

**MANUFACTURING TECHNOLOGY**



**KARMYOGI**  
COOLING INDUSTRIES  
KEEPING YOU COOL IS OUR BUSINESS



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**KEEPING YOU COOL IS OUR BUSINESS**



**KARMYOGI COOLING INDUSTRIES** has evolved into a multifaceted engineering organisation offering world-class products, services and solutions spanning several segments. We have been serving chemical industries, food processing & preserving industries, dairy industry, industrial AC plants, oil & gas industries, pharmaceutical industries, utility sector as well as hotels, hospitals, multiplexes, corporate offices and shopping malls.

We provide comprehensive services to our clients, starting from manufacturing and ranging upto supply, installation and commissioning of central AC plants, heating & cooling coils, shell & tube type heat exchangers, oil coolers, AHUs, fan coil units, air filters, air washers, chilling plants and conditioning units. Our products are manufactured under the supervision of experts, employing state of the art technologies and machineries using best quality raw materials. We are able to provide effective solutions that meet the special needs and requirements of our clients within minimum time, with best quality of products and services.

Our professionals are well experienced in their domains and they are working hard to meet the goal of the company. They are the key of our success in the market. In addition to this, transparent manner of dealing with our clients makes us their first choice.

**VISION:**

To be the world leader in heat management by providing high quality products with the best service support and be the most admired company which works as a catalyst in heat transfer solutions.

**MISSION:**

- To continuously improve the quality standards of our products, delivery and services that we offer to our clients and strive for client's delight.
- To deliver the products of sustainable excellence for exceeding client's expectations.
- To produce quality workmanship through attention to detail and innovative solutions.

**WHY US:**

Our design team has been introducing indigenous, innovative & customized solutions in power, petroleum, petrochemical & pharmacy, cement, FMCG, chemical, steel and shipping industries. We understand the pulse of heat transfer equipments. Our products and its development processes are tailor made to meet the industry's requirements. We offer the entire product to our clients in both standard and customized option with any shape, size and services as per various specifications. Our on-time delivery and services along with easy payment modes help us in attaining the maximum satisfaction of our clients.



<b>Type</b>	:	BPHE - Brazed Plate Heat Exchanger GPHE - Gasketed Plate Heat Exchanger Semi Welded Gasketed Plate Heat Exchanger
<b>Capacity</b>	:	1 to 200 TR
<b>Construction</b>	:	Plates—SS-304 / 316
<b>Jointing Method</b>	:	Copper Brazing / Complete SS welding
<b>Option</b>	:	Single or multi circuit
<b>Features</b>	:	Heavy duty designed with suitable material to deliver best efficiency
<b>Application</b>	:	Air Conditioning / Refrigeration / Industrial Heat rejection-absorption



## COILS



### WE MANUFACTURING:

#### Chilled water coil for Air Handling Unit: -

Chilled water coils are tube fin heat exchangers consisting of 2 to 12 rows of imported round seamless tubes. Usually that passes through sheets of formed fins (corrugated or plate type), bonded through tube expansion (1500-1800 PSI). The expansion of the tubes provides a permanent metal to metal bond with fins for efficient heat transfer. Fin collars are fully drawn to provide accurate control of fin spacing and maximum contact with tubes. Fins are available 6 to 14 FPI with seamless die formed collars. Our chilled water coils come with various tubes & fins materials option like copper, cupro-nickel, aluminum and stainless steel to match the performance requirements and level of corrosion resistance needed for different application.

#### Condenser Coils:

Condenser coil is available in a wide range, depending on the specifications of the system and the overall output volume. The refrigerant condenser coils are suitable for use in a wide variety of HVAC air conditioning (condensing) and heat recovery applications. We allow the user to vary coil circuiting (feeds and passes), fin spacing, Shape of coils like L-type, C-type, O-type and materials of construction to design the coil for any refrigerant and set of operating conditions.

#### Evaporator Coils:

DX Evaporator coils are designed to be use in an air side application for cooling, heating, dehumidifying. With wide array of distributors, we're able to provide proper reduction of pressure and temperature to optimize coil performance. Our evaporator coils offer various circuiting capability to design and produce custom evaporator coil as well as OEM replacement Evaporator coil.

