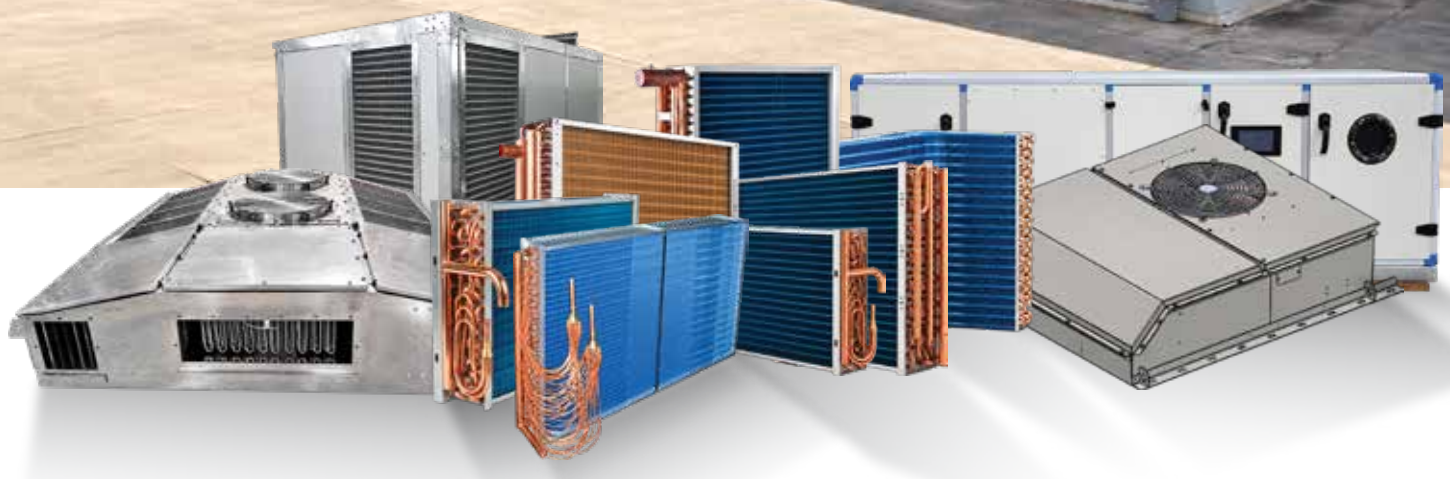
SPHERE

THERMAL SYSTEMS PRIVATE LIMITED



Thermal Performance, Precisely Formed

SPHERE
THERMAL SYSTEMS PRIVATE LIMITED

COMPANY & CAPABILITIES

Precision Thermal Engineering for every Environment.

Sphere Thermal Systems Pvt. Ltd., an RDSO-registered group company of **AND Hitech**, is an engineering and manufacturing company specializing in **thermal management, refrigeration, air-conditioning and heat-exchanger technologies.** Our comprehensive portfolio encompasses **complete HVAC/RMPU systems, high-performance heat exchangers, electromechanical and electronic products,** engineered to meet demanding applications across mobility and industrial sectors. With a state-of-the-art manufacturing facility and a PAN-India service network, we deliver dependable, efficient and application-driven solutions to **Indian Railways, OEMs and global customers.**

TIMELINE

- **2013** — AND Hitech begins: a family-owned business in precision manufacturing and railway rolling-stock components.
- **Today** — Sphere Thermal Systems: a rail-systems company focused on HVAC, heat exchangers and rail-coach maintenance.
- **Next** — a new Greater Noida plant is planned, with technical collaborations and strategic alliances welcomed.

