



Tropicoool!
e-Novations & Cooling Systems

Tropicool e-Novations & Cooling Systems one of the fastest growing & leading manufacturer of industrial climate control technologies. We are India's first CE certified company for manufacturing industrial cooling systems :

| | | | |
|-----------------------------|-----------------|------------------------|------------------|
| Panel Air-conditioner | Spindle Chiller | Coolant Chiller | Dehumidifier |
| Air to Air Heat Exchanger | Water Chiller | Refrigerated Air Dryer | Dust Collector |
| Rack Type Panel AC/Split AC | Oil Chiller | Mist Collectoer | Special Projects |

Company Strategy

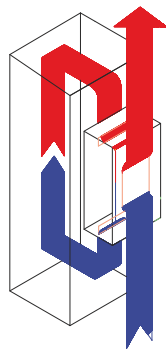
Purpose : To be a leader in climate control technologies by manufacturing enhanced products to improve human comfort, safeguard and protect our environment.

Vision : To provide quality services that exceeds the expectations of our esteemed customers.

Mission statement : To build long term relationships with our customers and clients and provide exceptional customer services by pursuing business through innovation and advanced technology.

Core values : We believe in treating our customers with respect and faith, we grow through creativity, invention and innovation. We integrate honesty, integrity and business ethics into all aspects of our business functioning.

Goals : Regional expansion in the field of industrial climate control technologies and develop a strong base of key customers and OEMs. Increase the assets and investments of the company to support the development of services. To build good reputation in the field of industrial climate control technologies and become a key player in the industry.



Tropicool Compact Panel Air Conditioner

Features

- ❑ Slim design for internal / external / partial mounting arrangement
- ❑ Digital display with potential free contact controller for temperature and alarm
- ❑ Separate condenser and evaporator fan for better energy saving
- ❑ External and internal circuit protection with IP 44& IP56 respectively
- ❑ High performance versus to price ratio
- ❑ CFC free, eco-friendly refrigerant - R134a
- ❑ Outer filter of superior quality, quick & easy change of integrated filter mat

Application Area

- | | |
|--------------------------------|-------------------------------------|
| ❑ Machine tool manufacturing | ❑ Iron and steel mill equipments |
| ❑ Mechanical engineering | ❑ Printing and paper technology |
| ❑ System and plant engineering | ❑ Office and information technology |
| ❑ Automotive industry | ❑ Food and packaging machinery |
| ❑ Handling systems | ❑ Textile machinery |
| ❑ Welding technology | |
| ❑ Wood processing Machines | |

Highlights

- ❑ Cooling output from 250 Watts to 9000 Watts
- ❑ Global product with optimum design
- ❑ Easy & less maintenance gives cost effective solution
- ❑ Maximum operating temperature of 50 degrees
- ❑ Internal circuit IP54 protection
- ❑ Complete solution of cooling with enclosures. One-stop-shop service networks

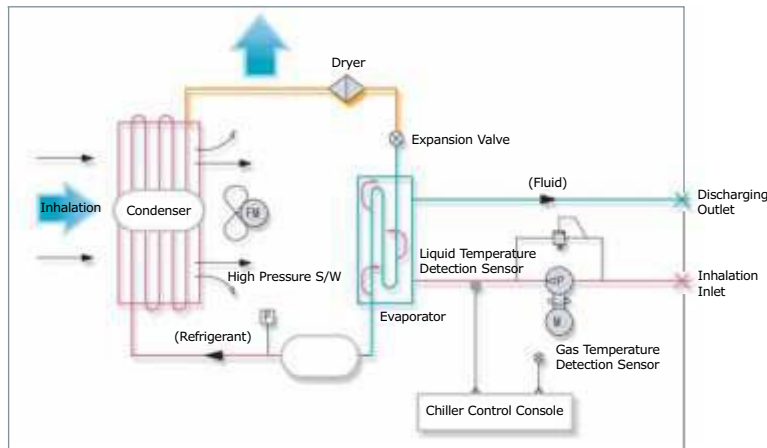
Technical Specification for Tropical Compact Air Conditioner

