fulfill its financial commitments and analyze the blend of operational costs to gauge how changes in production levels might impact operating earnings. These ratios are crucial for

assessing the level of financial risk associated with the company's capital structure.

1. Debt-to-Equity Ratio

The debt-to-equity ratio compares a company's total liabilities to its total shareholders' equity. It is a key metric used to assess the extent to which a company finances its operations through debt rather than wholly owned funds. A lower ratio generally indicates lower risk.

Table 64: *Debt-to-Equity Ratio*

Year	Total Liabilities	Total Equity	Debt-to-Equity Ratio
2026	1,895,879.15	7,593,149.07	0.25
2027	2,123,229.72	12,043,129.69	0.18
2028	2,238,510.01	16,884,883.73	0.13
2029	2,341,940.93	21,992,331.09	0.11
2030	2,458,937.84	27,384,264.36	0.09
2031	2,580,437.73	33,010,180.97	0.08
2032	2,722,405.15	38,967,190.45	0.07
2033	2,848,083.21	45,254,437.29	0.06
2034	2,988,607.37	51,885,871.84	0.06
2035	3,139,144.27	58,891,678.99	0.05

The Debt-to-Equity Ratio demonstrates AeroFusion's conservative and increasingly strong capital structure. In 2026, for every peso of equity, the company has only ₱0.25 of liabilities, indicating a very healthy financial position from the outset. This ratio improves dramatically to 0.05 by 2035, reflecting the company's ability to finance its impressive growth entirely through retained earnings without incurring any debt. The minimal and declining reliance on external liabilities indicates very low financial risk and substantial borrowing capacity for any future strategic initiatives.

2. Debt Ratio

The debt ratio measures the extent of a company's leverage by calculating the percentage of its total assets that are financed through debt. A lower debt ratio signifies a more stable business with the potential for longevity because a company with a lower ratio has lower overall debt.

Table 65: *Debt Ratio*

Year	Total Liabilities	Total Assets	Debt Ratio
2026	1,895,879.15	9,489,028.22	0.20
2027	2,123,229.72	14,166,359.41	0.15
2028	2,238,510.01	19,123,393.74	0.12
2029	2,341,940.93	24,334,272.02	0.10
2030	2,458,937.84	29,843,202.20	0.08

2031	2,580,437.73	35,590,618.70	0.07
2032	2,722,405.15	41,689,595.60	0.07
2033	2,848,083.21	48,102,520.50	0.06
2034	2,988,607.37	54,874,479.21	0.05
2035	3,139,144.27	62,030,823.26	0.05

The Debt Ratio shows that only 20% of AeroFusion's assets were financed by liabilities in 2026, and this ratio declined to just 5% by 2035. This exceptionally low ratio reflects the company's zero-debt financing strategy and demonstrates that most of its assets are financed by shareholders' equity. Such a conservative capital structure provides substantial financial flexibility, low financial risk, and the ability to secure external financing at favorable terms if needed for expansion.

C. Liquidity Ratios

Liquidity ratios evaluate a borrower's ability to settle current debt obligations without relying on external sources of funds. These ratios are critical for assessing the company's short-term financial health and its ability to maintain uninterrupted operations.

1. Current Ratio

The current ratio is a liquidity ratio that measures a company's ability to pay its short-term obligations, or those due within 1 year. It tells investors and analysts how a company can maximize the current assets on its balance sheet to satisfy its current debt and other payables.

Table 66: *Current Ratio*

Year	Current Assets	Current Liabilities	Current Ratio
2026	8,871,698.22	1,895,879.15	4.68
2027	13,602,399.41	2,123,229.72	6.41
2028	18,612,803.74	2,238,510.01	8.31
2029	23,877,052.02	2,341,940.93	10.20
2030	29,439,352.20	2,458,937.84	11.97
2031	35,240,138.70	2,580,437.73	13.66
2032	41,392,485.60	2,722,405.15	15.20
2033	47,858,780.50	2,848,083.21	16.80
2034	54,684,109.21	2,988,607.37	18.30
2035	61,893,823.26	3,139,144.27	19.72

The Current Ratio demonstrates exceptional liquidity throughout the projection period. A current ratio of 4.68 in 2026 indicates that AeroFusion has ₱4.68 in current assets for every peso of current liabilities, far exceeding the industry benchmark of 1.5–2.0. By 2035, this ratio strengthens to 19.72, reflecting the massive cash accumulation and minimal current liabilities. Such strong liquidity ratios indicate the company's ability to meet short-term obligations with ease and provide a substantial buffer for operational flexibility and contingencies.

2. Quick Ratio

The quick ratio, also known as the acid-test ratio, measures a company's liquidity by calculating its ability to pay its current liabilities with its quick assets. Quick assets are current assets that can be converted to cash within 90 days or in the short term, typically excluding inventory.

Table 67: *Quick Ratio*

Year	Quick Assets(Cash + Receivables)	Current Liabilities	Quick Ratio
2026	8,233,661.97	1,895,879.15	4.34
2027	12,932,963.13	2,123,229.72	6.09
2028	17,909,130.66	2,238,510.01	8.00
2029	23,145,550.76	2,341,940.93	9.88
2030	28,676,715.97	2,458,937.84	11.66
2031	34,438,402.22	2,580,437.73	13.35
2032	40,552,078.49	2,722,405.15	14.89
2033	46,985,290.12	2,848,083.21	16.50
2034	53,773,672.69	2,988,607.37	18.01
2035	60,946,440.60	3,139,144.27	19.41

The Current Ratio demonstrates exceptional liquidity throughout the projection period. A current ratio of 4.68 in 2026 indicates that AeroFusion has ₱4.68 in current assets for every peso of current liabilities, far exceeding the industry benchmark of 1.5–2.0. By 2035, this ratio strengthens to 19.72, reflecting the massive cash accumulation and minimal current liabilities. Such strong liquidity ratios indicate the company's ability to meet short-term obligations with ease and provide a substantial buffer for operational flexibility and contingencies.

