FIEC-02/0416

FRICK INDIA
EVAPORATIVE CONDENSERS

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You Still Can't Beat the System When It's All Frick India

Capacity Range
36 TR to 455 TR
@ 28 Deg C Wet Bulb temp.

Introduction

The objective of a mechanical refrigeration system is to remove heat from a space or product, and to reject that heat to the environment in some acceptable manner. Evaporative condensers are used to reject heat from mechanical refrigeration systems. The evaporative condenser is a combination of a water cooled condenser and an air-cooled condenser.

Frick India a leader in Industrial Refrigeration Solution provider is Providing a wide range of Condensers with following operational features :

- Low Power Consumption
- Simple Operation and maintenance
- High System Efficiency
- Environment Friendly
- Fewer Moving parts
- Lower Operating Costs

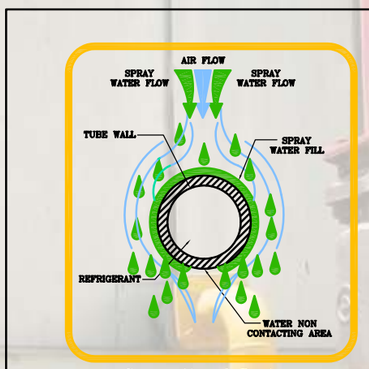
Outstanding Features

Low water usage
No effect of humidity
Compact design saves space
Low civil works

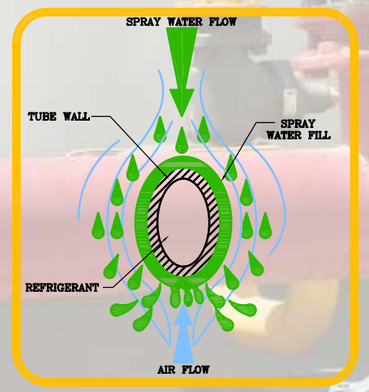
Advanced Design

Reduced Scale Potential & Advanced Design:

- Oval shaped coils have good heat and mass transfer characteristics and reduce the pressure drop.
- Counter flow design is used to reduce the tendency to accumulate fouling and scale on the coils exterior surface and create the turbulence for better heat transfer rate.
- Colder spray water keeps scale forming compounds in solution.
- **NOTE :** Chlorides are react with stainless steel materials at high temperature, so less than 50ppm chloride content of water should be used in SS condenser.



Conventional Design



Advanced Coil & Design Technology

Capacities & Specifications

HOT-DIP-GALVANIZED FRICK EVAPORATIVE CONDENSERS (Ammonia)

Model	Heat Rejection Capacity	Compressor Capacity	Total Air Flow	Fan & Motor			Pump Rating		Make Up Water	Dimension (MM)			Shipping Weight	Operating Weight
	TR @82 °F WBT	TR @82 °F WBT	CFM	Dia	HP	Nos.	GPM (LPS)	HP	GPM (LPS)	L	B	H	Kgs.	Kgs.
HGE-44S	51	36	13500	24"	1.5	2	270(17.03)	2.0	1.4(0.088)	2270	1020	3532	2000	3300
HGE-71M	79	58	18000	24"	2.0	2	270(17.03)	2.0	1.7(0.107)	2830	1020	3722	2750	4300
HGE-103L	116	89	24000	30"	2.0	2	355(22.39)	3.0	2.0(0.126)	3790	930	3723	3600	5500
HGE-138M2	169	120	35000	24"	2.0	4	355(22.39	3.0	2.6(0.164)	2830	1950	3722	4700	7500
HGE-204L2	229	176	46000	30"	2.0	4	585(36.90)	5.0	3.6(0.227)	3790	1770	3723	6000	9500
HGE-304L3	337	267	69000	30"	2.0	6	585(36.90)	5.0	6.0(0.370)	3790	2610	3723	8200	13500
HGE-408L4	455	356	96000	30"	3.0	6	815(51.41)	7.5	8.0(0.504)	3790	3450	3723	11500	18000

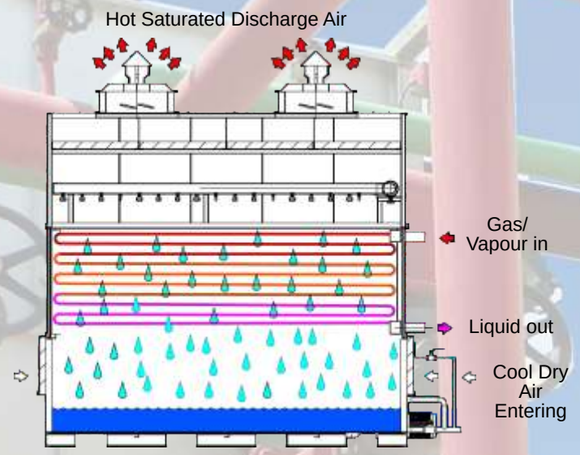
STAINLESS STEEL EVAPORATIVE CONDENSERS (Ammonia)

FSSE-44S	51	36	13500	24"	1.5	2	270 (17.03)	2.0	1.4(0.088)	2210	912	3908	2500	3900
FSSE-71M	79	58	18000	24"	2.0	2	270 (17.03)	2.0	1.7(0.107)	2750	1146	3908	3450	5300
FSSE-103L	116	89	24000	30"	2.0	2	355 (22.39)	3.0	2.0(0.126)	3730	1054	3908	4500	6700
FSSE-138M2	169	120	35000	24"	2.0	4	355 (22.39)	3.0	2.6(0.164)	2750	2202	3908	5750	8850
FSSE-204L2	229	178	46000	30"	2.0	4	585 (36.90)	5.5	3.6(0.227)	3730	2018	3908	7250	10500
FSSE-304L3	337	267	69000	30"	2.0	6	585 (36.90)	5.0	6.0(0.370)	3730	2800	3908	8900	14500
FSSE-408L4	455	356	96000	30"	3.0	6	815 (51.41)	7.5	8.0(0.500)	3730	3800	3908	12000	16500