| Model No TRP | | TRP 250 | TRP 500 | TRP 1000 | TRP 1600 | TRP 2000 | TRP 2700 |
|--------------------------------|------------------|------------------------|-------------|-------------|-------------|--------------|--------------|
| Rated operating voltage | | 230V, 50 Hz | 230V, 50 Hz | 230V, 50 Hz | 230V, 50 Hz | 230V, 50 Hz | 230V, 50 Hz |
| Dimensions (WxHxD)mm | | 700x300x250 | 700x300x250 | 700x380x280 | 700x380x280 | 1100x380x280 | 1100x380x280 |
| Useful cooling output | | 300 W | 600 W | 1000 W | 1600 W | 2000 W | 2700 W |
| Rated current | | 1.5 A | 2.1 A | 4.0 A | 4.0 A | 4.0 A | 4.6 A |
| Start-up current | | 3.0 A | 10.0 A | 12.0 A | 12.0 A | 12.0 A | 22.0 A |
| Refrigerant / Charge | | R134a | R134a | R134a | R134a | R134a | R134a |
| Permissible operating pressure | | 27 Bar | 27 Bar | 27 Bar | 27 Bar | 27 Bar | 27 Bar |
| Operating Temperature range | | 20°C~50°C | 20°C~50°C | 20°C~50°C | 20°C~50°C | 20°C~50°C | 20°C~50°C |
| Setting Temperature range | | 20°C~45°C | 20°C~45°C | 20°C~45°C | 20°C~45°C | 20°C~45°C | 20°C~45°C |
| Industrial Protection Category | Internal Circuit | IP44 | IP44 | IP44 | IP44 | IP44 | IP44 |
| | External Circuit | IP56 | IP56 | IP56 | IP56 | IP56 | IP56 |
| Weight | | 14 Kg | 23 Kg | 33 Kg | 39 Kg | 42 Kg | 50 Kg |
| Temperature Control | Digital Display | Factory Setting + 27°C | | | | | |
| Color | | RAL 9016 | RAL 9016 | RAL 9016 | RAL 9016 | RAL 9016 | RAL 9016 |

*Specifications may change without prior information

Tropicool Fluid Chiller

Description of Cooling Cycle



High accuracy temperature control oil chiller



Special Features

- ❑ Environmentally-friendly refrigerant.
- ❑ Durability & stability achieved Applying 3 Phase Rotary Compressor to over all models
- ❑ High accuracy control achieved (0.5), on/off control
- ❑ LCD Digital Controller Mounted
- ❑ Compact size allowing the installation of integrated machine tool type
- ❑ Embodying low-noise system by applying low-noise pump exclusive for oil cooler
- ❑ Supporting the function to be indicated in English- Easy maintenance and control
- ❑ Responding to user requested items through a large model
- ❑ lineup, various product development and design capability

Refrigeration cycle : It is divided into compression process, condensation process, expansion process and evaporation process. Compressor, condenser, expansion valve and evaporator exist at each process.

Compressor : It increases pressure by compressing refrigerant vapor to allow the refrigerant vapor (low temperature, low pressure, gas) to evaporate from the evaporator for it to easily condense. The refrigerant cycles inside the cooling device, through repeated evaporation and condensation processes, delivers heat from low temperature to high temperature.

Condenser : It is a heat exchanger that cools and liquefies refrigerant vapor (high temperature, high pressure, gas) that obtains cycling power from the compressor. High temperature refrigerant exchanges heat with air through the fan and refrigerant with high temperature, high pressure and gaseous state is condensed to medium temperature and high pressure liquid state by passing through the condenser.

Expansion Valve : It controls refrigerant fluid flow during cooling cycle and lowers pressure and temperature to facilitate heat absorbing process through fluid evaporation by supplying refrigerant fluid to the evaporator. At the same time, it controls and supplies the adequate refrigerant fluid flow by responding to a change in refrigeration load.

Evaporator : As a heat exchanger that performs cooling process at the cooling device, it is a device that makes low temperature and low pressure refrigerant fluid supplied to the evaporator exchange heat with cooling target material (oil, water or cutting fluid). Refrigerant fluid required in cooling is supplied through the expansion valve and evaporated vapor is supplied to the compressor.

Through the repetition of this cycle, the fluid inhaled to the chiller and discharged is maintained and managed at a temperature that a user desires.