#### Split AC's Cooling Coils:

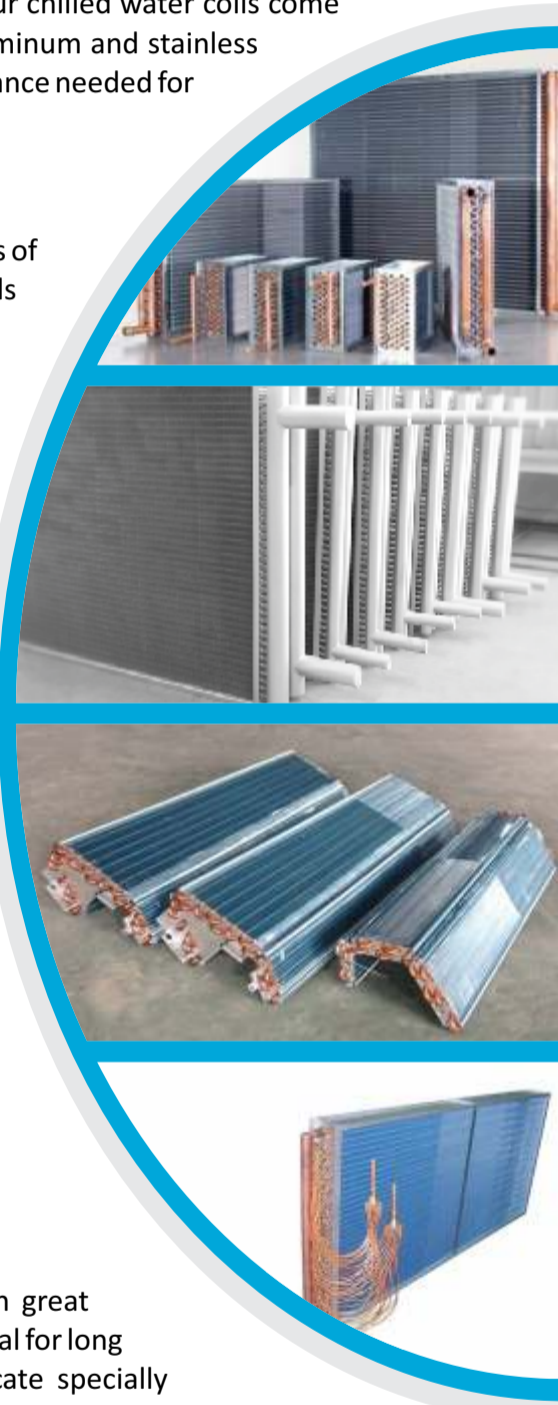
Our clients can avail from us an exclusive Cooling Coil for wall mounted split AC which is constructed by the heavy gauge copper tube have 7mm OD and aluminum fins. These are available in various models and are offered with specific features such as high efficiency airflow structure, multi airflow, minimum noise, optimum performance and innovative designs.

#### Steam Coils:

Our engineers have experience of solving steam coil requirement with great satisfaction of our clients. Proper drainage, trapping and piping are essential for long coil life. We will gladly assist you with such problems and can fabricate specially designed coils for unusual applications or for the replacement of any existing coil.

#### Laundry and dry-cleaning Coils:

Our laundry and dry-cleaning coil are top in the industry. We have a large inventory of replacement coils for laundry and dry-cleaning equipment. Most of our laundry and dry-cleaning coils are ready to be shipped immediately. We can provide exact fit replacement coils or duplicate custom coils.



### Thermal Coils:

Our organization is amongst the renowned manufacturer and exporter of high quality range of Thermal Coils. These industrial heating coils are widely demanded as reliable part of boilers, hydraulic equipment's, thermal products and many others. Our industrial Thermal Coils are able to provide excellent heating capacity for efficient heating functionality. These industrial Thermal Coils are made from annealed copper tubes.

### Jacket Type Coils:

Jacket Type Coil is drainable and easily cleaned by simply removing a single cover plate at each end of the coil. Our engineers have experienced of solving the issues which is create due to scale forming inside the tubes with great satisfaction of the clients by made the jacket type end cover openable coils. This exposes every tube, making it possible to clean each tube, from either end of the coil. These coils are used where periodic mechanical cleaning of the inside of the tubes is required because the unusual presence of sediment or scale - forming chemicals in the water.

