OPTA-PERIPH

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User:	**AIR CONDITIONER ATEX CE II 3G**		
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: AIR CONDITIONER ATEX CE II 3G
Model SAR VAC 15000

TECHNICAL BROCHURE

HVAC ATEX Zones 1 and 2

for analyser shelters

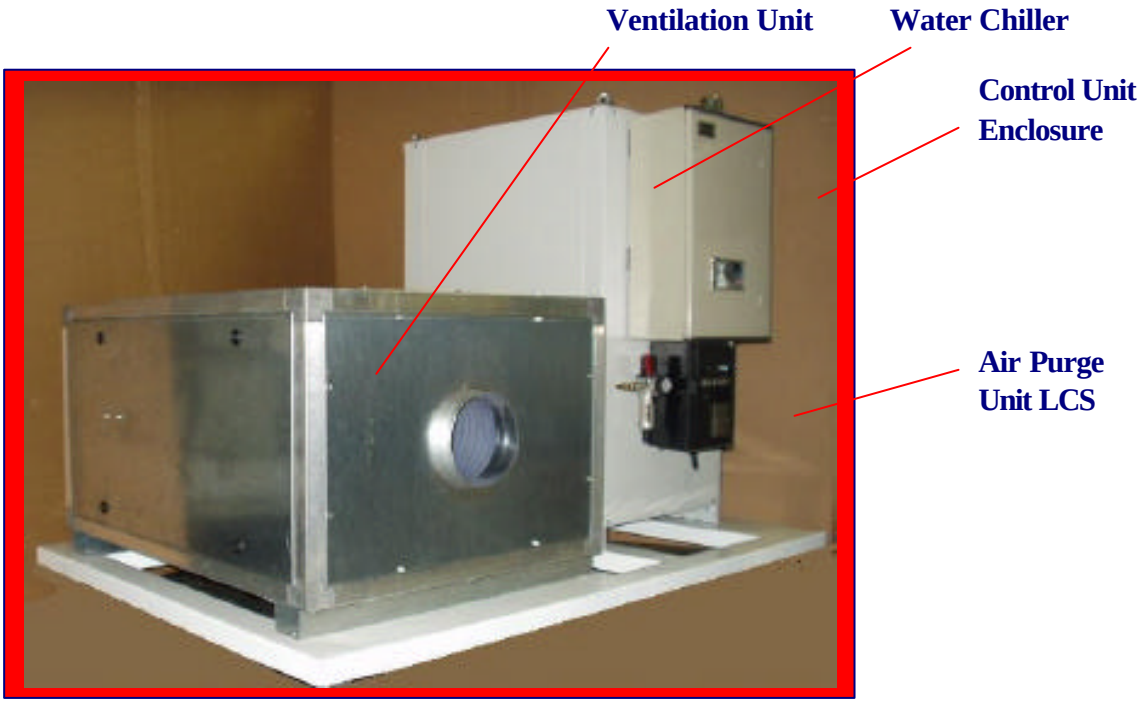
1-PRESENTATION:

Refinery analyser shelters HVAC are typically zone 2 classified for the chiller/heater with ventilation system classification for zone 1 as in case of LEL detection ventilation system is kept running.
Main part of ventilation systems are unable to control a 2.5 mmWG minimum pressure indoor and a water chiller is often required as addition for sample cooling or analyser utility.
The SAR VAC 15000 is a split system involving the ventilation unit / water-air exchanger model AEIB HCAS 740-4-0.37 LG and the recirculating water chiller model SAR 15000 AS 300F 3G.

This system has been designed to comply with the following specifications:
-Effective air conditioner cooling/heating capacity: 15 Kw (51 000 Btu/hr).
-Chilled water supply: 10°C - 3 bars
-Ventilation: 1 000 m3/h - static pressure: 15 mm WG
-A motor speed variator is proposed as option for adjustement of the ventilation flowrate to the required site experimental value.

