



S A F A R I O
FOR DISTINCT QUALITY & SERVICE



Since 1999, Safario Cooling Factory LLC has been a leading manufacturer of Commercial and Industrial HVAC Coils, chilled water coils, chiller coils, steam coils, Marine coils, immersion coils, refrigeration, condenser & evaporator coils. With excellent Engineering and Designing skills and solutions, we offer outstanding services to our clients and to the market. We have been serving all the major OEM companies, electromechanical contracting companies and Retailers in UAE as well as other GCC countries with quality products at competitive prices. Our technical team is always there to guide and install coils which improve the efficiency of the units whilst reducing power consumption.

Apart from the above Heat Exchangers, we also manufacture Air-Cooled chillers, Shell & Tube Condensers & Evaporators, AHU & FAHU Units, Heat Pipes, Dry Coolers, Make-up air Units, U-Tube Bundles, Plate Heat Exchangers [PHE], Panel coolers etc. Our Quality Assurance Department ensures that each and every coil is tested and approved at every stage of production. Pressure tests are carried out with nitrogen gas to check for leaks. We have qualified/professional field engineers who visit sites to gather technical data to provide the best solution for our clients. We have flexible manufacturing and delivery schedules; this helps us accommodate a client's emergency requests to produce a coil at an early date.

Coil production shop is equipped with latest advanced automated machines imported from reputed machine manufacturers in Europe, Japan, USA, India and Far East. With all the high speed machines, the installed capacity of the shop meets the requirements of the customers, thereby enhancing their satisfaction. The brazing operation of the coils is performed by well trained and qualified personnel. The material for brazing is being imported directly from the renowned suppliers, thereby eliminating the possible cause of leak or failure when the coils are in operation.



COPPER TUBES

- OD 7.93 mm (5/16"): With wall thickness of 0.28 mm smooth as standard
- OD 9.52 mm (3/8"): With wall thickness of 0.30 mm smooth as standard; 0.35 mm smooth or 0.40 / 0.51 mm Inner Groove Tubes are also available
- OD 12.70 mm (1/2") : With wall thickness of 0.38mm smooth as standard; 0.58mm Inner Groove Tubes are also available
- OD 15.87 mm (5/8") : With wall thickness of 0.41 mm smooth as standard
- Steam coils and oil coolers are equipped with 0.71mm copper tubes of 3/8", 1/2" and 5/8" patterns

Tubes have the suitable quality for refrigeration and air conditioning.

BRAZING MATERIAL

The most appropriate brazing material is chosen according to the application area.

HEADER MATERIALS

Unless otherwise stated, steel manifolds are used for dry coolers, water and steam coils. For all other products, copper manifolds are used.

FIN SURFACES

Fin surfaces can be manufactured as 'flat', 'corrugated', 'louvered' or 'pyramid' as per design requirement.

UNILAB COIL SELECTION SOFTWARE

FINS

The available tube arrangements and fin properties used are given in details in the following pages. In addition to 8006 H22 aluminium alloy, copper foils and hydrophobic, hydrophilic foils are used upon request.

CASING

Galvanized Iron, aluminium and stainless steel sheets are used as casework materials. Other appropriate materials can be used upon request.

The screenshot displays the UNILAB COIL SELECTION SOFTWARE interface. It is divided into two main sections: AIR SIDE and TUBES SIDE. The AIR SIDE section includes input fields for Capacity (kW), Airflow (m³/h), Face Velocity (m/s), Inlet Temperature DB (°C), Inlet Relative Humidity, Outlet Temperature DB (°C), Outlet Relative Humidity, Fouling factor (m² K/W), Pressure Drop (Pa), and Fin Pitch (mm (2)). The TUBES SIDE section includes input fields for Fluid (R134a), Flow (kg/h), Evaporating Temp. (°C), Condensing Temp. (°C), Overheating (K), Subcooling (K), Pressure Drop (kPa), Fouling factor (m² K/W), Fluid Velocity [Gas phase] (m/s), Finned Length (mm), and Circuits. The software also displays calculated results for Req. (Required) and Obt. (Obtained) values for Capacity, Airflow, Face Velocity, Inlet Temperature DB, Inlet Relative Humidity, Outlet Temperature DB, Outlet Relative Humidity, Fouling factor, Pressure Drop, and Fin Pitch. The interface includes a sidebar with navigation options like Direct Expansion, Calculation Method, Verify, Design, Geometry, Tube, Fin, Fin Pitch, and Headers. The bottom of the interface has buttons for Calculate, Print, and Close.