### Stainless Steel Cooling/Steam Coils (SS Coils):

Our company is one of the most reliable and trusted companies in the line of work of manufacturing & exporting of the stainless steel cooling/Steam coils. These SS coils are one of the most reliable and efficient quality products which we are providing our clients on a much wider extent in the market. These are designed and fabricated using high grade anti corrosive steel, which will withstand the corrosion and eliminate the leakage from tube to fins and enhance the life of entire coils in different application. These SS are highly demand in the market due to their top grad quality. Our applications expertise will assist to design & produce custom coil as well as OEM replacement by SS Coils that will meet all dimension and performance criterion of the original coil with better pre-long life.

### Custom Coils:

When standard heat exchangers can't meet your heat transfer needs, we provide custom design services to develop solutions that are efficient and affordable. Our engineering team provides expert design, analysis, and verification for custom solutions. Our engineers perform advanced thermal analysis using throughout the prototype process. Our team of experienced thermal engineers and designers choose the various material option as well as design criteria to create heat exchangers specific as our clients' needs. We are also providing our Clients with an exact dimensional replacement of their existing coil, maintaining all the specification of existing one. We specialize in customising exact dimensional replacement coils.

### Cassette Coils:

We are engaged in offering Cassette Coils that are made from copper pipes aluminum fins. With rich industrial experience, we have constructed these coils that have high functional life. Available in cost effective prices, these coils are very useful in for residential OEM air conditioners, dairy industries, Shopping Mall or one off made to fit and custom commercial coils.



## COILS



### Brine Coils:

When an application calls for low temperature cooling and the air side or liquid side temperature is at or below freezing, there is the potential for the coil to freeze, brine solutions are an option. We have become admired among our clients by offering a wide range of Brine Coils. These are constructed using newest technology from the high quality materials as per the set quality norms.

### Booster Coils:

Booster coils are used for zone heating or individual room heating where small hot water or steam coils are required. Our reheat booster coils are designed for air heating application using hot water. We provide a variety of casing, configuration including fully flanged, slip and drive or end plates only.

### Hot Water Coils:

We offer wide ranges of hot water coils are suitable for use in a wide variety of HVAC air heating applications. Leveraging on our knowledge, we manufacture Hot Water Coils for our patrons. These are ideal for use with hot water, glycol solutions and steam. These Metal Coils have thick tube walls, strong brazed joints and continuous circuit tubes with return bends. The manifold pipe headers of these coils are made of steel or non-ferrous material.

### MATERIALS OF CONSTRUCTION

#### Fin Material:

Coils are constructed with plate and zig-zag types fin, die-formed Aluminum, Copper, Cupronickel and Stainless Steel (S.S.) with self spacing collars. Standard aluminum material thickness shall be 0.10 mm to 0.30 mm

#### Copper Tube Material:

Machine bends Copper tubing and return bends are manufactured with seamless copper conforming to ASTM B75 and ASTM B251. Tubes are mechanically expanded to form an interference fit with fin collars. Tube wall thickness between 0.27 mm to 0.70 mm can be used depending upon the customer's specification. Tube OD available are 1/4", 3/8", 1/2", 5/8" in sizes.

#### Manifold:

All manifolds are constructed from seamless copper conforming to ASTM B75.

#### Brazing:

All brazed joints utilize high temperature filler metals. Manifold connections are brazed with filler metal containing at least 5 to 8% silver.

#### Tube Sheet/Casing Material:

Casing and tube sheets are usually manufactured from 16 gauge galvanized steel of 180 to 220 GSM meeting ASTMA527 standards Thickness from 1.0 mm to 3.0 mm can also be used.



## PRODUCT SPECIFICATION

The significant advantage offered by the versatility of our product portfolio is the variety and the flexibility it can offer with regard to fin patterns, types of fin surfaces, coil length and height, the number of rows, fin spacing, fin thickness and the type of tubes.

Tube O.D.	Tube Type	Fin Geometry	Fin Surface	Fin Edge	FPI Range	Row
7 mm	Inner grooved	21 mm x 12.7 mm	Louvered Corrugated sinewave	straight	12 to 20	1 to 6
7 mm	Inner grooved	25 mm x 21.65 mm	Louvered Corrugated sinewave	zigzag	8 to 20	1 to 8
9.52 mm	Inner grooved Smooth	25.4 mm x 22 mm	Louvered Corrugated sinewave	zigzag	4 to 18	1 to 12
12.7 mm	Inner grooved Smooth	31.5 mm x 27.5 mm	Louvered Corrugated sinewave	zigzag	6 to 14 FPI	2 to 12
15.875 mm	Inner grooved Smooth	38.1 mm x 38.1 mm	Louvered Corrugated sinewave	zigzag	10 to 16 FPI	2 to 12

### Coil Leak Testing:

All KYCI coils, whether they are for chilled water coil or DX systems, surpass all standard industries leak test specifications. Every coil must pass each step of the leak test procedure before it receives final approval and ships to client or installed. Using the test data, KYCI is also able to continually improve the manufacturing process to offer the best quality of coils or condensers are available for our clients.



