APEX ENCLOSURES

APE Pool Series

Design Brief for Aesthetics Development

Prepared for: Tom & Design Team

January 2026

Product Line Overview

The APE (Apex Pool Equipment) Series consists of three distinct product lines, each addressing different pool area needs. All products share common construction quality and aesthetic language but have different functional requirements that affect their design.

APE-P	APE-HC	APE-S
Pump Enclosures	Heater/Chiller	Storage
Sealed + Acoustic	Louvered + Airflow	Climate Controlled

Target Market

Luxury villa owners in the Gulf region (UAE, Saudi Arabia) who want their pool equipment and storage to look as good as the rest of their outdoor space. These customers pay AED 50,000+ for outdoor furniture sets - they don't want ugly plastic boxes or exposed equipment.

Design Philosophy

- **Architectural integration:** Should look like it belongs in a luxury villa, not industrial equipment
- **Clean lines:** Minimal visible hardware, flush surfaces where possible
- **Premium materials:** Powder-coated aluminum, stainless steel accents
- **Color matching:** Full RAL palette to match villa architecture

Manufacturing Partner

Eurotech Metal Industries (UAE) - Sheet metal fabrication specialists with 2000+ hour salt spray coating capability. They build to our specs, so design freedom is high within aluminum sheet metal constraints.

> **Key Design Constraint**
>
> All products are made from folded/welded aluminum sheet metal (2-3mm). Complex curves are possible but expensive. Flat panels with clean folds are preferred for cost efficiency.

1. APE-P Series - Pool Pump Enclosures

Fully sealed acoustic enclosures that house pool pumps, filters, and chlorinators. The primary goal is **noise reduction (70-80%)** while protecting equipment from weather.

Size Options

Model	External Dimensions	Internal Space	Typical Use
APE-P-S (Small)	700 × 600 × 900mm	650 × 550 × 850mm	Single pump + compact chlorinator
APE-P-M (Medium)	1100 × 600 × 900mm	1050 × 550 × 850mm	Pump + full-size filter
APE-P-L (Large)	1500 × 600 × 900mm	1450 × 550 × 850mm	Complete pump room

Design-Critical Features

Acoustic Sealing CRITICAL

Interior lined with 25mm closed-cell acoustic foam. All panel joints must seal completely - any gaps destroy acoustic performance. Consider how doors/panels meet the frame.

Passive Ventilation

Equipment generates heat but no fan is needed. Ventilation via labyrinth baffles that allow airflow while blocking sound. These could be a design feature (visible grilles) or hidden.

Service Access

Full-front door required for equipment access. Consider: swing door vs lift-off panel vs bi-fold. Door needs compression latches for acoustic seal + padlock provision for security.

Design Consideration

This is the "workhorse" product - most common configuration. Needs to look premium but pricing is sensitive. Overly complex designs will price us out of market.

Technical Specs for Reference

- IP55 rated (rain-proof, hose cleanable)
- All fasteners: 316 stainless steel (salt pool compatible)
- Height: 900mm (sits on ground or plinth)
- Weight: 35-55kg depending on size

2. APE-HC Series - Heater/Chiller Enclosures

These enclosures house heat pumps, pool chillers, or gas heaters. Unlike the pump enclosures, these **require significant airflow** for the equipment to operate. The design uses louvered panels rather than sealed construction.

> **Key Difference from APE-P**
>
> Heat pumps and chillers need 50%+ open area for airflow. This is NOT an acoustic enclosure - it's weather protection and aesthetic screening with moderate noise reduction (50-60%).

Size Options

Model	External Dimensions	Clearance Required	Equipment Capacity
APE-HC-S (Small)	900 × 550 × 1000mm	250mm sides, 300mm top	Up to 12kW
APE-HC-M (Medium)	1100 × 650 × 1000mm	300mm sides, 300mm top	Up to 20kW
APE-HC-L (Large)	1400 × 750 × 1100mm	400mm sides, 350mm top	Up to 35kW

Design-Critical Features

Louvered Panels CRITICAL

Side and rear panels need louvers for airflow. Louver design is a major aesthetic opportunity - horizontal vs vertical, blade angle, spacing. Must achieve 50%+ open area while blocking rain at 45° angle.

Top Ventilation

Heat rises - top panel needs ventilation. Could be louvered, mesh, or open with rain hood. This is highly visible so design matters.

Equipment Platform

Heat pumps/chillers sit on internal platform (not directly on ground). Consider vibration isolation mounting points.

Design Opportunity

The louver pattern is the signature visual element of this product. Distinctive louver design could become part of the Apex brand identity across the product line.