D. Activity Ratios

Activity ratios indicate a company's effectiveness in utilizing its balance-sheet assets to generate revenue and cash flow. These ratios help management assess how efficiently the business converts its investments in inventory and other assets into sales.

1. Raw Materials Inventory Turnover

Raw materials inventory turnover is a ratio that measures how many times a company's raw materials inventory is sold and replaced over a given period. A higher ratio implies strong sales or effective inventory purchasing, while a lower ratio may indicate poor sales or overstocking.

Table 68: *Raw Materials Inventory Turnover*

Year	Cost of Direct Materials Used	Average Raw Materials Inventory	Turnover Ratio
2026	4,656,435.00	194,018.13	24.00
2027	4,853,235.33	396,236.27	12.25
2028	5,084,076.99	414,054.68	12.28
2029	5,238,015.11	430,087.17	12.18
2030	5,431,634.80	444,568.75	12.22
2031	5,662,836.41	462,186.36	12.25
2032	5,885,862.00	481,071.80	12.23
2033	6,039,890.34	496,948.75	12.15
2034	6,242,504.60	511,963.45	12.19
2035	6,450,233.19	528,909.59	12.19

The Raw Materials Inventory Turnover ratio demonstrates highly efficient inventory management. In 2026, the ratio is 24.00, reflecting the initial setup phase. From 2027 onwards, the ratio stabilizes around 12.2, indicating that the company turns over its raw materials inventory approximately once every month (30 days). This aligns perfectly with the company's policy of maintaining a 30-day buffer stock, ensuring that capital is not tied up unnecessarily in excess inventory while maintaining sufficient stock to support continuous production.

2. Payback Period

The payback period refers to the amount of time it takes to recover the cost of an investment. Simply put, the payback period is the time it takes an investment to reach a break-even point. Shorter payback periods are generally preferable as they indicate faster recovery of investment capital.

Table 69: *Payback Period*

Year	Investment to be Recovered	Expected Cash Flow from Operations	Balance Remaining	Payback in Years
0	—	—	5,000,000.00	—
1	5,000,000.00	5,450,024.87	(450,024.87)	0.92
2	—	4,959,992.70	—	—
3	—	5,121,952.02	—	—
4	—	5,376,761.84	—	—
5	—	5,677,767.15	—	—
6	—	5,969,367.89	—	—
7	—	6,347,714.06	—	—
8	—	6,662,048.42	—	—
9	—	7,030,702.59	—	—
10	—	7,428,101.67	—	—

Payback Period				0.92 Years

Payback Period = Initial Investment/Annual Net Cash Inflow

The table presents the payback period analysis for the investment, showing the investment to be recovered at the beginning of the year, the cash flows from operating activities, and the remaining balance. Based on the data provided, it takes approximately 0.92 years (or about 11 months) to recover the initial investment of ₱5,000,000. This exceptionally short timeline is due to the project's high profitability and strong cash generation relative to its initial capital requirement. Unlike projects that require years to recoup costs, AeroFusion achieves full ROI within its first year of operations, indicating superior liquidity and minimal financial risk

3. Gross Profit Margin

Gross profit margin is a metric analysts use to assess a company's financial health by calculating the amount of money left over from product sales after subtracting the cost of goods sold (COGS). It indicates the efficiency of the production process and pricing strategy.

Table 70: **Gross Profit Margin**

Year	Gross Profit	Net Sales	Gross Profit Margin
2026	7,778,058.29	15,025,751.29	0.52 (52%)

2027	8,147,911.17	15,668,505.61	0.52 (52%)
2028	8,570,041.11	16,405,407.65	0.52 (52%)
2029	8,959,968.23	17,024,906.30	0.53 (53%)
2030	9,403,438.44	17,746,017.73	0.53 (53%)
2031	9,842,047.98	18,503,100.06	0.53 (53%)
2032	10,377,410.34	19,354,900.14	0.54 (54%)
2033	10,858,414.02	20,075,081.67	0.54 (54%)
2034	11,397,180.73	20,913,113.82	0.55 (55%)
2035	11,963,875.34	21,784,564.49	0.55 (55%)

Gross Profit Margin = Gross Profit/Net Sales

The Gross Profit Margin demonstrates strong and consistently improving product economics. Starting at 52% in 2026, the margin improves steadily to 55% by 2035. This high margin indicates that AeroFusion retains more than half of every peso earned from sales after paying for direct production costs. The gradual improvement reflects the company's ability to manage production costs effectively while benefiting from operational efficiencies and pricing power as the business scales.

Sensitivity Analysis

Sensitivity analysis examines the impact of varying values of an independent variable on a specific dependent variable within a defined set of assumptions. Essentially, it explores how different sources of uncertainty in a

mathematical model contribute to the model's overall uncertainty. This method is applied within predefined boundaries determined by one or more input variables.

In this study, a ±5% sensitivity analysis is conducted on the selling price, variable costs, and fixed costs to examine their effects on net income and break-even points, as outlined below.

Table 71: *Price Sensitivity Analysis*

SENSITIVITY ANALYSIS	Base Year 1	5% Increase in Selling Price	5% Decrease in Selling Price
Sales	15,025,751.29	15,777,038.85	14,274,463.73
Less Variable Cost			
Direct Materials	4,656,435.00	4,656,435.00	4,656,435.00
Direct Labor	874,590.00	874,590.00	874,590.00
Factory Overhead	1,716,668.00	1,716,668.00	1,716,668.00
Total Variable Cost	7,247,693.00	7,247,693.00	7,247,693.00
Gross Profit	7,778,058.29	8,529,345.85	7,026,770.73
Less Fixed Expenses	2,622,676.00	2,622,676.00	2,622,676.00
Breakeven in Units	827	754	914
Breakeven Sales	5,022,684.68	4,807,460.22	5,273,114.58
Percentage Change in Breakeven	—	-8.83%	+10.52%

The sensitivity analysis demonstrates that a 5% increase in the selling price results in higher sales revenue and a lower breakeven point (from 827 to 754

units), indicating significantly improved profitability and lower risk. Conversely, a 5% decrease in selling price results in lower sales revenue and an increased breakeven point to 914 units. This highlights that pricing power is a critical driver of AeroFusion's financial stability; however, even with a 5% price drop, the breakeven point of 914 units is well below the Year 1 production capacity of 2,499 units, confirming the project's robustness.