Hydrotest Expansion

Bullet Expansion

Nitrogen Test



## SHELL & TUBE HEAT EXCHANGERS



**Shell and Tube Type Heat Exchangers** are a simple but effective type of heat exchangers consisting of a cylindrical shell which contains a bundle of tubes. In most applications the hot fluid flows over the outside of the tubes and the coolant flows through the tubes exchanging the heat between the thermally conductive materials used in the heat exchanger design. Our Shell & Tube type heat exchangers are widely used for liquid to liquid, liquid to gas and gas to gas applications.

**Heat Exchangers in this category include:**

- Condenser
- Evaporators

Heat exchanger size is calculated to achieve optimum flow regimes in relation to heat transfer, low fouling and scaling. Heat exchanger's materials are carefully selected so as to minimize erosion and wherever possible we try to use materials that are readily available in standard sizes for short lead times and compatibility with further orders and re-builds.

### SHELL AND TUBE TYPE CONDENSER

Our shell & tube type condenser are manufactured and designed using the best technological solutions as per different applications area.

The tube is made of special high-performance Copper, Mild Steel (MS) and Stainless Steel (SS) both internally and externally grooved finned tube (as per requirement) for a low fouling factor with high heat transfer capacity. The offered product is precisely designed in compliance with ASME & TEMA codes.



### SHELL AND TUBE TYPE EVAPORATORS (CHILLER)

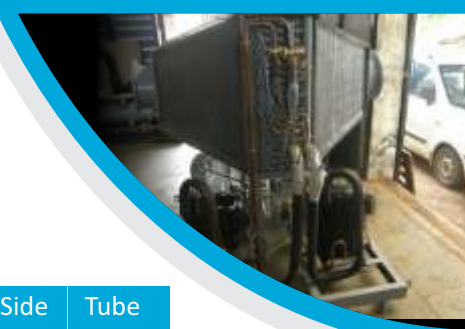
The KARMYOGI COOLING INDUSTRIES's shell and tube type evaporators are very efficient and require minimum floor space and head space. These are easy to maintain, hence they are very widely used in medium to large capacity refrigeration systems.

We offer a premium range of shell and tube type chiller. This has wide applications for comfort / industrial A.C. plants, process water / other fluids chilling plants. These chillers are manufactured by using the latest technology and can withstand high pressure and temperature.

It is further classified into

#### SHELL AND TUBE TYPE

- DX /Dry chiller:** Shell & Tube Direct Expansion Refrigeration Chillers are designed and fabricated under the direct supervision of a team of Engineers well experienced in the line of Heat Transfer Equipment. Every care is taken to ensure a long and trouble free service and the desired performance from the equipment.
- Flooded chiller:** It is also a type of shell and tube chiller where the water runs through the tubes and the refrigerant flows over the outside of the tubes within a closed shell. Mainly in the flooded chiller approximately 50% to 75% of the tubes are immersed in liquid refrigerant and the space above provides an allowance for the vapor generated through evaporation of the liquid below. This type is more often used with screw or centrifugal type compressors.



#### TYPES:

- Fixed Tube Sheet types horizontal Chillers
- Removable "U" Tube type Chillers

#### MATERIAL OF CONSTRUCTION:

Heat Exchangers Category	Shell Material	Tube Material	Baffles	Shell Side BSP	Tube Side BSP	Tube OD
Condenser	MS, CS, SS304, SS316, SS316L	Copper, Cupronickel (70:30/90:10), SS304/316, SS316L, MS, Brass (Seamless, External/Internal Grooved, Extruded, Spiral Wound Fin Tube), Carbon Steel.	MS / CS Brass / SS / PP	MS / CS / SS	MS / CS / SS	¾", ½", 5/8", 3/8"
Evaporators (Chiller)	MS, CS, SS304, SS316, SS316L	Copper, Cupronickel (70:30/90:10), SS304/316, Brass (Seamless, External/Internal Grooved, Extruded, Spiral Wound Fin Tube)	MS / CS Brass / SS / PP	MS / CS / SS	MS / CS / SS	¾", ½", 5/8", 3/8"

## RETUBEING OF SHELL & TUBE TYPE HEAT EXCHANGER



Manufacturing tube bundles and retubing of heat exchanger equipment can be utilised for liquid-to-liquid or steam-to-liquid applications. The bundles can be used for applications including industrial processes and commercial water heating or cooling. In this case with straight tube bundles, we design, manufacture and re-manufacture U-tube bundles for both new and existing applications according to customer requirements.