KEY FIGURES

- 4,000 sq. m total area · 2,200 sq. m shop floor
- 11 qualified design-team members
- PAN-India service support to Indian Railways

Our Commitment

- **Vision** — To bring innovation and evaluate the future roadmap for clients and shareholders with positive outcomes through technological advancements and the expansion of our industry partnerships.
- **Mission** — Sphere Thermal is composed of a diverse team of professionals with varying backgrounds, technical expertise, and perspectives all of which contribute to our ability to provide innovative solutions for each client.
- **Quality** — Sphere Thermal Systems Private Limited is engaged in the Manufacture and Supply of Rolling Stock Components for Railway Coach and we are committed to exceed customer expectation & achieve customer satisfaction through continual improvement by effectively implementing Rail Quality Management Systems.

Certifications & Approvals

Our Commitment to Quality, Safety & Global Standards

ISO 9001-(NABCB)

ISO 14001:2015

EN 15085-2

ISO 9001:2015

Under Certification / Approval Process

IRIS Certification | AHRI CERTIFIED | EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com | UL

CLIENT REFERENCES

RCF | MCF | BHEL | DMRC Delhi Metro Rail Corporation | Indian Railways | Integral Coach Factory | MEDHA

PRODUCT CAPABILITY · OUR OFFERINGS

Precision-Engineered Coils. Application-Driven Performance.

Finned-tube heat exchangers for chilled-water and DX applications — two tube diameters with multiple fin materials, surfaces and edge designs.

WHY WORK WITH US

- **Engineered to Fit** — Application-specific solutions designed around your exact requirements.
- **Built to Deliver** — Disciplined manufacturing and committed timelines that keep projects moving.
- **Expertise That Performs** — Proven engineering capabilities across heat exchangers, HVAC systems and railway/mobility RMPUs.
- **Quality You Can Trust** — Rigorous quality processes and compliance with demanding industry standards.
- **Support Beyond Supply** — PAN-India service and lifecycle support from engineering to after-sales.

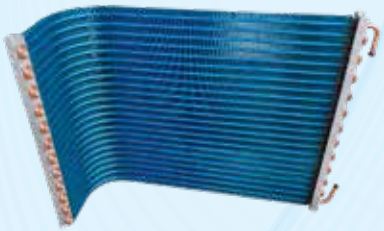
Material Details: • 7 mm tube • 3/8-inch (9.52 mm) Tube • Hydrophilicblue • Bare aluminum • Copper fins • Louver / sine-wave

BASIC TECHNICAL PARAMETERS

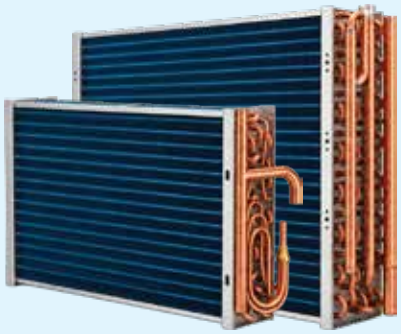
Length range	200 to 2,500 mm
Width range	200 to 1,500 mm
Tube material & size	Copper — ϕ 9.52 mm & ϕ 7 mm
Fin material	Aluminum & copper (hydrophilic blue & bare)
Fin type	Sine-wave, with & without louvers
Pitch	ϕ 7 mm: 21 × 12.7 mm · ϕ 9.52 mm: 25.4 × 22 mm
FPI range	ϕ 7 mm: 7~22 · ϕ 9.52 mm: 7~14
Basic Technical Parameter	
Design software	Unilab Coil Design · SolidWorks

Chilled Water Coil

DX - Coil



Bend Condensers Coils



LHB RMPU Coils

EMU 15 TR

LHB RMPU 7 TR

CAB AC 1.5 TR

RAW MATERIAL SPECIFICATIONS — HEAT EXCHANGERS

7 mm inner-grooved copper tube.

For evaporator and condenser applications, the inner-grooved profile supports the coil manufacturing process.