Description of chiller model symbols



1 Unit Type

- OC : Oil chiller (for cooling the main spindle & lubricant, hydraulic fluid)
- WC : Water chiller (for cooling high frequency main spindle & semiconductor equipment, medical apparatus)
- CC : Coolant chiller (for cooling the cutting fluid used in cutting & grinding)

2 Division of capacity

- 030 : 700/900kcal/HR - 050 : 1,500/1,700kcal/HR
- 075 : 2,500/2700kcal/HR - 110 : 3,500/3,700kcal/HR
- 150 : 4,800/5,300kcal/HR - 220 : 7,200/7,500kcal/HR

3 Temperature Control Method

- A: Body temperature synchronized control (analog method)
- D : Fixed (setting) temperature control (digital method)
- L : LCD Digital Temperature Control

4 P

- Cycle pump attachment type

5 H

- Heater attachment type

6 T

- Sub tank attachment type

7 Heat Exchanger Type

- S : Direct submerging type
- No marking : Evaporator built-in type

8 Attachment Type

- C : Roller attachment type
- Non-specified: BOLT Assembly Type (See Drawing)

9 Option

- 1 : Sub tank level check function
- 2 : Chiller cycle pump pressure detection function
- 3 : Discharged fluid flow rate control function
- 4 : Special voltage specification (380/440[Vac])
- 5 : Customer requested exterior dimension
- 6 : Length of temperature detection sensor

Key application Examples

Application field

Factory machine: machining center, CNC lathe, grinder, dedicated machine tool and NC electrical discharge machine

Industrial machine: molding machine, press

Application examples in machine tool

Water chiller (PFWC)

Heat displacement minimization
Temperature management of built-in high speed



Oil chiller(PFOC)

Fluid temperature management of gear box
Spindle
- Heat displacement minimization
- Heat displacement inhibition



Cutting fluid chiller (PFCC)

Cutting fluid temperature management
Processing material processing rate management



Fluid pressure hydraulic fluid (PFOC)

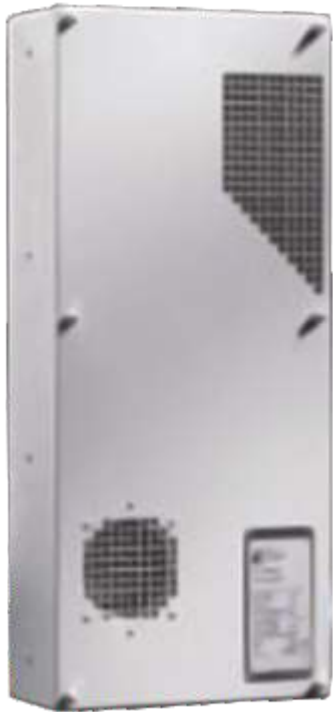
- Fire prevention of hydraulic fluid
- Stable operation of hydraulic system



Technical Data - Oil / Coolant / Water Chiller

| Classification | | Unit | TRPOC030 | TRPOC050 | TRPOC075 | TRPOC110 | TRPOC150 | TRPOC220 | TRPOC300 | TRPOC500 | TRPOC750 | TRPOC1000 | |
|--|--------------|---------|--|-----------|-----------|-----------|-----------|-------------------|-------------|----------|----------|-----------|--|
| | | kcal/Hr | 800/900 | 1500/1700 | 2500/2700 | 3500/3700 | 4900/5300 | 7200/7500 | 10000/10500 | 15000 | 26250 | 35000 | |
| Compressor | | kW | 0.3 | 0.5 | 0.75 | 1.1 | 1.5 | 2.2 | 3.0 | 6.0 | 9.0 | 12.0 | |
| | Pump | kW | 0.2 | 0.2 | 0.4 | 0.75 | 0.75 | 0.75 | 1.0 | 1.0 | 1.0 | 1.0 | |
| | Fan | kW | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | |
| Pump discharged fluid flow rate | | | As per requirement | | | | | | | | | | |
| Temperature control method | Synchronized | | -9.9 ~ +9.9 | | | | | | | | | | |
| | Fixed | | 5 ~ 50 | | | | | | | | | | |
| Temperature range used (inlet fluid temperature) | | | 5 ~ 50 | | | | | | | | | | |
| Voltage specification | | Vac | 3 Phase 415[Vac] 50[Hz] Contact our company for special voltage specifications | | | | | | | | | | |
| Refrigerant | | | R 407 / R-22 / R134a / R-32 | | | | | | | | | | |
| Viscosity of oil used | | cSt | 2 ~ 200 | | | | | | | | | | |
| Pipe standard | Inlet/Outlet | inch | Rc 1/2" / Rc 3/4" | | | | | Rc 1" / Rc 1 1/2" | | | | | |
| Exterior dimension | WxHxD | mm | Refer to the exterior diagram | | | | | | | | | | |
| Oil tank capacity | | | As per requirement | | | | | | | | | | |
| Weight | | kg | 65 | 65 | 80 | 90 | 100 | 100 | 100 | 150 | 170 | 220 | |
| Safety protection mechanism | | | High Low pressure detector, excess current detector for motor protection, circuit breaker, reverse phase detector, thermal for compressor protection *Level S/W *Flow S/W *Specifications may change without prior information | | | | | | | | | | |

Air/air heat exchangers



The process of heat exchange is simple: air temperatures within an enclosure are modified by actions from the outside. Air/water heat exchange is simple, effective and efficient. With the aid of cooling water, the air inside an enclosure can be cooled to below the level of the ambient temperature. Air/air heat exchangers are for environments where ambient air temperature is at or below the desired interior temperature of the enclosure. And, as closed systems, no external dust or contaminants penetrate the enclosure.