We can construct any existing bundle to include dimensions, material and performance as same as OEM. We are also able to build U-tube bundles, straight tubes, and "floating" tube sheet bundles. Tubes can be plain, finned (internal or external) with many methods for tube side/shell side enhancement available.

### PROCEDURE OF RETUBEING OF SHELL AND TUBE TYPE HEAT EXCHANGER

- **STEP 1: TUBE CUTTING**  
In existing tube of shell and tube type heat exchanger both side cutting is done with the help of Kraiss make Minicut.
- **STEP 2: TUBE PULLING**  
Cutting of one side of tube is followed by pulling of existing tube using Kraiss make Tube-puller CP-1000.
- **STEP 3: TUBE SHEET REFURBISHMENT**  
Due to corrosive environment and prolonged use, tube sheet of the heat exchanger is corroded. Also dust and junk particles sticks on its surface. So for leak proofing we need refurbishment of tube sheet. We do this with the help of abrasive disc.
- **STEP 4: TUBE ROLLING/ TUBE EXPANDING**  
Tubes are properly inserted in tube sheet. For straight type heat exchanger, they are bonded with tube sheet on both side using Kraiss TES Mini 2 with Motor and Push-pull K50 expander. For U-tube bundle type heat exchanger bonding is done from one side only.
- **STEP 5: TUBE FACING**  
Tubes are levelled with tube sheet by facing them with the help of abrasive disc.
- **STEP 6: LEAK TESTING**  
Bonding of all the tubes is tested by hydro and pneumatic test at 300 PSIG and 350 PSIG respectively.

### MATERIAL OF CONSTRUCTION:

Tube	Tube Sheet	Baffle
Copper, Cupronickel, Brass, Stainless Steel, Mild Steel, Carbon Steel.	Carbon Steel, Mild Steel and Stainless Steel	PP, Mild Steel, Stainless Steel





## OIL COOLERS



Oil coolers are used to maintain the temperature of hydraulic fluid, transmission fluid, engine oils or any other lubricant within its operating limit for smooth running of that equipment.

KARMYOGI COOLING INDUSTRIES manufacture different types of oil coolers which are suitable for varying needs of oil cooling. Our plant is designed to manufacture oil cooler of any size.

### WE MANUFACTURED:

- **Fin-tube Oil Cooler:**

Fin-tube oil cooler is best replacement of Aluminum based fin tube oil cooler. An early design is known for its low oil-side pressure drop, multi-directional fin access and for easy installations. The air fin is mechanically bonded and the tubes are welded together by MAW, Gas or TIG, forming a cross-tube and header design. Flexibility is the significant advantage of this cooler design as it can be adapted to most applications by varying the length, height, fin density and tube diameters.

- **Shell and tube Oil Cooler:**

We hold expertise in manufacturing the shell and tube type oil coolers. Our shell & tube oil coolers and heat exchangers are fabricated using quality raw materials and they are known for its reliable performance and durability. Range of our oil coolers is offered through tailored solutions to serve the requirements of our clients.

### COMPRESSOR COOLER

The process of compression produces energy which is manifested as heat. The heat is removed before or further compression hence the introduction of pre-cooler, inter coolers and after coolers.

KARMYOGI COOLING INDUSTRIES offers high quality compressor cooler which are known for its longer lifespan and solid performance in air compressors. Compressor cooler is considered as the lung of compressor as its cooling effect directly influences the performance and efficiency of air or gas compressors.

- **Pre cooler :** We are one-step ahead of the current market in manufacturing, exporting and supplying the qualitative range of pre-coolers. These are precisely engineered to reduce air temperature under extreme conditions. Our products are claimed for high performance and ensure their adherence with the industry standards.