Copper Tubes: 7.0 mm and 9.52 mm OD
Tube Types: Plain Copper Tubes and IGT Copper Tubes
Selection: Tube type and configuration are selected based on **customer-specific application, thermal performance and design requirements.**

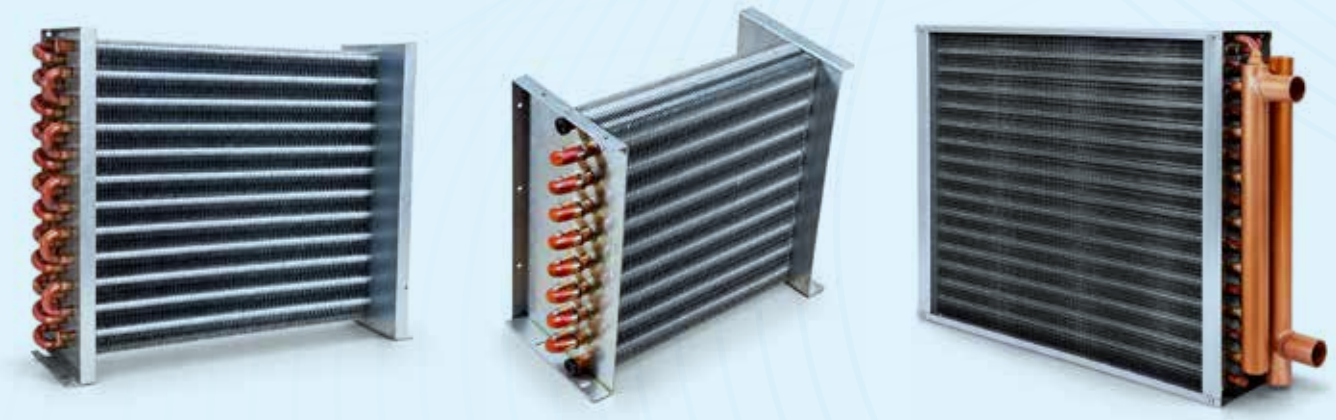
FIN GEOMETRY

7 mm fin geometry, formed for control.

A louvered, sine-wave surface with adjustable fin pitch and straight-edge trimming.

Geometry	ϕ 7*36R*2P (21 × 12.7) mm
Surface	Louver, sine-wave
Hole distance in row	21 mm ±0.03
Distance between rows	12.7 mm ±0.03
Edge trim	Straight edge
Collar height / FPI	FPI 7–22, individual draw adjustment
Material	Aluminum alloy 8011 — H22 / H24 / H26 or equivalent

Selectable fin thickness.
• 0.095 mm supports FPI 17–22 • 0.14 mm supports FPI 10–14
• 0.16 mm supports FPI 7.