AIR SIDE		Req.	Obt.	TUBES SIDE	
Capacity	kW		13.12	Fluid	R134a
Airflow	m³/h		2500	Flow	kg/h
Face Velocity	m/s		2.22	Evaporating Temp.	°C
Inlet Temperature DB	°C		27	Condensing Temp.	°C
Inlet Relative Humidity			50	Overheating	K
Outlet Temperature DB	°C		15.5	Subcooling	K
Outlet Relative Humidity			85.5	Pressure Drop	kPa
Fouling factor	(m² K)/W		0	Fouling factor	(m² K)/W
Pressure Drop	Pa		70	Fluid Velocity [Gas phase]	m/s
No tubes for row			6	Finned Length	mm
Rows			4	Circuits	
Fin Pitch	mm (2)		2.10		
No of Skipped Tubes			0		

DESIGNING

Our R & D department offers state of the art product design and testing facilities. Accurate product performance data is used for the benefit of the customers ensuring the highest level of integrity and quality. Complete coil designing is performed with advanced design software, for the production of extensive range of HVAC coils in response to customer's requirements. Safario has recently procured high level optimized software for the design and development of AHU, Air-Cooled Chiller and Shell and Tube heat exchangers, thereby providing efficient and cost effective heat transfer solutions to the customers.

PRODUCTION FACILITIES

Safario is equipped with advanced manufacturing facilities which lead to high quality finished products. It's commitment to the technological innovation is exemplified by the degree of automation throughout the business. A network of computers connected via custom built software coordinates Engineering, Design, Production and Customer Service activities to ensure the client receives the products well on time. The sheet metal shop is equipped with CNC machines for mass production of complex sheet metal parts. The punching head has a combination of 45 stations and the mode of operations include punching, forming, notching, shearing, louvers, etc.

INSPECTION & QUALITY CONTROL

Safario has stringent quality control procedures for checking quality and controlling parameters at various levels of manufacturing for each unit to ensure a defect free product and achieve a high level of customer satisfaction. The raw material used in the fabrication of products complies with national and international standards. The raw materials are imported from reputed suppliers from Europe and other Far East nations, for better quality and performance.

ENGINEERING

Precision and accuracy of our calculations are provided by a simulation software program by UNILAB, which enables us to provide the most efficient design. The latest version of this software is currently available in our company. Safario specializes in OEM coils in addition to a wide range of other heat exchangers; OEM coils are either designed or directly manufactured upon customer needs and requirements. A large family of fin geometries makes it easier for our customers to get what they exactly need. 5/16", 3/8", 1/2" or 5/8" coils are manufactured for different application areas from Industrial refrigeration sector to special project.





ANTI-CORROSIVE COATING

Heresite {USA}

Different type of coatings is applied depending on application areas and corrosion conditions. Safario is an authorized applicator of Heresite coating in the UAE. Heresite coating is the Anticorrosive coating most conventional in the common market with good quality and economical rates. Heresite Coating extends the life of the coil multiple times, so there is significant economic benefit having Heresite coatings applied to the coils, radiators or other process equipment. For heat transfer equipment, the impact on thermal efficiency is negligible with thin-filmed Heresite coatings; hence no modification (i.e. sizing or other design elements) is necessary. Items coated with Heresite includes: Coils, finned tube coils, Evaporators, Condensers, HVAC / R Units*, RTUS (pre-engineered rooftop unitary systems), Air to Air heat Exchangers, Refrigeration coils, Fans, Blowers, Air Handlers, Duct Work and piping. Due to its Superior bond Strength, and ability to perform in temperature extremes, Heresite protective coatings also used to prevent corrosion of the entire HVAC unit.

Bronz Glow Husky Green {USA}

Bronz Glow Husky Green Spray Coating for HVAC Fin tube and coaxial coils-tough, flexible, will not chip, crack, powder or flake. This tough single component air-dry coating provides surface protection in any harsh environment, even from severe acid fumes, where traditional coil coatings may fail. Formulated around a synthetic resin base, at 0.8 to 1.5 mils dry thickness, provides corrosion protection across the entire pH range (1.0 to 14) and has little effect on the heat transfer. Bronz Glow Sea Coast spray coating Sea Coast Protector is a versatile, single-component elastomeric coating that has been formulated for multiple uses. In addition to providing coastal corrosion protection for condensing coil, it is also confidently applied to metal surfaces such as steel, copper, aluminum and brass.