- **Inter cooler :** Most industrial compressors operating today are a multistage design. To optimize the cost of compressing gases it is popular to use multi-stage industrial compressor. In multi-stage compression process, at each step pressure and temperature of air is increased. So, in further compression stage we need to control temperature of air. Inter cooler suited between the first & second stage of multistage air compressor. The role of the inter cooler is to provide cooled, dryer air to the next stage of compression.

- **After cooler :** After coolers are heat exchangers that remove the heat from compressed air. The most common compressor after coolers use much cooler ambient air or cool water to remove the heat which is also effective in removing moisture from compressed air.



## CHILLING PLANT



### AIR COOLED CHILLING PLANT

- **Compressor:** Reciprocating / Scroll compressor / Semi Hermetic of reputed make.
- **Condenser:** Fin-tube type Condenser having compact design. High pressure cut out is being provided for the safety of plant.
- **Chiller/Evaporator:** Condensed liquid refrigerant is being expanded in DX Chiller through expansion valve. Water is being circulated through Shell Side having baffles arrangement.
- **Capacity:** Customized unit will be manufactured as per the clients' requirement.

### WATER COOLED CHILLING PLANT

- **Compressor:** We are using Reciprocating / Scroll / Semi Hermetic compressor of reputed make.
- **Condenser:** Shell and tube type condenser is made up of different materials as per requirement. Low and High pressure cutout is being provided for the safety of plant.
- **Chiller /Evaporator:** Condensed liquid refrigerant is being expanded in DX Chiller through expansion valve. Water is being circulated through Shell Side having baffles arrangement.
- **Capacity:** Customized unit will be manufactured as per the clients' requirement.

#### Applications:

- Air Conditioning
- Petrochemical Industries
- Solvent Plants
- Dairies
- Pharmaceuticals
- Plastic Industries

### CONDENSING UNIT

KARMYOGI COOLING INDUSTRIES continues to invent the design and development of condensing units for various applications. We offer a complete range of air and water-cooled, indoor and outdoor condensing units for commercial as well as Industrial refrigeration applications.

### AIR COOLED CONDENSING UNIT

- **Unit Cabinet:** Unit cabinet constructed of galvanized steel and coated with an epoxy non-corrosive powder coating.
- **Fans:** External rotor condenser fans direct driven, propeller type, discharging air vertically upward. Fan blades are dynamically balanced.
- **Compressor:** Hermetic/semi hermetically sealed reciprocating or scroll type. Compressor mounted on anti-vibration mounts.
- **Condenser Coil:** Condenser coil shall be air cooled and circuited for integral sub cooler. Standard Condenser Coils are with internally enhanced copper tubes and aluminum fins.
- **Capacity:** 2 TR TO 100 TR

As per clients' requirement Capacity as we manufacture the customized unit.

### WATER COOLED CONDENSING UNIT

- **Condenser:** Shell and tube condensers are externally finned in order to increase its overall Heat Transfer capacity and area. All shell and tube condensers come with MS/SS shell and copper/ss tubes in variable sizes.
- **Compressor:** Hermetic/semi hermetically sealed reciprocating or scroll type or rotary screw compressor. Compressors are mounted on anti-vibration mounts.
- **Capacity:** 2 TR to 100 TR (Customized unit will be manufactured as per the clients' requirement)

#### General:

Factory assembled, single piece, air/water cooled condensing unit with factory wiring, piping, controls, compressor, holding charge and special feature required prior to field start-up.



# FAN COIL UNIT



## UNIT CASING

Top cover material, base material, side panel material, back cover, top cover for plenum, side cover for plenum and plenum box are manufacture powder coated Single Skin Galvanized Steel, Galvanized iron, Stainless Steel. Casing is internally lined with 6mm closed cell elastomeric foam insulation

### Options:

Double skin FCU with Casing made of 0.8mm Galvanized Steel, Galvanized iron with 15 mm puff injected.

## COOLING COIL:

Fabricated from copper tubes hydraulic bonded pressure at 2000 psig with aluminum fins and are leak tested at 350 PSIG nitrogen pressure.

- Copper Pipe Tube OD : 3/8", 1/2"
- Fin Thickness: 0.15 mm
- Fin Pitch: 10-14 FPI
- Fins Type: Zig Zag Pattern with Louvered

## BLOWER:

Fans are forward cured centrifugal type of double inlet, statically and dynamically balanced to ensure quiet operation.