Classification:

Recirculating water chiller: CE EEx II 3G IIC T4 (ATEX Zone 2)
Ventilation unit:CE EEx II 2G IIC T4 (ATEX Zone 1) or CE EEx II 3G IIC T4 (ATEX Zone 2)



2- MATERIAL DESCRIPIVE:

Recirculating water chiller model SAR AS 300F 3G has been designed for Cooling output of 15 000 W
This system certified CE Ex II 3G IIC T4 (ATEX Zone 2) integrates ATEX II 2 G EExd IIB T4 fan condenser; ATEX II 2G EExp IIB T4 control unit air purging; ATEX II 2 G EExd IIB high pressure alarm switch; pneumatic water pump ATEX 94/9/EC and hermetically sealed compressor.

Ventilation unit / water-air exchanger model AEIB HCAS 740-4-0.37 LG: consists of motor direct drive blower and water/air heat exchanger. The cooling is operated by the 1 000 m3/h ventilation flow rate.
Blower is realised in galvanized steel; exchanger in copper with aluminium fins anti-corrosion coated and enclosure in galvanized steel; condensates collector is in stainless steel
This system certified CE Ex II 2G IIC T4 (ATEX Zone 1) integrates ATEX II 2 G EExd IIB T4 motor blower and high temperature alarm switch

3-TECHNICAL SPECIFICATIONS:

3-1 Recirculating water chiller

Model:: SAR 15000 AS 300F 3G
Cooling output: 15 300 W / 13.16 Kcal(@ 10°C water set point and 32°C ambient)
Electrical consumption power : 5.3 kW
Max. current : 14.1 / 66.3 A
Electrical supply: : 380 V -3 Ph- 50 Hz
Temperature controller : Electronic with digital read-out
Compressor type : hermetically sealed
Coolant : R407
Air condenser cooler : on top
Water pump : pneumatic
Water flow : up to 3.80 m3/h
Maximum water output pressure : 2.6 barg
Water tank : 60 l.
Enclosure size : 615 (W) x 1265 (H) x 1160 (D) mm
Materials: condenser / evaporator: copper anti-corrosion coated; enclosure: carbon steel painted grey RAL 7032; water tank: stainless steel

3-2 : Ventilation unit / water-air exchanger model AEIB HCAS 740-4-0.37 LG

Water air exchanger: BSC 25 EC
Exchange area: 15.5 m2
Cooling power: 15 000 W at 8°C water inlet and 13°C air outlet
Water flow: 2.79 m3/H
Temperature air inlet / relative humidity: 40°C / 50% RH
Temperature air outlet / relative humidity: 18.4°C / 96,9% RH
Blower flow: 1 000 m3/h at 150 Pa
Pressure drop on water: 41 Pa
Pressure drop on air: 3,6 mm CE (35.3 Pa)
Air velocity: 1,37 m/s
Water exchanger capacity: 7,25 l
Condensates collector: stainless steel
Water condensate rate: 0,000577 kg/s
Tube Tube: copper anti-corrosion coated: 12,7 x 0,405
Fins BG 1232Q1 Aluminium
Blower: HCAS 740
Turbine: galvanized steel
Motor 0,37 kW- 4 poles-3 Ph 380V-50 Hz
Enclosure : galvanized steel

4-FUNCTIONALITY:

Material features the following main functions:

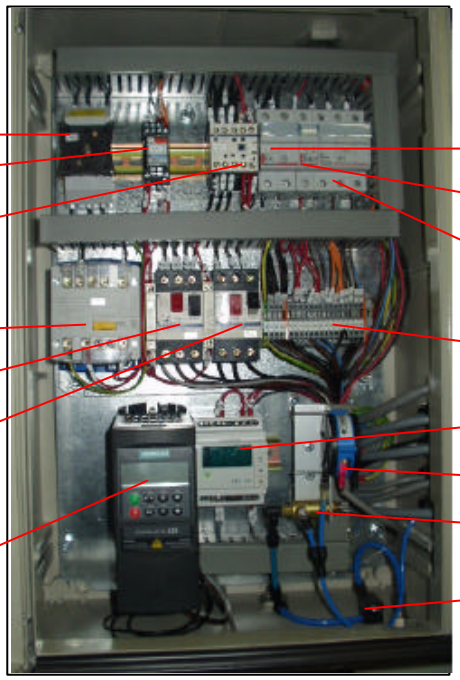
4-1 Recirculating water chiller

4-1-1: Compressor monoblock ref TAG 4528Y:

Power: 400-440 V /50-60 Hz
Expension device: Capillary/Expension valve
Cooling: forced
Windings resistances at 20°C: phase N° 1,2,3 : 4.3 Ohms
Current: rated current RLA : 4.3 /5.1
Max current: 14 A
Start current LRA 66 A
Compressor is delivered with oil sight glass and crankcase heater

4-1-2: Control unit enclosure :

The control unit enclosure with air purge unit LCS box content the following components:



Control Unit enclosure

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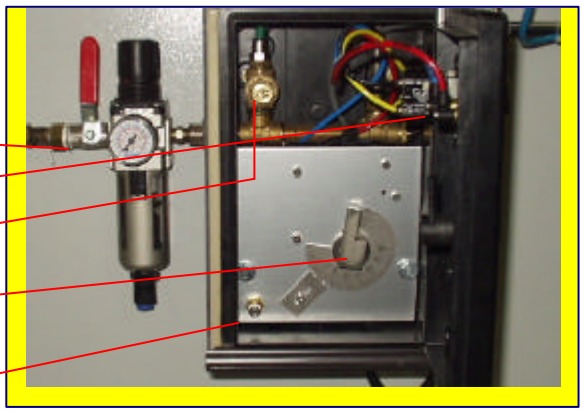

Air purge unit LCS

1- General air valve:
To be turned ON before of start-up

2-General ON/OFF (pneumatic switch): on air purge unit front door:
For the general system start-up this switch is pushed ON for supplying the instrument air to the purging unit. At the end of the purging sequence (refer to annex) the 24 VAC transformer for control powering is energized and this control power supplies the relay of the breaker in the power supply control box, switching ON the compressor, chiller and ventilation unit blowers.
As the ventilation unit features a thermoswitch , this contact NC is connected in serial with the power breaker relay for general switch -off in case of over-heating in ventilation enclosure.

3- Electrical control block unit:
Referring to the upper part of control unit enclosure and drawing Power Supply pages 1 and 2 this unit involves the switching and protection of the compressor, chiller and ventilation unit blowers.

4- Ventilation.air blower motor speed variator: optional
Purpose of this unit is to trim the ventilation air blower motor speed in order to control the ventilated air flow at the value required by application.

5- Pneumatic pump flowrate set valve:
The air pressure has been adjusted at 4 bar-g corresponding to a flowrate of 1800 L/H of water.

4-1-2: Power supply junction box:

This explosion proof box certified ATEX IIGD EEx d IIC T5/6 involves the main power supply terminal 380 V 50 Hz - 3Ph- 5.3 KW for 3 conductors 2.5 mm2 + ground.

4-1-3: Air purge unit monitor LCS:

LCS System protects, by applying an internal over pressure inside of the Control Unit enclosure in which are installed the electrical components. LCS System incorporates a pneumatic logic assembly unit generating the different required functions of purging , leakage flow and pressurisation and the final function to switch ON the electrical power to the enclosure when these standard procedure has been correctly and fully operated.

For this small volume enclosure purging flow is maintained to low value (typically 4200 SL/H).

4-1-4: High pressure switch on coolant:

This component, the model Georgin FP62RX is certified ATEX II 2G EExd IIC T6.

4-1-5: Condenser blower:

This component, model AEIB EVXPIIB3554P is certified ATEX II 2G EExd IIC T6.

4-1-6: Water pneumatic pump:

The pump model WILDEN PIPPPPPWF is air supplied at 4 bar-g pressure for processing the brine flow at the rate of 1,12 m3/H required by the ventilation unit exchanger, higher flow can be adjusted if required by user for sample cooling or analysers utilities.

4-2:Ventilation unit / water-air exchanger

Ventilation unit / water-air exchanger model AEIB HCAS 740-4-0.37 LG: consists of motor direct drive blower and water/air heat exchanger. The cooling is operated by the 1 000 m3/h ventilation flow rate.
The ventilation motor is powered and protected by the electrical power block unit in the control unit enclosure .
A thermoswitch has been provided inside of enclosure to check that ambient temperature of air never exceeds 40°C , in case of detection the general power relay is switched-off as described in previous para.
Operator has to clean all deposits of dust if the inside is too dirty
On tank condensates, one high water level detector has be provided, this is a pneumatic bubble flow device located in the control unit enclosure and the low pressure switch associated is connected in serial with the power breaker relay for general switch -off