Technical Specs for Reference

- IP44 rated (splash resistant)
- Open area: minimum 50% on ventilated panels
- Height: 1000-1100mm (taller than pump enclosures)
- Weight: 30-50kg empty

3. APE-S Series - Climate-Controlled Storage

Premium outdoor storage for pool cushions, towels, and accessories. The unique selling point is **integrated climate control** - these aren't just waterproof boxes, they actively maintain optimal humidity to prevent mold and mildew.

Size Options

Model	External Dimensions	Capacity	Typical Use
APE-S-100 (Compact)	800 × 500 × 500mm	~100L	4-6 cushions or towels
APE-S-200 (Standard)	1200 × 600 × 600mm	~200L	Full lounge set cushions
APE-S-350 (Large)	1500 × 700 × 700mm	~350L	Multiple sets + accessories

How the Climate Control Works

Peltier Dehumidification System

A small thermoelectric (Peltier) module built into the enclosure wall extracts moisture from the air. It's silent (no compressor), low power (20-25W), and maintenance-free. Condensate collects in a small drawer that's emptied periodically.

- **Sensor:** Built-in temperature + humidity sensor with smartphone app
- **Automatic:** Activates when humidity exceeds 50% RH
- **Power:** 12V DC adapter (standard), solar panel option, or battery backup
- **Extraction:** 250-350ml per 24 hours

Design-Critical Features

IP65 Sealing CRITICAL

Must be completely sealed (dust-tight + water jet protected). The whole point is keeping Gulf humidity OUT. Continuous EPDM gasket around lid opening.

Lid Design

Top-opening lid with gas struts for soft close. Needs to support seating load (150kg) if bench seat option selected. Consider lift mechanism and hinge visibility.

Condensate Drawer

Small pull-out drawer (hidden from main view) to empty collected moisture. Needs easy access but shouldn't be visible during normal use.

Status Indicators

Small LED or indicator window showing system status (humidity level, power). Should be subtle/elegant, not industrial looking.

Premium Positioning

This is our highest-margin product (AED 5,000-11,000). It competes with designer outdoor furniture, not plastic deck boxes. The design needs to justify the premium price point.

4. Common Design Elements

All three product lines should share a common design language while respecting their functional differences.

Materials & Finishes

Element	Material	Notes
Panels	5052-H32 Aluminum (2.0mm)	Marine grade, won't corrode
Frame	5052-H32 Aluminum (3.0mm)	Structural members
Fasteners	316 Stainless Steel	Required for salt pool environments
Hinges	316 SS or concealed	Gas struts where needed
Finish	Powder coat (80-100µm)	2000hr salt spray rated
Gaskets	EPDM	UV and ozone resistant

Color Options

Standard (included): RAL 7016 Anthracite Grey, RAL 7035 Light Grey, RAL 9005 Jet Black

Premium: RAL 1015 Light Ivory, RAL 7030 Stone Grey, RAL 7033 Cement Grey, RAL 8011 Nut Brown, plus others

Custom: Any RAL color can be matched

Hardware Considerations

- **Latches:** Compression latches for sealed products, standard latches for louvered
- **Locks:** Padlock provision on all products (security in common areas)
- **Handles:** Flush or integrated preferred over protruding handles
- **Feet:** Adjustable feet for uneven surfaces, or plinth mounting option

Brand Elements

> **Opportunities for Brand Integration**

- Subtle Apex logo placement (laser etched or small badge)
- Consistent handle/latch design across product lines
- Signature louver pattern that could appear on all products
- Common corner radius or edge treatment

5. Questions for Design Team

Key decisions we'd like input on from the design team:

Overall Aesthetic Direction

1. Should we pursue a **minimalist/invisible** approach (blend into background) or **architectural statement** approach (feature piece)?
2. How do we create visual coherence across the three very different product types?
3. What's the right balance between premium appearance and manufacturing cost?

Specific Design Elements

1. **Louver design:** Horizontal vs vertical? Blade profile? Spacing? This could become a signature element.
2. **Corner treatment:** Sharp corners, radiused corners, chamfered edges?
3. **Panel articulation:** Flat panels or subtle reveals/shadow lines?
4. **Hardware visibility:** Exposed stainless (industrial chic) or hidden (clean minimalist)?
5. **Logo/branding:** Placement, size, method (etched, badge, embossed)?

Product-Specific Questions

APE-P (Pump)

- Door opening mechanism preference?
- How to make ventilation grilles attractive?

APE-HC (Heater/Chiller)

- Louver pattern that provides 50%+ airflow while looking premium?
- Top treatment (visible louvers vs hidden under overhang)?

APE-S (Storage)

- Lid opening mechanism - visible hinges or hidden?
- How to integrate status indicators elegantly?

- Bench seat variant - any design implications?

Next Steps

We're open to your recommendations on all of the above. Once we align on direction, we can work with Eurotech to prototype. Happy to have a call to discuss any questions about functional requirements or constraints.

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