- Type: DIDW Forward cured centrifugal fan
- Material: Galvanized steel

## MOTOR:

- Type: single phase/ three phase capacitor type
- Power- 220-240/50 Hz
- Safety: Flame proof and non-flame proof
- Insulation: B
- PROTECTION GRADE: IP20

## AIR FILTER:

All units are provided with 25 mm Aluminum Mesh filter as a standard option. Filters accessible from rear end of the unit and is easily removable by pulling out from unit frame.

- Filter frame - Aluminum alloy
- Thickness: 25 mm
- EU-2 FILTER GRADE AS PER EN779

## DRAIN TRAY:

They are fabricated from heavy gauge galvanized steel and are insulated to prevent condensation. Powder coated on both side as per RAL 9002.

- Material: Galvanized steel
- Thickness: 0.8 mm
- Insulation material: PE, 3 mm
- Powder coated as per RAL 9002

## STANDARD FEATURES:

- Extra Low Noise Due To Lower Rpm With Larger Dia Fan Wheels
- Statically And Dynamically Balanced Forward Cured Centrifugal
- High Efficiency Coils With Slit Fin Design
- Most Compact Design With Only 251 mm Height Across The Range
- Blue Fin Coated Coils To Withstand Corrosive Climates
- Simple Design With Easy Service Ability

## OPTIONAL FEATURE:

- Back or Bottom Surface Plenum With Filter
- 3 Row/ 4 Row Cooling Coil
- 100 mm or 200 mm Extended Insulated Drain Pan In GI/SS
- External Static Pressure of 0,3,6 and 8 mm of WG



## AIR WASHER



KARMYOGI COOLING INDUSTRIES provides effective air temperature cooling to meet your temperature requirements. These units are available in Single/ Double Modular Draw types, comprising various sections such as spray section, filter sections, fan section, mist eliminator etc. Frame work for each section shall be joined together with soft neoprene gasket to make the joint airtight.

- All fans and motors are carefully selected so as to give maximum efficiency, low noise, less energy consumption.
- Washable type pre-filters with Aluminum frame and HDPE media having efficiency of 90% down to 10 microns are provided in cooling units.

### SINGLE SKIN AIR WASHER:

**Available sizes are:**

1. With Single Blower : Capacity Starts from 3000 CFM to 30000 CFM
2. With Double Blower : Capacity Starts from 15000 CFM to 60000 CFM

### DOUBLE SKIN AIR WASHER:

**Available sizes are:**

1. With Single Blower, Capacity Starts from 3000 CFM to 30000 CFM
2. With Double Blower, Capacity Starts from 15000 CFM to 60000 CFM

FEATURES	SINGLE SKIN	DOUBLE SKIN
Material	16SWG G.I.	18 SWG G.I.
Insulation	N/A	PUF
Tank	M.S.	M.S.
Fan	Forward/Backward Curved	Forward/Backward Curved
Cooling Media	Cellulose Pad	Cellulose Pad
Mounting Arrangement	Floor Mounted/ Ceiling Suspended	Floor Mounted/ Ceiling Suspended



## FILTERS



The basic objective of the Clean Room Air Filtration is to ensure that there is no entry of unwanted particulate matter air into the clean room.

- Pre-Filter (10 micron media)
- Fine Filter (3 & 5-micron media)
- Return Air Riser Filter (10 & 20-micron media)

### PRE & FINE FILTERS

- **Frame:** Aluminum, S.S, G.I. (box Type / Flange Type)
- **Filter-Grade:** G3 To F9 (20  $\mu$  to 1  $\mu$ ) H10 TO H14 (95% to 99.999% @0.3  $\mu$ )
- **Standard Sizes Available:** 610 x 610 x 50 mm /100 mm/150 mm/300 mm  
545 x 545 x 50 mm/100 mm/150 mm/300 mm
- **Product range:** Filters Are Available With Air Handling Capacity In The Range of 170 Cubic Meter Per Hr (100 Cfm) to 3400 Cubic Meter Per Hr. (2000 Cfm) .
- **Filter Media:** Glass Fiber/Spun Bonded polyester media.
- **Adhesive:** Epoxy Based Adhesive for Leak Proof Joint Between Filter Media and Casing.
- **Gasket:** Felt / Natural Rubber / Pre Foam Gaskets as Per Customer Choice for Sealing the Filters on Mounting Frames.
- **Temperature & Humidity:** Operating Temperature: Up To 75°C. Operating Humidity Up To (0%-100% RH) and also Heat Proof
- **Customized Sizes Are Available on Request**

### HEPA FILTERS

These Filters are HEPA filters certified to be a minimum of 99.97%, 99.99% or 99.999% on 0.3 $\mu$ m per Mil. Standard 282. Ultra-seal filters are available in a variety of framing materials, galvanized steel, aluminum, stainless steel, and particle board.