Air-to-Air Heat Exchanger highlights...

- ❑ Two separate air circuits prevent dust and pollutants in ambient air from entering an enclosure interior
- ❑ Mounts to enclosures' exterior wall

| Dimensions H x W x D in (mm) | Specific Thermal Capacity |
|-----------------------------------|------------------------------|
| 22 x 11 x 6 (550 x 280 x 150) | 17.5 W/C |
| 37 x 16 x 8 (950 x 400 x 205) | 30 W/C |
| 37 x 16 x 9 (950 x 400 x 225) | 45 W/C |
| | 60 W/C |
| 62 x 16 x 9 (1580 x 400 x 215) | 90 W/C |
| 14 x 23 x 17 (362 x 595 x 440) | 66 W/C |

Applications

- ❑ CNC Machine Tools, Drive Panels, PLC Panels, Instrument Panels
- ❑ CPU / Server Enclosures
- ❑ Telecom Equipment
- ❑ Medical Electronic Equipment
- ❑ Process Control Equipment
- ❑ Robotics
- ❑ Gas Analyzer Equipment
- ❑ Crane / Material Handling Equipment
- ❑ Any panel housing sensitive electronic components

Refrigerated Air Dryers



The importance of dry air in Machines and systems:

Excellent operational performance with high quality productivity and increased machine reliability are probably the three most requested attributes that modern machinery and systems using pneumatic components must meet today. However, water contained in compressed air systems (CAS) is the leading enemy in achieving this goal. When water forms in a CAS, not only does it reduce the overall working life of the machine, it also affects the reliability of its pneumatic equipment. By installing a good quality air dryer in your CAS it effectively removes the build-up of water bringing improved performance and productivity.

Standard Specifications (Stocked models)

| Operating Range | | | Power supply voltage | Power consumption (W) | Air port connections | Refrigerant | Weight (kg) | Nominal Air Flow Rate [m ³ /h(ANR)] | | |
|--------------------------|----------------------------|--|----------------------------|-----------------------|----------------------|-------------|-------------|--|----------------|-----------------|
| Inlet air pressure (bar) | Inlet air temperature (°C) | Ambient temperature (°C) | | | | | | -4,- (3°C PDP) | -5,- (7°C PDP) | -6,- (10°C PDP) |
| 1.5 to 10 | 5 to 50 | 2 to 40 (Relative humidity of 85% or less) | Single phase 230 VAC 50 Hz | 180 | Rc 3/8 | R134a (HFC) | 18 | 12 | 15 | 17 |
| 1.5 to 16 | | | | | Rc 1/2 | | 22 | 24 | 31 | 34 |
| | | | | Rc 3/4 | 23 | | 36 | 46 | 50 | |
| | | | | | 27 | | 65 | 83 | 91 | |
| | | | | 28 | 80 | | 101 | 112 | | |
| | | | | 46 | 120 | | 152 | 168 | | |
| | | | | R407C (HFC) | R1 | 54 | 182 | 231 | 254 | |
| | | | | | R1 1/2 | 62 | 273 | 347 | 382 | |
| | | | | | R2 | 100 | 390 | 432 | 510 | |
| 116 | | | | | | 660 | 720 | 822 | | |
| 1.5 to 10 | 5 to 60 | 2 to 40 (Relative humidity of 85% or less) | Three phase 400 VAC | R2 | R407C (HFC) | 245 | 860 | 1040 | 1230 | |
| 2700 | | | | R2 1/2 | | 270 | 1100 | 1320 | 1550 | |
| | | | | DIN flange 80 | | 350 | 1340 | 1690 | 1920 | |



Mist Collectors & Dust Collectors

Industrial air filters for oil mists, fumes, nasty smells, dust and metal shavings for machine tools and industry. Tropicool suction systems differ depending on the specific needs of the single machine tools: centrifugal aspirators, static filters assembled to the machine, high flow-rate units or centralised systems for the abatement of whatever polluting mix. To satisfy all requirements effectively, all of our air filters are modular type and can be matched with a wide range of pre- and post-filter units.

