

-5°C
+55°C

Instrument Air Packages engineered for the desert and high temperature environements

Oil free and oil injected compressors and heatless dryers





THE DETAILS MAKE THE DIFFERENCE

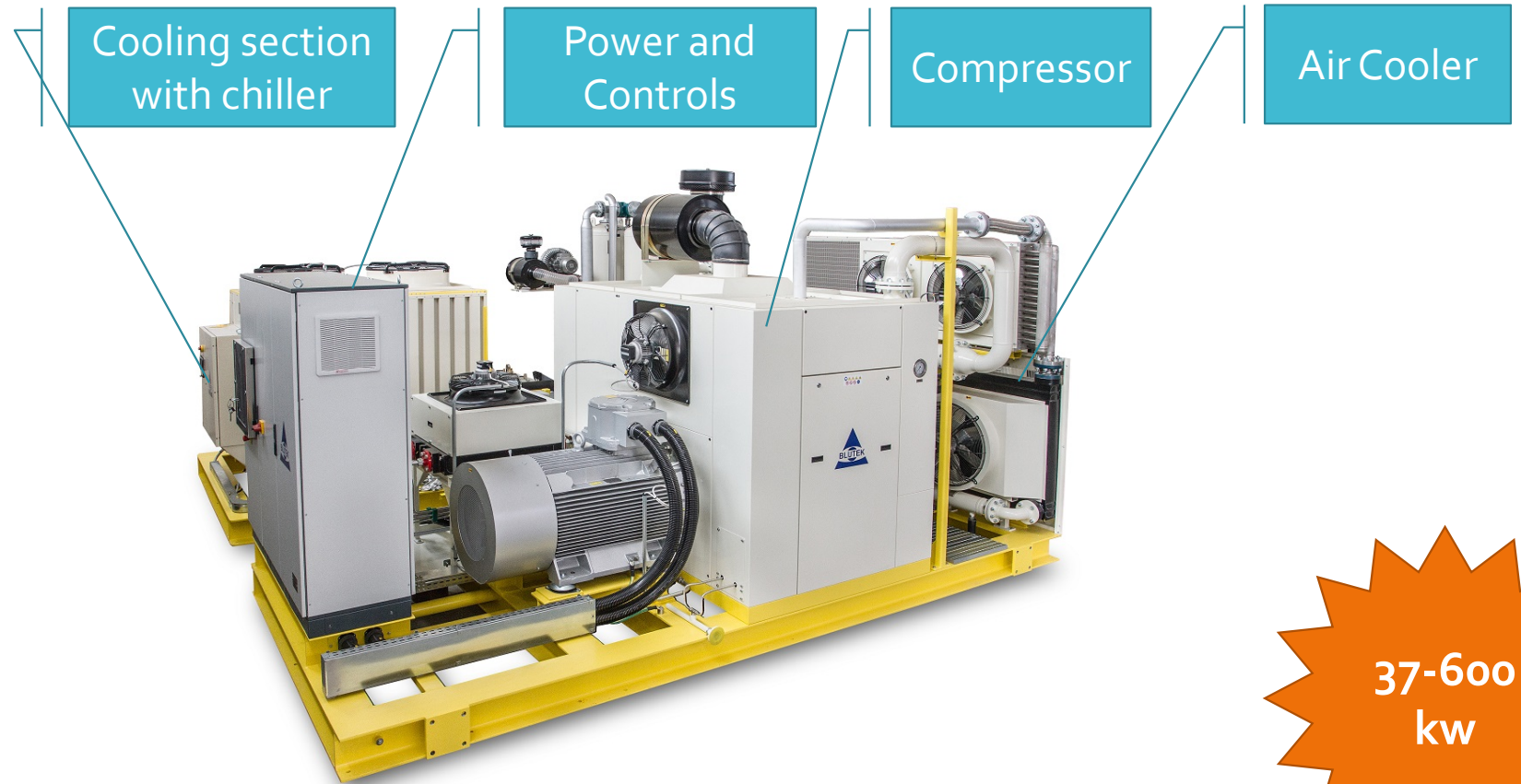


DESIGNED FOR THE LOCATION

COMPRESSOR AND DRYER LAYOUT



The compressor is designed to run continuously despite the location's harsh conditions, the operation of the product and the maintenance requirements



37-600
kw

STANDARD 3-SECTION LAYOUT OF AN OIL-FREE COMPRESSOR WITH MIXED COOLING. ADAPTED TO MEET THE INSTALLATION REQUIREMENTS AND PROJECT SPECIFICATIONS.



The instrument air packages are also engineered on a single skid for ease of installation and control

Compressor 1

Dryer and filters 1/2

Compressor 2

Power and Controls

ON SITE 50°C!