Frame types include DTF (double turned flange), single and double-header, box, groove seal, reverse groove seal, and C-style in metal.

The standard models can be utilized up to 220°F (104°C), and 100% RH. A High Temperature version is available for temperatures up to 500°F (260°C).

### TECHNICAL SPECIFICATIONS

- **Flange Type & Box Type**
- **Sizes Available:** 610 mm x 610 mm x 50 mm/ 100 mm / 150 mm / 300 mm, 545 mm x 545 mm x 50 mm / 100 mm / 150 mm / 300 mm, 545 mm x 545 mm x 50 mm / 100 mm / 150 mm / 300 mm
- **Filtration Rating:** 0.3 Micron & More
- **Frame Material:** SS 304 / GI (Galvanized Steel) / Aluminum.
- **Filtration Efficiency:** 90- 99.9 %
- **Filter Media:** Glass Fiber Media / Spun Bonded Polyester Media.
- **Customized Sizes Are Available on Request**



## AIR HANDLING UNIT (AHU)



Our AHU comes with CFM ranging from 800 CFM to 40000 CFM, static pressure ranging from 40 mmwc to 150 mmwc, imported fan selection – SISW, DIDW, EC & Plug Type. The compact design is maintenance friendly, vibration free & noiseless in operation. Filters & coil selection is done in a manner to attain efficient results. Mixing chambers, humidifiers & specialized aero foil/motorized dampers are available on specific demand.

- Double skin AHU with 40 to 50 mm fiber glass insulation or 25 mm foam insulation with 0.9 to 1 mm G.I. outer & 0.8 mm inner skin.
- Single skin AHU with 25 mm fiber glass insulation or 15 mm thick foam insulation with 0.7 to 0.8 mm G.I. outer & 0.5 mm inner skin
- Ceiling Suspended Ductable Units
- Fresh Air & Exhaust Air Ventilation Units (As Required)
- Treated Fresh Air Unit

### CASING

- In AHU, the assembly includes a frame composed of a specially shaped section of extra-thick GI sheet with high bending strength, due to the pleats in frame.
- The inner rack is manufactured of plain GI sheet, whereas the exterior rack of the same material has a backed on pre enamel coated.
- The space created by the connection of the two racks is filled with an injected CFC Polyurethane foam insulation having 38-40 kg/m<sup>3</sup> to ensure excellent thermal and sound insulation that prevents heat transfer, noise transmission and potential condensation.
- The frame sections are joined by angle cleats manufactured of Die-cast Aluminum.
- Drain pan is made of SS 304 to avoid rusting.

### HINGS AND LOCKS

- The hinges and locks are made of self-extinguishing thermoplastic nylon-filled with glass wool and minerals. Heavy duty Hinges and locks are specially designed to operate at higher pressure.

### FILTER SECTION

We manufacture pre- filters & fine filters of Aluminum, GI & SS materials as per the standards.

- Pre-Filter (Filtration Range- 10 $\mu$ )
- Fine Filter (Filtration Range- 3 $\mu$  to 5 $\mu$ )
- Return Air Riser Filter (Filtration Range- 10 $\mu$  to 20 $\mu$ )
- HEPA Filter (Filtration Range up to 0.3 $\mu$ )

### FAN SECTION

- This part is composed of a double inlet cone centrifugal fan with an anchor bedplate, drive and electric motor or plug-fan.
- Forward-facing impeller blades are used in facilities designed to run with low-pressure air flow. These fans are identified with the AT and ADH codes.
- Backward curved blades designated with RDH code is used for facilities with medium or high pressure air flow.
- The Motor-Fan drive is composed of pulleys and v-belts.

### VIBRATION ISOLATORS

- The entire fan & motor assembly is mounted on specially designed spring/ rubber/ cushy foot vibration isolators to reduce noise and vibration.

### WEATHER PROOF LIGHT / WIRE GUARD / LIMIT SWITCH

- These are safety devices which helps to avoid any accident. Wire guard is provided at door to avoid direct exposure.