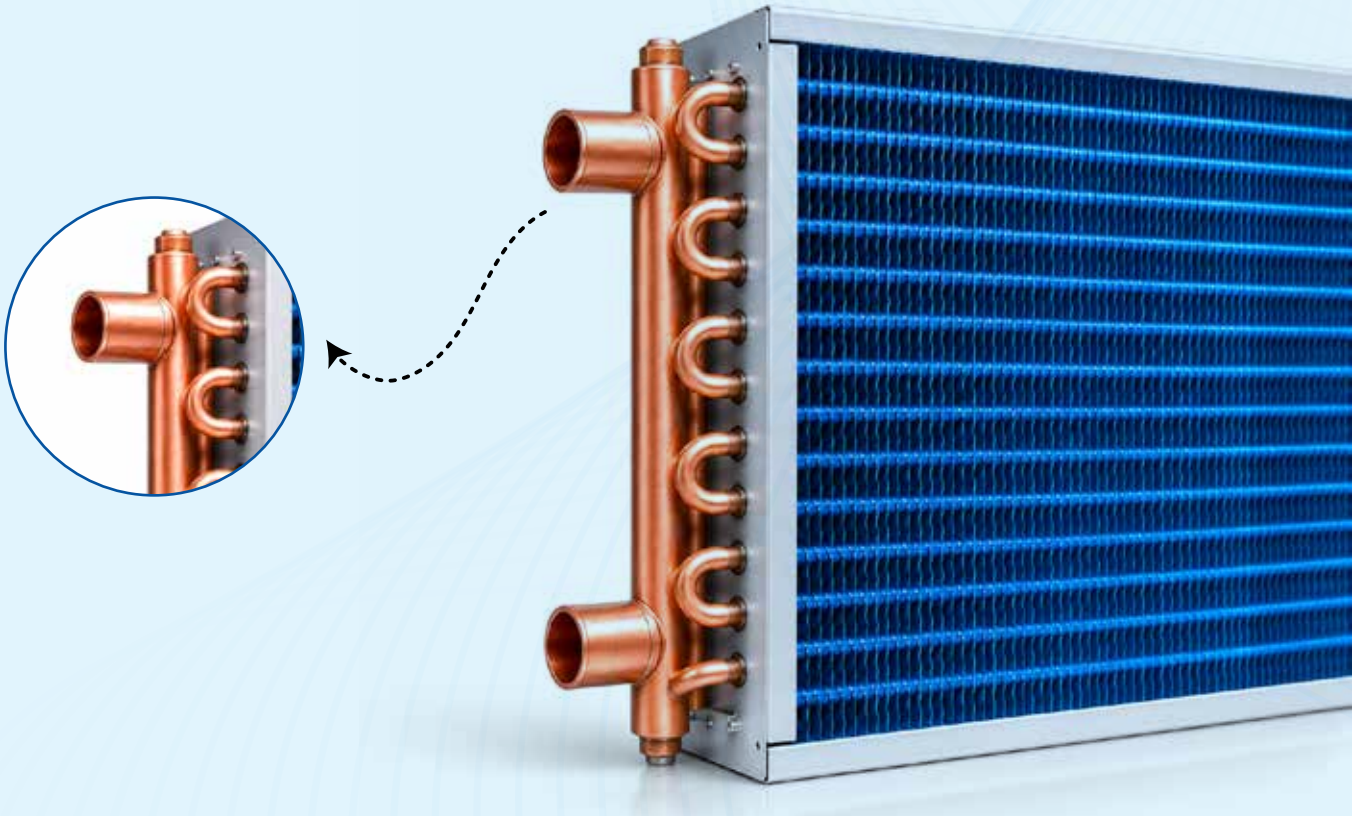


3/8" inner-grooved copper tube.

For the ϕ 9.52 mm platform, the fin geometry is defined around a louvered 24R × 2P pattern, straight-edge trim and an adjustable FPI range.

Geometry	ϕ 9.52*24R*2P (25.4 × 22) mm
Surface	Louver, sine-wave
Hole distance in row	25.4 mm ±0.05
Distance between rows	22 mm ±0.05
Edge trim	Straight edge
Collar height / FPI	FPI 7–14, individual draw adjustment
Fin thickness	0.12 mm · FPI 10–14 · 0.15 mm · FPI 7
Material	A8011 — H24 / H22 / H26 / O; bare & precoated

Two tube platforms. One disciplined approach.
Material, fin geometry, pitch and edge treatment are specified as controllable inputs to the final coil.



PRODUCT APPLICATION

Chilled-water & DX coils.

Chilled-water coils for air-handling units and DX coils for refrigerant-based systems are built on the same two tube platforms, with configurable fin materials and surface treatments.

TUBE

7 mm and 3/8" (9.52 mm) inner-grooved copper platforms.

FINS

Hydrophilic blue, bare aluminum and copper.

DESIGN

Sine-wave ripple, straight edge slit and louver patterns.

HEADERS

Copper-to-copper, or copper combined with a mild-steel adapter — preferably for air-handling units.

AT A GLANCE

- 7 mm tube platform
- 9.52 mm tube platform
- 3 fin material options
- 3 fin surface / edge options

FIN & SURFACE COMBINATIONS

Fin materials — hydrophilic blue, bare aluminum, copper. Surface / edge — sine-wave ripple edge, straight edge, louver pattern. These are configurable per the application on either tube platform.