COATING CHARACTERISTICS:

Solids: (wt) 17%

Tensile: 2,500 psi (ASTM D- 638)

Finish: Semi - Gloss

Shelf Life: 1yr@ 77° F

Elongation: 500% (ASTM D-638)

Durometer: Shore A 70 (ASTM D-2240)

VOC lbs. Per gallon 5.1-5.4

Abrasion: (ASTM D- 3170)

Weather Ability: (ASTM G-53)

Temperature use range:-30° to 220° F

Cut Resistance: Very Good (astm d- 1044)

Salt Spray: 3,000 hrs (ASTM B-117.85)

Field Repairable

Viscosity Range: 55-66 K.V. @ 77 deg.F.

Gas Chromatography Test (FID) No evidence of residual vapors

COLOR : Olive Green

FIN GEOMETRIES

DESCRIPTION	FINS SPACING	TUBE SPACING	ROW SPACING	F P I	TUBE THICKNESS	TUBE EXTERNAL DIA	FIN THICKNESS	FIN MATERIAL	FIN CORRUGATION	TUBE CORRUGATION	MAX. TESTING PRESSURE
3/8" X 0.011"	Staggered	25.4 mm	18.24 mm & 22 mm	6 TO 20	0.28 mm	9.525 mm	0.1 mm, 0.12 mm, 0.13 mm, 0.15mm, 0.17mm	Aluminium,Copper & Hydrophilic	Smooth, Sine Wave Corrugated, Louver	Smooth	350 psi
3/8" X 0.012"	Staggered	25.4 mm	18.24 mm & 22 mm	6 TO 20	0.30 mm	9.525 mm	0.1 mm, 0.12 mm, 0.13 mm, 0.15mm, 0.17mm	Aluminium,Copper & Hydrophilic	Smooth, Sine Wave Corrugated, Louver	Smooth	450 psi
3/8" X 0.014"	Staggered	25.4 mm	18.24 mm & 22 mm	6 TO 20	0.35 mm	9.525 mm	0.1 mm, 0.12 mm, 0.13 mm, 0.15mm, 0.17mm	Aluminium,Copper & Hydrophilic	Smooth, Sine Wave Corrugated, Louver	Smooth	450 psi
3/8" X 0.011" (IGT)	Staggered	25.4 mm	18.24 mm & 22 mm	6 TO 20	0.28 (IGT)	9.525 mm	0.1 mm, 0.12 mm, 0.13 mm, 0.15mm, 0.17mm	Aluminium,Copper & Hydrophilic	Smooth, Sine Wave Corrugated, Louver	Inner Groove	450 psi
3/8" X 0.028"	Staggered	25.4 mm	18.24 mm & 22 mm	6 TO 20	0.71 mm	9.525 mm	0.1 mm, 0.12 mm, 0.13 mm, 0.15mm, 0.17mm	Aluminium,Copper & Hydrophilic	Smooth, Sine Wave Corrugated, Louver	Smooth	450 psi
1/2" X 0.015"	Staggered	31.75 mm	27.5 mm	6 TO 16	0.38 mm	12.7 mm	0.13 mm, 0.15 mm, 0.17 mm	Aluminium,Copper & Hydrophilic	Smooth, Sine Wave Corrugated, Louver	Smooth	450 psi
1/2" X 0.016"	Staggered	31.75 mm	27.5 mm	6 TO 16	0.40 mm	12.7 mm	0.13 mm, 0.15 mm, 0.17 mm	Aluminium,Copper & Hydrophilic	Smooth, Sine Wave Corrugated, Louver	Smooth	450 psi
1/2" X 0.016" (IGT)	Staggered	31.75 mm	27.5 mm	6 TO 16	0.40 mm (IGT)	12.7 mm	0.13 mm, 0.15 mm, 0.17 mm	Aluminium,Copper & Hydrophilic	Smooth, Sine Wave Corrugated, Louver	Inner Groove	450 psi
1/2" X 0.028"	Staggered	31.75 mm	27.5 mm	6 TO 16	0.71 mm	12.7 mm	0.13 mm, 0.15 mm, 0.17 mm	Aluminium,Copper & Hydrophilic	Smooth, Sine Wave Corrugated, Louver	Smooth	450 psi
5/8" x 0.016"	Staggered	38.1 mm	33 mm	8 TO 13	0.40 mm	15.875 mm	0.15 mm	Aluminium,Copper & Hydrophilic	Smooth, Corrugated	Smooth	450 psi
5/8" x 0.018"	Staggered	38.1 mm	33 mm	8 TO 13	0.45 mm	15.875 mm	0.15 mm	Aluminium,Copper & Hydrophilic	Smooth, Corrugated	Smooth	450 psi
5/8" x 0.020"	Staggered	38.1 mm	33 mm	8 TO 13	0.50 mm	15.875 mm	0.15 mm	Aluminium,Copper & Hydrophilic	Smooth, Corrugated	Smooth	450 psi
5/8" x 0.030"	Staggered	38.1 mm	33 mm	8 TO 13	0.76 mm	15.875 mm	0.15 mm	Aluminium,Copper & Hydrophilic	Smooth, Corrugated	Smooth	450 psi