37-132 kw

STANDARD LAYOUT ASSEMBLED ON A SINGLE SKID WITH COMPRESSORS, DRYERS, FILTERS POWER AND CONTROL. ADAPTED TO MEET THE INSTALLATION REQUIREMENTS AND PROJECT SPECIFICATIONS.



Dryer designed for use with max. water intake and max. input temperature with spare dryer parts fully available



60-8000 Nm³/h

STANDARD DRYER LAYOUT WITH 3 SECTIONS .



COMPONENT STANDARDISATION

FOR EASE OF MAINTENANCE AND REDUCTION IN THE
NUMBER OF EXPENSIVE WAREHOUSE PARTS



Instruments suitable for use in process systems with the same models for both compressor and dryer





Standard PLC components for compressor and dryer Rockwell micro logic 850 and Control Logix 5000 are used on the packages. SIL₂, SIL₃ certification are available

Standard layout of Rockwell Micro Logic 850 PLC with communication port and expansion cards



Standard layout of Rockwell Control Logix 5000 redundant PLC, SIL₂, with communication port and expansion cards



COMPLIANCE WITH INTERNATIONAL RULES

SAFETY FIRST

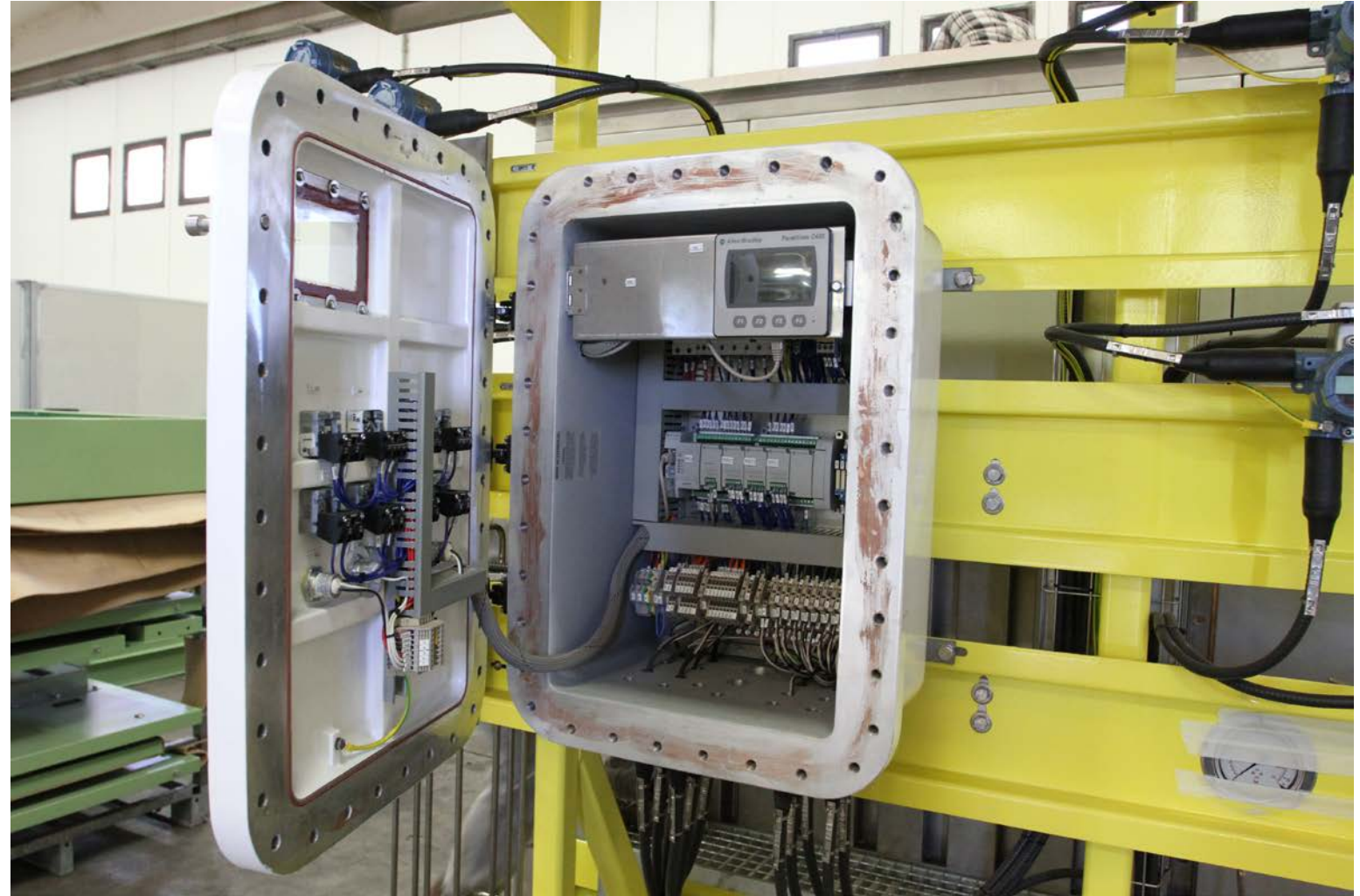


When required,
the compressor
motor and fan-
cooling motor
are certified for
ATEX zone 1 and
zone 2 or for
Class 1 Div.1