Table 72: *Cost Sensitivity Analysis on Sales and Breakeven*

Particulars	5% Increase in Variable Cost	5% Decrease in Variable Cost	5% Increase in Fixed Cost	5% Decrease in Fixed Cost
Sales	15,025,751.29	15,025,751.29	15,025,751.29	15,025,751.29
Total Variable Cost	7,610,077.65	6,885,308.35	7,247,693.00	7,247,693.00
Fixed Expenses	2,622,676.00	2,622,676.00	2,753,809.80	2,491,542.20
Breakeven in Units	884	777	868	785
Breakeven Sales	5,368,923.56	4,719,013.98	5,271,717.84	4,767,649.12
% Change in BEP	+6.89%	-6.05%	+4.96%	-5.08%

The table presents a sensitivity analysis showcasing the impact of a 5% increase or decrease in variable and fixed costs. A 5% increase in variable costs raises the break-even point by 6.89% to 884 units, while a 5% increase in fixed costs raises it by 4.96% to 868 units. This indicates that AeroFusion's profitability is slightly more sensitive to changes in variable costs (such as raw material prices)

than to changes in fixed costs (such as rent). However, in all scenarios, the break-even point remains comfortably below 900 units, leaving a wide safety margin against the projected sales of 2,499 units.

Table 73: *Sensitivity Analysis of CVP/Breakeven*

SENSITIVITY ANALYSIS	Base Year 1	5% Increase Selling Price	5% Decrease Selling Price	5% Increase Var. Cost	5% Decrease Var. Cost	5% Increase Fixed Cost	5% Decrease Fixed Cost
Variable Cost Per Unit	2,900.73	2,900.73	2,900.73	3,045.77	2,755.69	2,900.73	2,900.73
Selling Price Per Unit	6,073.44	6,377.11	5,769.77	6,073.44	6,073.44	6,073.44	6,073.44
Gross Margin Per Unit	3,172.71	3,476.38	2,869.04	3,027.67	3,317.75	3,172.71	3,172.71
TOTAL FIXED COST	2,622,676	2,622,676	2,622,676	2,622,676	2,622,676	2,753,810	2,491,542
Divided by Gross Margin	3,172.71	3,476.38	2,869.04	3,027.67	3,317.75	3,172.71	3,172.71
Break Even in Units	827	754	914	884	777	868	785
Multiply Selling Price	6,073.44	6,377.11	5,769.77	6,073.44	6,073.44	6,073.44	6,073.44
Break Even in Pesos	5,022,685	4,807,460	5,273,115	5,368,924	4,719,014	5,271,718	4,767,649

The comprehensive sensitivity analysis reveals that AeroFusion's financial feasibility is robust across multiple adverse scenarios. The most significant risk factor is a decrease in the selling price, which results in the largest increase in the break-even point (to 914 units). However, even in this worst-case scenario, the required sales volume is still only 36% of the company's Year 1 production capacity

(914/2,499 units). This confirms that the project possesses a substantial "safety buffer," making it highly resilient to market price fluctuations, raw material cost spikes, or overhead increases.

Chapter V

SOCIO ECONOMIC STUDY

Introduction

This chapter examines the business's obligations and relationships with the society in which it operates. Every business must not only seek profit but also provide support or assistance to the community in which it operates, the environment, the government, and its employees, as well as meet the needs of its customers. The socio-economic study aims to determine how this project will benefit society, affect salaries and employment, and impact living standards.

This chapter demonstrates how the AeroFusion Cooling Solutions Inc. initiative will help to raise living standards by creating more job opportunities in

Infanta, Quezon. Human resources will be hired to reduce unemployment and improve everyone's quality of life. Another objective of this study is to determine how this endeavor will impact society. This project aims to provide economic benefits, such as tax revenues for the government, while also promoting environmental sustainability through energy-efficient cooling technology. Every initiative worthy of funding should not only be profit-oriented but also deliver social and economic benefits.

Social Implication

The launch of AeroFusion Cooling Solutions Inc. carries significant social implications, particularly in enhancing the quality of life for residents in tropical climates like the Philippines. By providing an affordable, energy-efficient alternative to traditional air conditioning, AeroFusion addresses the pressing need for thermal comfort amidst rising global temperatures. The product's unique value proposition—delivering superior cooling performance at a fraction of the energy cost of air conditioners—democratizes access to comfortable living and working environments for households and businesses that cannot afford the high electricity costs associated with air conditioning.

Furthermore, the company promotes a culture of innovation and technical proficiency within the local community. By establishing a manufacturing facility in Infanta, Quezon, AeroFusion introduces advanced assembly and quality control

processes, fostering skill development and technical knowledge transfer among local workers. The company's commitment to producing high-quality, durable appliances also protects consumers from substandard products, ensuring safety and long-term value for Filipino households.

Taxes

AeroFusion Cooling Solutions Inc. recognizes its responsibility to contribute to the nation-building efforts of the government by conscientiously paying taxes. As projected in the Financial Study, the company is expected to contribute approximately ₱1,362,937.32 in corporate income taxes during its first year of operation alone. In addition to corporate income tax, the company will also generate significant revenue for the government through Value Added Tax (VAT) remitted from sales, annual business permits and license fees paid to the local government of Infanta, and employee withholding taxes remitted to the Bureau of Internal Revenue (BIR). These tax contributions increase annually as the company grows, providing the local and national governments with vital revenue to fund public infrastructure, healthcare, education, and other essential social services that uplift the community.

Employment

One of the most direct and tangible contributions of the project is the creation of stable, meaningful employment. AeroFusion Cooling Solutions Inc. will

prioritize hiring residents of Infanta, Quezon, and neighboring municipalities, thereby reducing the local unemployment rate. In its first year, the company will employ 20 personnel, including direct and indirect labor and administrative staff. This workforce is expected to grow in line with production expansion, creating further job openings in the community.