Energy and oil savings

Efficiency in manufacturing processes

Easy installation and maintenance

Compact and modular

Available in 4 models of centrifugal air filters, covers throughput ranges from 600 to 3300 m³/h. Thanks to patented and innovative technology, the **ZERO MIST** series, with interchangeable rotors turbine single centrifuge and double centrifuge, provides maximum performance at moderate costs. Horizontal and vertical installation possible. Expandable system with our pre-and post-filters, for removal of many kinds of pollutant at its source, eliminating oil mists and micro-mists, smokes, vapours and unpleasant odours. Wide range of accessories.

Dust Collectores

ZERO DUST is a filtration module specific for filtering air containing dry dust and smokes deriving from dry machining, welding processes, plasma and laser cutting. The filtration module enables the extraction of industrial dusts and non combustible smokes in areas with potentially non-explosive atmospheres.

ZERO DUST is a cartridge-system filtration module which may be used individually or connected in a centralised system, to purify air. The structure consists of 3 main parts: a compartment containing the filter cartridges; a soundproof box with fan; a dust collection tray.



DEHUMIDIFIER

A dehumidifier is generally a household appliance which reduces the level of humidity in the air, usually for health or comfort reasons, or to eliminate musty odor. Large dehumidifiers are also used in commercial buildings such as indoor ice rinks to control the humidity level.

Applications:

- ❑ Production & Preservation for pharmaceutical, food and chemical industry.
- ❑ Manufacturing & Wrapping processes of chocolates, candies, chewing gums and toffees.
- ❑ Keeping crops, tea leaves mushrooms, lumbers & fishes in humidity free environment.
- ❑ Protecting the quality of electronic parts, high exposure films during storage.
- ❑ Aviation
- ❑ Space
- ❑ Defense equipment

Benefits:

- ❑ Corrosion Prevention
- ❑ Condensation Prevention
- ❑ Mold/Fungus Prevention
- ❑ Moisture Regain Prevention
- ❑ Product Drying
- ❑ Dry Cooling



Sump Sucker



The Yellow Bellied Sump Sucker™ will clean virtually any machine tool sump quickly and thoroughly. During the process of cleaning the machine, the sump cleaner also:

- Removes the coolant, sludge and chips from the sump

Filters the sludge and chips from the coolant

Returns the filtered coolant to the sump, or transports the coolant to waste treatment for disposal or to a Master Chemical XYBEX® Recycling System

The Yellow Bellied Sump Sucker is fast! In a typical example, a cylindrical grinder sump with 120 U.S. gallons (454 liters) of coolant and 700 pounds (318 kilograms) of sludge was completely cleaned, the coolant filtered, and returned to the sump in ten minutes.

Features:

- ❑ Capacities from 65 U.S. gallons (246 liters) to 1,000 U.S. gallons (3780 liters)
- ❑ Single or twin compartment configuration
- ❑ Push around, tow around, or truck mounted units available
- ❑ 3.5 ft3 (.095m3) or 5.3 ft3 (.14m3) holding capacity sludge basket
- ❑ Air, 110V single phase, 3-phase electric, or LP gas power sources
- ❑ Complete with hoses and cleaning tools

SCROUNGER® OILSKIMMERS



effective in removing oil from coolants and washing solutions

Tramp oil has long been recognized as a major source of problems associated with water miscible cutting and grinding fluids. Tramp oil contributes to the growth and formation of:

- ❑ coolant destroying bacteria
- ❑ undesirable residues on machine tools and workpieces
- ❑ smoke and oil mist in shop atmospheres

The results of these problems are:

- ❑ shortened coolant life
- ❑ poor material removal rates
- ❑ poor surface finish and size control
- ❑ decreased tool and wheel life

Features :

- ❑ 115 volt, single phase, 50/60 Hz
- ❑ heavy-duty, impedance-protected fan-cooled drive motor with a hardened shaft and needle bearings (220 volt, single phase, 50 Hz available also)
- ❑ open, accessible oil collecting tray with a convenient drain connector
- ❑ 'oil loving' Oleophilic Belt (purchased separately)
- ❑ heavy-duty steel construction, with industrialgrade enamel paint

Sales & Application Support



Service Support



Raut Group of Companies ...

1. Tropicool e-Novations & Cooling Systems
2. Walia Edge Tech
3. SMK Turnkey Solutions Pvt Ltd
4. Universal Technologies



Decide with Confidence

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