WHY CHOOSE THESE COILS

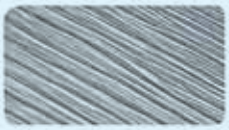
High efficiency · customizable fin · durable materials.

CAPABILITY

The facility can produce 1/2" (and larger) coils for the same chilled-water range by adding a new die and boom for the HP bender and vertical expander.

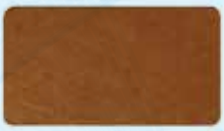
MATERIAL FINISHES (REFERENCE)

Hydrophilic blue


Aluminum bare

Copper

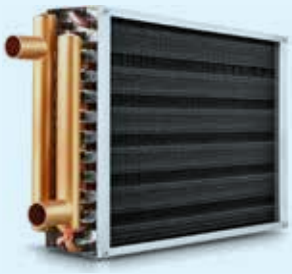
Header


Copper (copper)

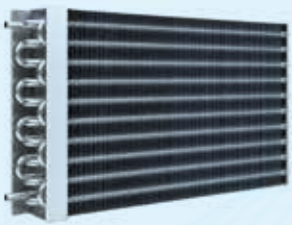
REPRESENTATIVE COILS

Hydrophilic-blue fin

Copper fin

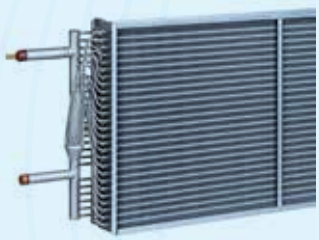

Bare-aluminum fin

Chilled-water builds — hydrophilic blue & bare aluminum


TIN Coating

Heresite Coating

Pre-Coated Blue


Bly Gold Coating

A CONFIGURABLE BUILD LANGUAGE

Choose the material. Tune the geometry.

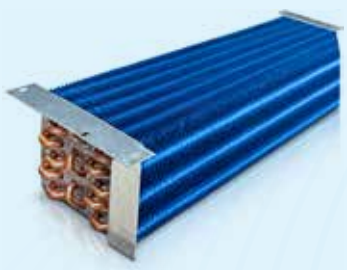
Build element	7 mm platform	9.52 mm platform	R2 application note
Tube	Inner-grooved copper, C12200 / O60	Inner-grooved copper, C12200 / O60	Evaporator / condenser use.
Fin material	Aluminum alloy 8011 family	A8011 family; bare & precoated	Hydrophilic blue, bare aluminum, copper.
Surface / pattern	Louver, sine-wave	Louver, sine-wave	Ripple- and straight-edge also available.
FPI / pitch	FPI 7~ 22 · 21 x 12.7 mm	FPI 7~14 · 25.4 x 22 mm	Individual draw & dial adjustment.
Headers	Copper-to-copper or copper + mild-steel adapter		Preferably for air-handling units.

HEAT EXCHANGER FOR VARIOUS PURPOSE (TRUMPF 1000 SERIES CNC PUNCHING)

- **Define** — translate coil geometry into a controlled end-plate requirement.
- **Punch** — CNC punching for a repeatable profile and hole placement.
- **Assemble** — bring tubes, fins, headers and plates into a coherent coil build.
- **Verify** — inspection and testing facilities support the final assembly.

The Trumpf 1000 series punching machine is used for precision cutting of the various end-plate shapes required for finned-tube heat exchangers, supporting high accuracy and efficiency so each plate meets the specification for the coil build.
Most critical operations are executed in-house — from tooling, fixtures and programming to sheet-metal fabrication, brazing, coil assembly and testing — so the manufacturing system is designed for control and traceability.

DIFFERENT PURPOSE COIL



Specification discipline is the value.
When tube, fin, pitch, material and header decisions are visible, the coil can be discussed, designed and manufactured with fewer assumptions.