Beyond job creation, AeroFusion is committed to fair labor practices. The company ensures that all employees receive competitive salaries that meet or exceed regional wage standards, along with full statutory benefits, including SSS, PhilHealth, and Pag-IBIG contributions, and 13th-month pay as mandated by law. Moreover, employees will receive continuous skills training to enhance their professional growth and career advancement. By providing stable jobs with comprehensive benefits, the company helps improve the economic status of its employees and their families, stimulating local economic activity through increased household spending.

Environment

AeroFusion Cooling Solutions Inc. places a high priority on environmental stewardship, recognizing that businesses have a duty to minimize their ecological footprint and contribute positively to environmental conservation. In

acknowledgment of the inevitable consequences of climate change, the company's product design is centered on environmental responsibility, ensuring positive impacts on the planet. The company strives to reduce energy consumption during product use, thereby minimizing its ecological footprint. Additionally, strict protocols for waste management are maintained, with proper disposal of production waste and rigorous enforcement of segregation of other waste products throughout the facility.

AeroFusion represents a pioneering response to the environmental challenges posed by excessive energy consumption in cooling appliances. The product is designed as an energy-efficient alternative to conventional air conditioning systems, using water-evaporative cooling technology and efficient motors. This innovative approach not only addresses thermal comfort needs but also closely aligns with the United Nations Sustainable Development Goals (SDGs), underscoring its potential to address global sustainability challenges.

1. SDG 7: Affordable and Clean Energy

AeroFusion directly contributes to SDG 7 by providing an energy-efficient cooling solution that consumes significantly less electricity compared to traditional air conditioning systems. By combining water-evaporative technology with energy-efficient motors, the product enables households and businesses to achieve thermal comfort while dramatically reducing electricity consumption. This reduced

energy demand lessens the burden on the national power grid and reduces reliance on fossil-fuel-based energy generation, thereby promoting cleaner energy practices. The affordability of operating AeroFusion units makes clean-cooling technology accessible to a broader population, particularly in tropical regions where cooling needs are essential, but energy costs are prohibitive.

2. SDG 9: Industry, Innovation, and Infrastructure

The development and manufacturing of AeroFusion signify a pioneering approach to sustainable cooling solutions within the appliance industry. By introducing an energy-efficient hybrid technology, AeroFusion exemplifies innovation in addressing the environmental challenges posed by conventional cooling systems. The establishment of the manufacturing facility in Infanta, Quezon, contributes to local infrastructure development and industrial capacity building. Moreover, AeroFusion underscores the potential for leveraging engineering innovation to drive both environmental sustainability and economic growth. By creating a technologically advanced yet affordable product, AeroFusion demonstrates how innovation can bridge the gap between environmental responsibility and market accessibility.

3. SDG 12: Responsible Consumption and Production

AeroFusion plays a crucial role in advancing SDG 12 by promoting responsible consumption patterns through energy efficiency. The product

encourages consumers to make environmentally conscious choices by offering a sustainable alternative that reduces overall energy consumption. Throughout the manufacturing process, the company implements waste-minimization strategies and uses recyclable materials wherever possible. The production facility adheres to a "Reduce, Reuse, Recycle" policy, ensuring that waste materials are properly segregated and recyclable components are processed through accredited recycling centers. This commitment to responsible production practices extends throughout the product lifecycle, from raw material sourcing to end-of-life disposal.

4. SDG 13: Climate Action

AeroFusion plays a vital role in advancing SDG 13 by actively mitigating greenhouse gas emissions from electricity generation for cooling. By significantly reducing energy consumption compared to traditional air conditioners—up to 75% lower electricity use—AeroFusion helps decrease the carbon footprint of cooling operations. This shift towards energy-efficient cooling alternatives reduces emissions from fossil-fuel-based power generation, fostering climate resilience. The widespread adoption of AeroFusion units has the potential to collectively reduce national electricity demand during peak cooling seasons, thereby lessening the environmental strain on power generation infrastructure. Through its commitment to energy efficiency, AeroFusion exemplifies a proactive approach to

addressing climate change and contributes to broader global efforts to build a more resilient and sustainable future.

5. SDG 8: Decent Work and Economic Growth

The establishment of AeroFusion Cooling Solutions Inc. directly supports SDG 8 by creating quality employment opportunities within the local community. The company provides decent work characterized by fair wages, full statutory benefits, safe working conditions, and opportunities for skills development and career advancement. By prioritizing local hiring from Infanta and surrounding municipalities, the project stimulates grassroots economic growth. The multiplier effect of stable employment—through increased household incomes and consumer spending—contributes to broader economic development in the region. Furthermore, the company's commitment to continuous training ensures that workers develop marketable technical skills, enhancing their long-term employability and economic security.

Social Activities

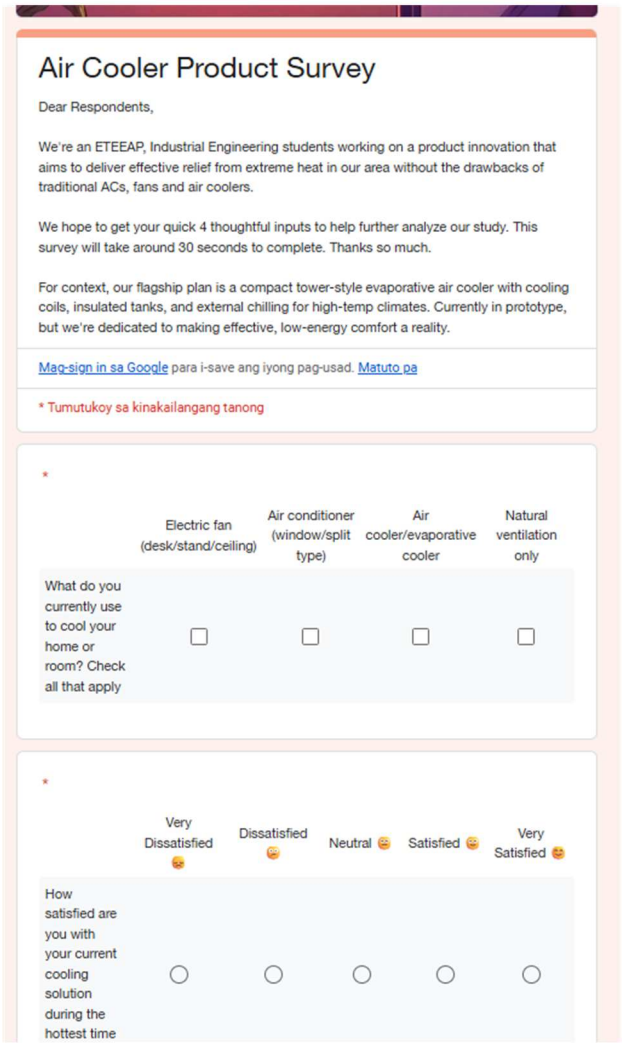
As part of its Corporate Social Responsibility (CSR), AeroFusion Cooling Solutions Inc. is dedicated to giving back to the community that supports it. The company plans to engage in social activities that foster community well-being and environmental awareness. The "Cool Schools" Program will donate AeroFusion units to selected public schools in Infanta, Quezon, to provide a more comfortable