Condenser heat rejection capacities are based on 38 Deg C condensing temperature and 27.8 Deg C Wet Bulb Temperature.
Condenser compressor capacities are based on 38 Deg C condensing temperature and 27.8 Deg C Wet Bulb temperature for milk plant applications.
Please maintain your log sheet on a daily basis as this will help in evaluating the performance of the plant. Please contact factory for more details.
All specifications are subject to change without notice. Contact factory for R-22 /R-404a/R-410a/R-134a applications.

Principle of Operation

The process fluid is circulated through the coil of the evaporative condenser. Heat from the process fluid is dissipated through the coil tubes to the water cascading downward over the tubes. At the same time, air is drawn in through the air inlet louvers at the base of the cooler and travels upward over the coil opposite the water flow. A small portion of the water is evaporated which removes the heat. The warm moist air is drawn to the top of the closed circuit cooler by the fan and is discharged to the atmosphere. The remaining water falls to the sump of the bottom of the cooler where it is recirculated by the pump up through the water distribution system and back down over the coils.



Maintenance

- EASY ACCESS :
  Removable louvers provide easy accesses to the unit interior to adjust the float valve, clean the strainer and flush the water basin.
- EASY NOZZLE REMOVAL SYSTEM :
  Water distribution branch removal system that requires no tools.
- Removable coil casing panels allow for visual inspection and cleaning of the coil.
- FAN MOTORS :
  Direct Drive TEFC motors are mounted above the unit and this arrangement provides easy access to the motor. Additional motor protector saves motor from rain water.
- Units are assembled in fan section, coil section and tank sections, so easily accesses to the maintenance.
- Optionally ladders and platforms are available to provide access for water distribution system inspection and maintenance.
- Cleaning of spray system can be done without removing spray heads.

Few Moving Parts
Less maintenance is an inherent benefit of Frick Evaporative condensers as there is a minimum number of moving parts.

Broad Range of Unit Capacities

Frick Evaporative Condensers are available in a nominal capacity range of 36 to 455 TR for single unit. Modular constructions are available for higher capacities. The Condensers are specially designed to meet fluctuating and seasonal loads. They are used with all common refrigerants, for normally wet operation or dry operation at low ambient temperature. They can be applied to any new or existing system.

Advantages of Stainless Steel Evaporative Condensers

- Stainless Steel Tube Size : 19.05 mm and 22.225 mm
- Easy Access for Components for reduced Maintenance hours and costs.
- Exceptional resistance to white rust and corrosive elements.
- Highly efficient direct-drive fan for lower energy consumption, increases reliability
- Effective Life Span double that of conventional evaporative condensers.
- Significantly reduces annual operating costs.
- Up-to 70% saving in total life-cycle costs.
- Lifetime Costs savings.

Design Highlights

- Coils designed for low pressure drops and good refrigeration drainage
- Coils are Spray Galvanized / hot dip galvanized after assembly.
- Sprinkler system of inside / outside PVC pipes
- Two step 360 Deg Sprary System
- Brass float valve to control tank water level
- Additional water connection for compressor cooling
- Vertical space saver design if required

FRICK INDIA EVAPORATIVE CONDENSERS

Few Moving Parts :

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Fan Section:

The condensers use heavy duty cast Aluminum axial flow fans directly driven by motors with IP 55 protection. The fans are designed to run at low rpm to reduce wear & noise.

Casing :

Heavy duty Galvanized plain sheet (coated with 275 gsm) as a standard and stainless steel casing as a optional.

Air Inlet Louvers :

Air Inlet Louvers are provided with anti corrosive material of SS 304/ PVC and easy removal for cleaning. It is designed to eliminate splash out, dirt, sun light and greatly reducing the potential for a algae formation inside the condensers.

Water pan section :

The entire pan assembly is zinc spray metalized after fabrication. Also available in fibre coated steel for extra long durability.

Water Circulating Pump

Water Circulating Pump is provided in its high quality materials and long service life for trouble free circulation of water.

Drift Eliminators

The multiple break design eliminators provide very efficient removal of water droplets & mist from the air stream.

The eliminators are constructed of non corroding PVC material for maximum protection.

Trouble-free water distribution system

- Spray nozzle pattern ensures proper water spray In 360 Deg and it covers all places.
- 360 Deg spray nozzles has large orifice, non-clag and require less maintenance.
- Branches for spray nozzles are too less.
- Due to evenly distribution of water with high velocity scale formation has been reduced during operating condition.

Condensing coils :

Condensing coils are constructed using heavy duty, oval in design, it has good heat and mass transfer characteristics. The coils are hot-dip galvanized after fabrication to give extra protection against corrosion. We use sloped tubes for free drainage of fluids.

For additional corrosion resistance, the following options are available at extra costs :-

- Stainless steel cold water basin of series 300 is provided.
- Steel panels, structural elements are considered of series 300 stainless steel.
- A cost effective alternative to all stainless steel construction, all components that are exposed to the re-circulation water are provided in stainless steel and remaining components in galvanized steel.
- Coils are available in series 300 stainless steel for specialized application.