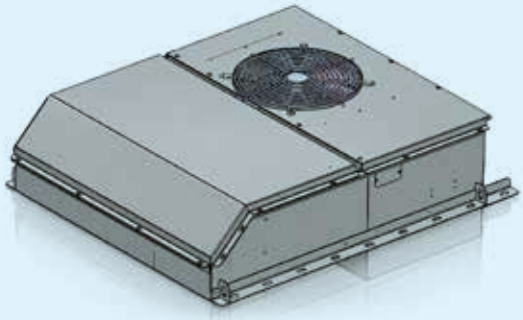
BEYOND THE COIL

Conditioning packaged for the site.

Alongside heat-exchanger coils, the facility builds complete air-conditioning assemblies — roof-mounted packaged units in stainless-steel structure, fan coil units and single-skin air-handling units to specification, with every unit tested in the psychrometric lab.

- **Packaged units** — SS-structure roof-mounted units at 2-ton to 20-ton cooling capacity, all psychrometric-lab validated.
- **Fan coil & AHUs** — fan coil units and single-skin air-handling units built to the required specification.
- **On the roadmap** — smart AHUs are planned as the next addition to the conditioning range.

Roof-mounted packaged units are built in stainless-steel sheet structure at 2-ton to 20-ton cooling capacity, with all testing carried out in the psychrometric lab. Fan coil units and single-skin air-handling units are produced to the required specification. Smart AHUs are noted as a planned future addition to the range.



CAB-RMPU

AHU

LHB-RMPU

Packaged Unit

WHAT IS AVAILABLE NOW, AND WHAT IS PLANNED

Capability grows in defined phases.

Delivery can start immediately after machine installation (Phase 1A); after order receipt, delivery begins in 90 days (Phase 1B). Beyond the base capability, defined expansion options are already scoped.

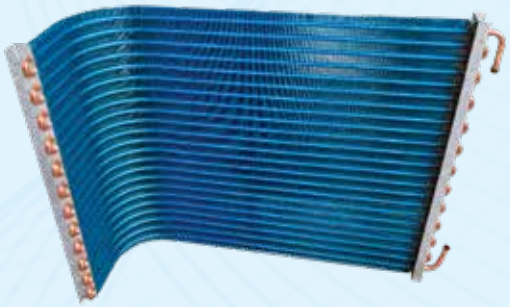
- **Bend condenser · up to 12 T** — adding a bend-condenser machine to the existing setup enables bent condensers up to 12-ton condensing capacity.
- **½ in. chilled-water coils** — a new die and boom for the HP bender & vertical expander extends chilled-water builds to 1/2 in.
- **Domestic split-AC evaporators** — two cutter slots in the existing fin press support split-AC evaporator coils; cutter lead time 60 days.

VERIFICATION & TEST CAPABILITY

QA and reliability labs, psychrometric lab, rain-test facility and electronics lab. Psychrometric capacity is stated as 2 TR to 20 TR, up to 16 kW heating, with airflow of 2,000 to 10,000 CMH.

Chilled Water Hydrophilic Coil

DX – Copper Coil



Bend condenser

Planned means planned.
Phase, lead-time and future-capability statements retain the status language of the source deck and should be confirmed during commercial and engineering review.

SPHERE
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SPHERE THERMAL SYSTEMS PVT. LTD.

Thermal performance, ready for the journey.

Bring the application, geometry and service condition — we can help turn the brief into a clearer engineering conversation for HVAC, rail and industrial coils.

CONTACT:

Sphere Thermal Systems Private Limited
B-22 & 23, Kasna Ecotech-1 Extension, Greater Noida, G.B. Nagar (U.P.) 201306, India
www.spheretherm.com • info@spheretherm.com
+91 11 25710064 • +91 9147998960

SERVICE SUPPORT LOCATIONS (REFERENCE)

RDSO Lucknow • Bhopal • Kolkata • ICF Chennai • Hyderabad • MCF Raebareli · Greater Noida.

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Contact us : +91 7605055505 • +91 9147998963 • +91 9147998813