learning environment for students during the hot summer months. The company will also partner with the local DENR office to support annual tree-planting activities that contribute to carbon sequestration and environmental beautification. Additionally, a portion of the company's contingency fund will be allocated to disaster relief, providing essential aid such as food packs and hygiene kits to the local community during natural disasters like typhoons, which frequently affect the region. Through these activities, AeroFusion aims to build strong, positive relationships with the community and to demonstrate its commitment to improving society's overall comfort and well-being.

APPENDICES

Appendix A: Market Study Documents

A-1: Market Survey Questionnaire



Air Cooler Product Survey

Dear Respondents,

We're an ETEEAP, Industrial Engineering students working on a product innovation that aims to deliver effective relief from extreme heat in our area without the drawbacks of traditional ACs, fans and air coolers.

We hope to get your quick 4 thoughtful inputs to help further analyze our study. This survey will take around 30 seconds to complete. Thanks so much.

For context, our flagship plan is a compact tower-style evaporative air cooler with cooling coils, insulated tanks, and external chilling for high-temp climates. Currently in prototype, but we're dedicated to making effective, low-energy comfort a reality.

Mag-sign in sa Google para i-save ang iyong pag-usad. Matuto pa

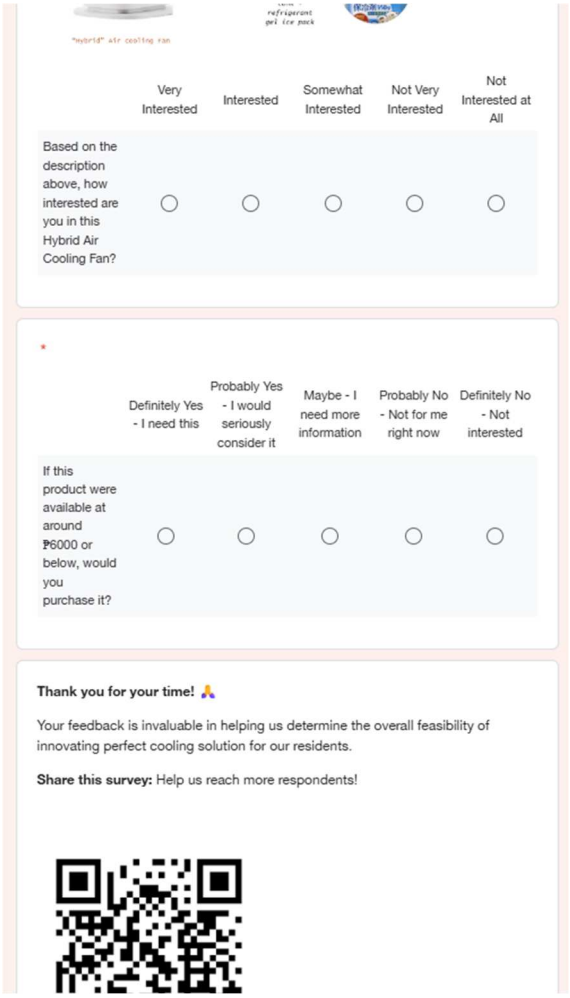
* Tumutukoy sa kinakailangang tanong

*

	Electric fan (desk/stand/ceiling)	Air conditioner (window/split type)	Air cooler/evaporative cooler	Natural ventilation only
What do you currently use to cool your home or room? Check all that apply	☐	☐	☐	☐

*

	Very Dissatisfied 😖	Dissatisfied 😞	Neutral 😐	Satisfied 😊	Very Satisfied 😍
How satisfied are you with your current cooling solution during the hottest time	○	○	○	○	○



	Very Interested	Interested	Somewhat Interested	Not Very Interested	Not Interested at All
Based on the description above, how interested are you in this Hybrid Air Cooling Fan?	○	○	○	○	○

*

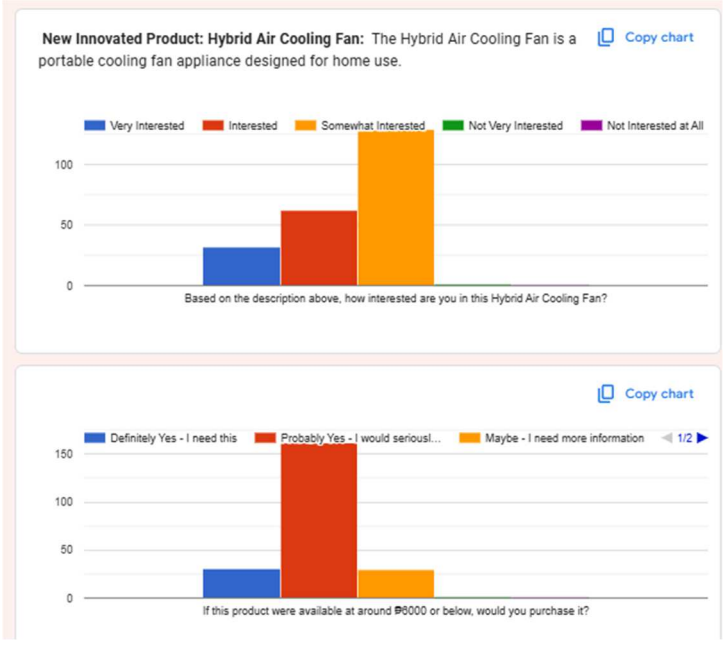
	Definitely Yes - I need this	Probably Yes - I would seriously consider it	Maybe - I need more information	Probably No - Not for me right now	Definitely No - Not interested
If this product were available at around ₱6000 or below, would you purchase it?	○	○	○	○	○

Thank you for your time! 🙏

Your feedback is invaluable in helping us determine the overall feasibility of innovating perfect cooling solution for our residents.