SHELL & TUBES

Shell & Tube heat exchangers are available with tubing dia ranging from 0.375 to 0.875 inches. Shells are made of MS, SS 304, SS 316 and internal tubes - grooved and plain tubes in SS 304, SS316, Copper, Copper Nickel, AluBrass and Titanium to meet specific application requirements.

HEAT PIPE COILS:

Safario Cooling Factory manufactures Heat Pipe Coils as Original Equipment parts for several leading manufacturers of Heat Pipes in Europe and UK for their Heat Pipe Units. Our manufacturing facility and quality have been well accepted by these Companies.

Copper Fin - Plain / Smooth



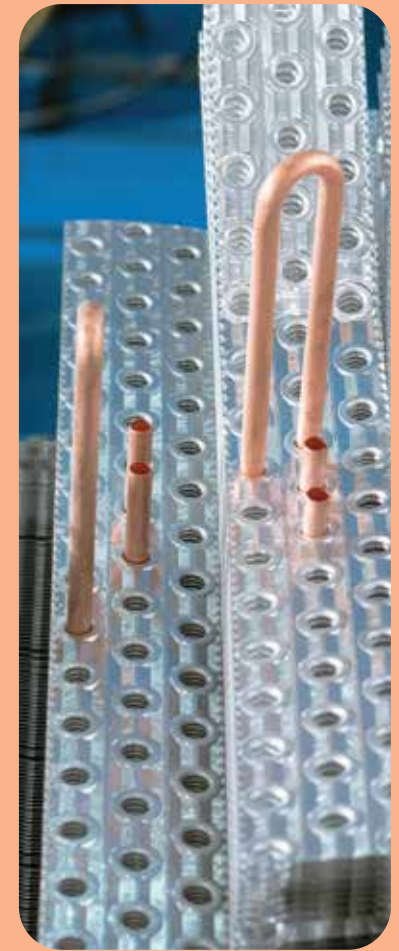
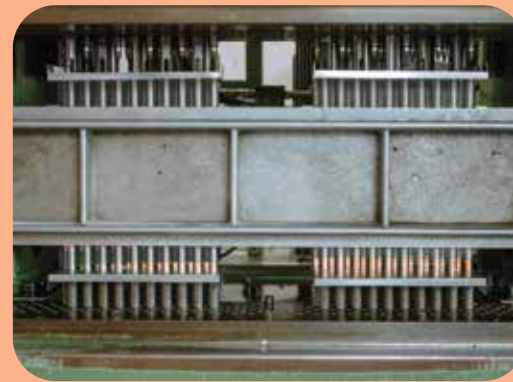
Aluminium Fin - Louvered



Hydrophilic Fin - Plain / Smooth



Aluminium Fin - Corrugated



Aluminium Fin - Sinewave



Copper Fin - Corrugated



Aluminium Fin - Louvered



DX. Type AHU Coil



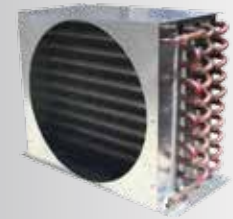
Heat Pipe Coil



Chilled Water AHU Coil



Condenser - Water Cooler



FCU Coil



Heat Pump Coil



Dry Cooler (40 - 50) TON



Condenser - O-bend



Condenser - Chiller



Evaporator - Water Cooler



Condenser C - Bend



Direct Expansion Coil





SAFARIO TRADING CO. LLC

Trading Division of Safario Group of Companies handles distribution of Sapphire brand air conditioner products, which includes window, split, ducted, package type air conditioners, water chillers and all other products related to HVAC. The group offers market expertise, solutions and services in Refrigeration & HVAC field.

SAFARIO AC MAINTENANCE LLC

This division of Safario group of companies takes care of After-Sales-Service. It also undertakes installation and annual maintenance contract of chillers and other HVAC products.

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