Share this survey: Help us reach more respondents!

A-2: Market Survey Results



A-3: Market Demand Data Sources:

Table 1. POPULATION AND ANNUAL POPULATION GROWTH RATE BY MUNICIPALITY QUEZON* : 2010, 2015, 2020, AND 2024 POPULATION CENSUSES

CITY/ MUNICIPALITY	TOTAL POPULATION				POPULATION GROWTH RATE			
	01-May-10	01-Aug-15	01-May-20	01-Jul-24	2010-2015	2015-2020	2015-2024	2020-2024
INFANTA	64,818	69,079	76,186	77,676	1.22	2.08	1.32	0.47

Province of Quezon

Municipality of Infanta

Quick Facts

Congressional District: First **Income Classification:** First Class **Land Area (as per DENR) (in hectares):** 13,010.00 **2020 Population** 76,186 **Annual Population Growth Rate (%), 2015-2020** 2.08 **Population Density (persons per square kilometer)** 222 **No. of Households** 19,125 **Average Household Size** 4 **2018 Poverty Incidence** 7.6

Name of Local Chief Executive

Mayor: Lord Arnel R. Ruanto

Contact Details

Contact No: (042) 535-2457
Email Address: laruanto21@gmail.com
LGU Website / Page: https://web.facebook.com/mabuhaykainfanta/

Poverty Incidence declined to 6.9 percent in Quezon Province in 2023

Home > Poverty Incidence declined to 6.9 percent in Quezon Province in 20...

Release-Date Tuesday, November 19, 2024
Reference-Number 2024-202

The Philippine Statistics Authority (PSA) releases updates on the 2023 Full Year Official Poverty Statistics based on the preliminary results of the 2023 Family Income and Expenditure Survey. It was initially released last 22 July 2024 covering data at the national level. Estimates of poverty disaggregated at the regional, provincial, and highly urbanized city levels are included in the updated report.

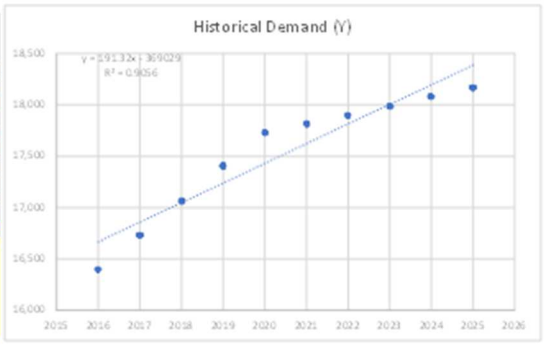
A-4: Historical Demand Data Detailed Calculations

Year	Population (Infanta)	Growth Rate	Calculation (Pop. / 4.0 Household Size Infanta)	Number of Households (All income classess)	Poverty Incidence	Calculation (Number of Households (- Poverty Incidence %)	Number of Households (above poverty income class) - Target Market
2016	70,461	2.08	70,461 / 4.0	17,615	0.069	17615 - 1215.435	16,400
2017	71,870	2.08	71,870 / 4.0	17,968	0.069	17968 - 1239.792	16,728
2018	73,307	2.08	73,307 / 4.0	18,327	0.069	18327 - 1264.563	17,062
2019	74,773	2.08	74,773 / 4.0	18,693	0.069	18693 - 1289.817	17,403
2020	76,186	2.08	76,186 / 4.0	19,047	0.069	19047 - 1314.243	17,733
2021	76,552	0.47	76,552 / 4.0	19,138	0.069	19138 - 1320.522	17,817
2022	76,919	0.47	76,919 / 4.0	19,230	0.069	19230 - 1326.87	17,903
2023	77,288	0.47	77,288 / 4.0	19,322	0.069	19322 - 1333.218	17,989
2024	77,676	0.47	77,676 / 4.0	19,419	0.069	19419 - 1339.911	18,079
2025	78,049	0.47	78,049 / 4.0	19,512	0.069	19512 - 1346.328	18,166

A-5: Projected Demand Computation via Microsoft Excel

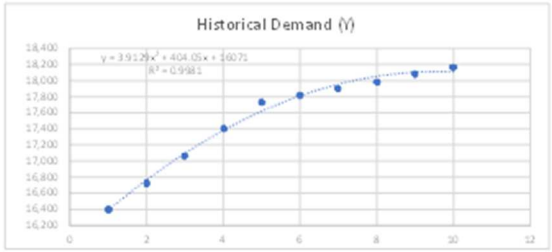
Statistical Straight Line

Historical Year	Historical Demand (Y)	Yc (Linear)	Error (Linear)
2016	16,400	16667.101	-268
2017	16,728	16858.418	-130
2018	17,062	17049.736	13
2019	17,403	17241.054	162
2020	17,733	17432.371	300
2021	17,817	17623.689	194
2022	17,903	17815.007	88
2023	17,989	18006.324	-18
2024	18,079	18197.642	-119
2025	18,166	18388.96	-223
2026		18580.28	177.41
2027		18771.60	Lowest std
2028		18962.91	
2029		19154.23	
2030		19345.55	
2031		19536.87	
2032		19728.18	
2033		19919.50	
2034		20110.82	
2035		20302.14	



Statistical Parabolic

Historical Year (last 10 years)	Historical Demand (Y)	Yc (Parabolic	Error (Parabolic)
1	16,400	16478.963	-79
2	16,728	16894.752	-167
3	17,062	17318.366	-256
4	17,403	17749.806	-347
5	17,733	18189.073	-456
6	17,817	18636.164	-819
7	17,903	19091.082	-1,188
8	17,989	19553.826	-1,565
9	18,079	20024.395	-1,945
10	18,166	20502.79	-2,337
		STDEV.P	762.66



Arithmetic Straight Line

Historical Year	Historical Demand (Y)	Avg. Increme	Yc (Arithmetic)	Error (Arithmetic)
2016	16,400	196.23411	16,400	0
2017	16,728	455.22222	16,596	132
2018	17,062	455.22222	16,792	270
2019	17,403	455.22222	16,988	415
2020	17,733	455.22222	17,185	548
2021	17,817	455.22222	17,381	437
2022	17,903	455.22222	17,577	326
2023	17,989	455.22222	17,773	216
2024	18,079	455.22222	17,969	110
2025	18,166	455.22222	18,166	0
			STDEV.P	177.97

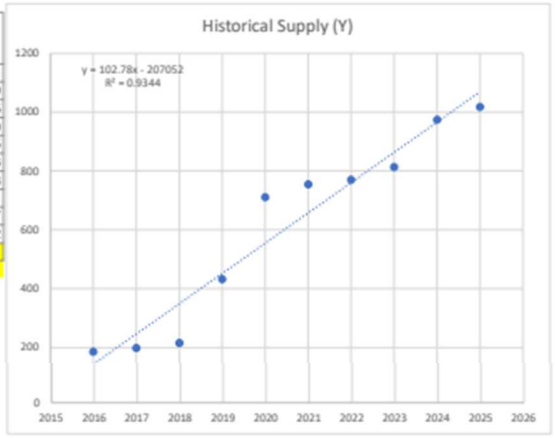
Arithmetic Geometric Curve

Historical Year	Historical Demand (Y)	Compound Growth rate		Yc (Geometric)	Error (Geometric)
2016	16,400	0.0114291	1.011429136	16,400	0
2017	16,728	0.0250191	1.025019142	16,809.87	-82
2018	17,062	0.0250191	1.025019142	17,230.44	-168
2019	17,403	0.0250191	1.025019142	17,661.53	-258
2020	17,733	0.0250191	1.025019142	18,103.40	-371
2021	17,817	0.0250191	1.025019142	18,556.34	-739
2022	17,903	0.0250191	1.025019142	19,020.60	-1,117
2023	17,989	0.0250191	1.025019142	19,496.48	-1,508
2024	18,079	0.0250191	1.025019142	19,984.26	-1,905
2025	18,166	0.0250191	1.025019142	20,484.25	-2,319
				STDEV.P	783.85

A-6: Projected Supply Computation via Microsoft Excel

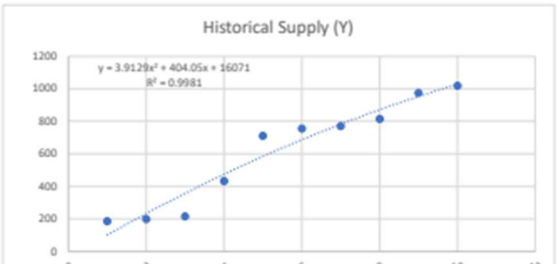
Statistical Straight Line

Historical Year	Historical Supply (Y)	Yc (Linear)	Error (Linear)
2016	185	144.10909	41
2017	198	246.88485	-49
2018	215	349.66061	-135
2019	432	452.43636	-20
2020	710	555.21212	155
2021	754	657.98788	96
2022	769	760.76364	8
2023	813	863.53939	-51
2024	973	966.31515	7
2025	1017	1069.0909	-52
2026		1,172	78.21
2027		1,275	*lowest σ*
2028		1,377	
2029		1,480	
2030		1,583	
2031		1,686	
2032		1,789	
2033		1,891	
2034		1,994	
2035		2,097	



Statistical Parabolic

Historical Year (last 10 years)	Historical Supply (Y)	Yc (Parabolic	Error (Parabolic)
1	185	16478.963	-16,294
2	198	16894.752	-16,697
3	215	17318.366	-17,103
4	432	17749.806	-17,318
5	710	18189.073	-17,479
6	754	18636.164	-17,882
7	769	19091.082	-18,322
8	813	19553.826	-18,741
9	973	20024.395	-19,051
10	1017	20502.79	-19,486
		STDEV.P	993.20



Arithmetic Straight Line

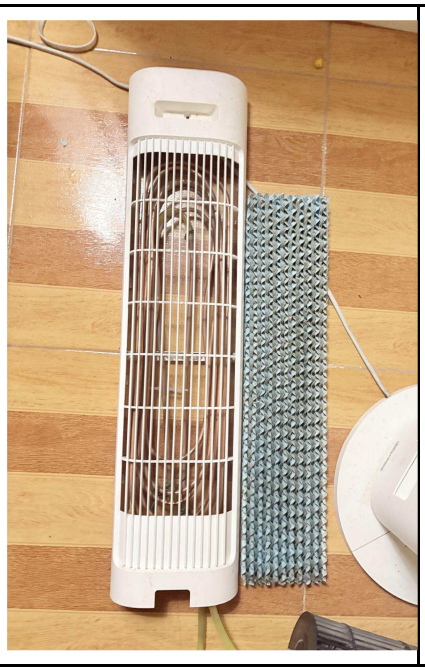
Historical Year	Historical Supply (Y)	Avg. Increme	Yc (Arithmetic)	Error (Arithmetic)
2016	185	92.444444	185	0
2017	198	92.444444	277	-79
2018	215	92.444444	370	-155
2019	432	92.444444	462	-30
2020	710	92.444444	555	155
2021	754	92.444444	647	107
2022	769	92.444444	740	29
2023	813	92.444444	832	-19
2024	973	92.444444	925	48
2025	1017	92.444444	1,017	0
			STDEV.P	83.65

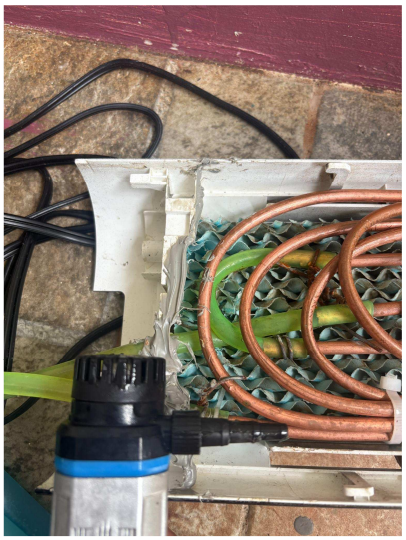
Arithmetic Geometric Curve

Historical Year	Historical Supply (Y)	Compound Growth rate		Yc (Geometric)	Error (Geometric)
2016	185	0.2084782	1.208478151	185	0
2017	198	0.0250191	1.025019142	189.63	8
2018	215	0.0250191	1.025019142	194.37	21
2019	432	0.0250191	1.025019142	199.24	233
2020	710	0.0250191	1.025019142	204.22	506
2021	754	0.0250191	1.025019142	209.33	545
2022	769	0.0250191	1.025019142	214.57	554
2023	813	0.0250191	1.025019142	219.94	593
2024	973	0.0250191	1.025019142	225.44	748
2025	1017	0.0250191	1.025019142	231.08	786
2026				236.86	291.25
2027				242.79	
2028				248.86	
2029				255.09	
2030				261.47	
2031				268.01	
2032				274.72	
2033				281.59	
2034				288.63	
2035				295.86	

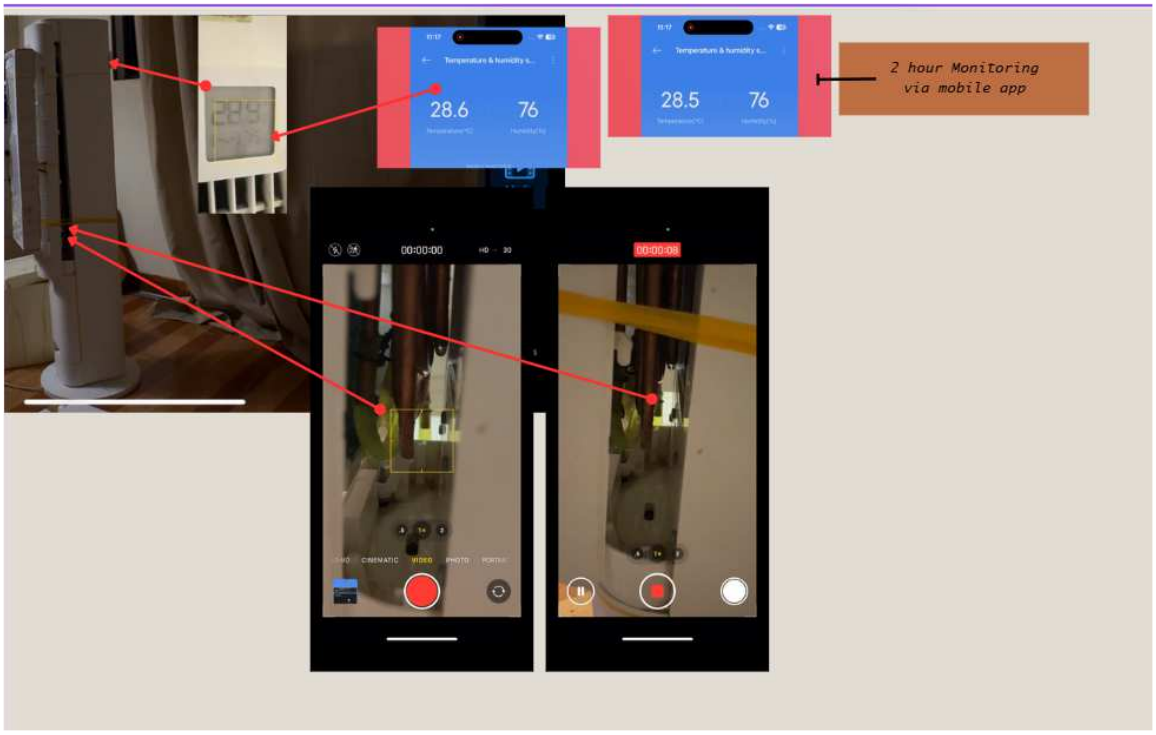
Appendix B: Technical Study Documents

B-1: Product Assembling (Innovated Tower Fan Product) Documentation





B-1: Product Initial Testing (“Hybrid Cooling”) Documentation



University of Batangas
COLLEGE OF ENGINEERING

Mark Angelo A. Taniegra

Position: Facilities Officer

Contact: +63.927.439.0467 | Mark.Taniegra@Outlook.com
Location: Infanta, Quezon, Philippines

Education

- Bachelor of Science in Industrial Engineering (ETEEAP) – University of Batangas
- Diploma in two-year Industrial Technician Course – MFI Technological Institute

Core Competencies

- Facilities Management and Administration
- Safety and Compliance (Safety Officer 3, BOSH and LCM Certified)
- Project Management (Fit-out/Renovations)
- Multi-functional Team & Stakeholder Management
- Process Improvement
- Supplies/Consumables & Inventory Management
- Financial Management and Budget Forecasting (CAPEX/OPEX)
- Technical Expertise: HVAC, UPS, Electrical and Power Systems, Fire Protection Controls

Professional Experience

- **TaskUs** (Jun 2020 – Sep 2023): Facilities Officer
- **Sykes Asia, Inc.** (May 2014 – Feb 2020): Facilities & Admin Assistant
- **MIESCOR Logistics Inc.** (2011 – 2014): HVAC Technician

Key Expertise: Over 10 years of comprehensive facilities management and project leadership in fast-paced tech-enabled BPO environments, with proven expertise in major renovation projects (up to 3.6k sqm), UPS systems management, regulatory compliance, safety & security, and cost-efficient operations management.