When required,
the control panel
is certified for
Atex Zone 1 and
Zone 2 or Class 1
Div. 1 using an
explosion-proof
or pressurized
box



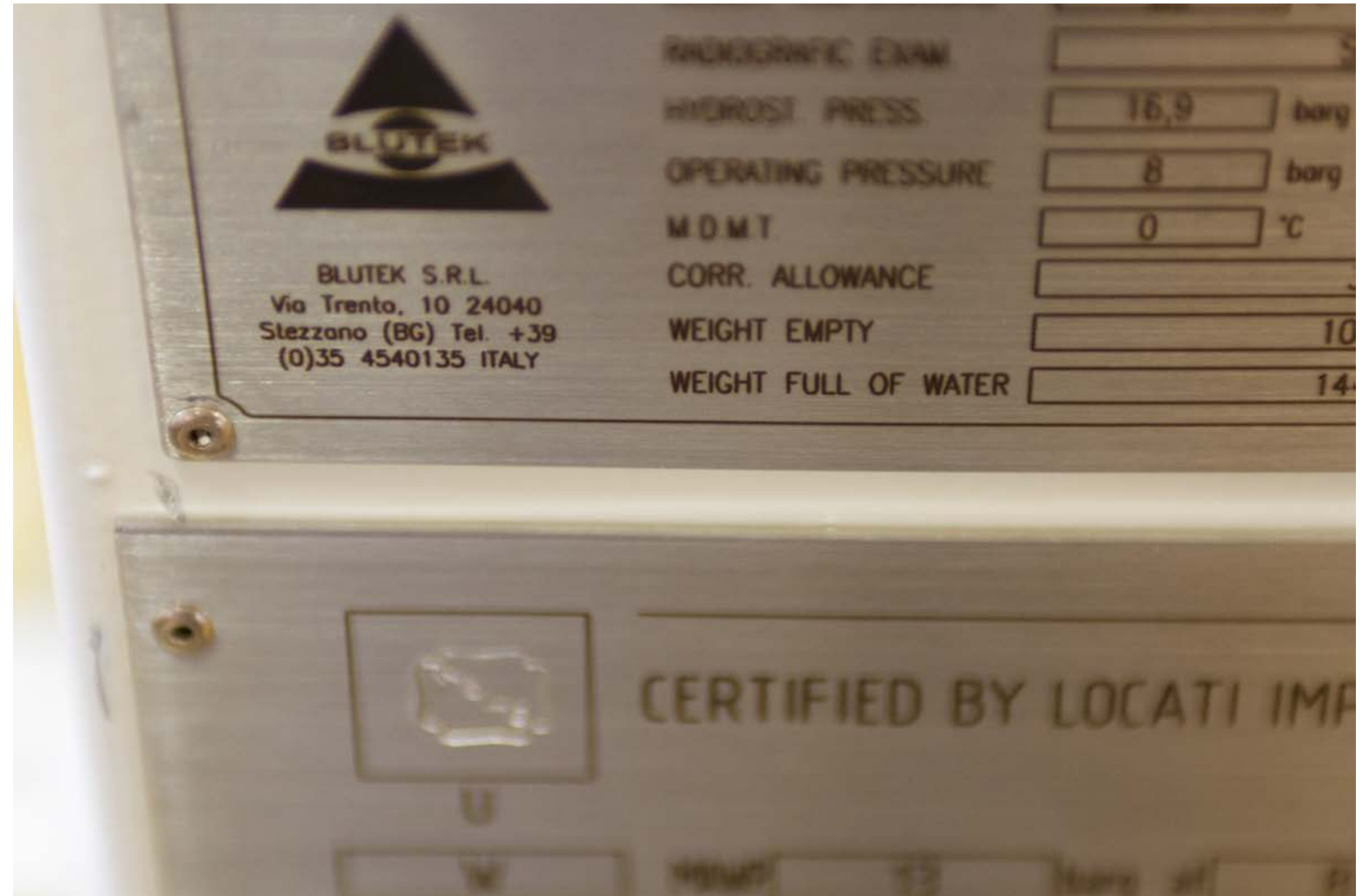


Solenoid valve
certified for
ATEX Zone 1,
Zone 2 or
Class 1 Div.1





All pressure vessels comply with ASME VIII div. 1 and U stamped, PED97/23 CE, ARH, SELO, DOSH.





Safety valve
sized as per
API520 and
manufactured
as per API526





ENGINEERING DETAIL

AIR FILTRATION TECHNOLOGY , COOLING SYSTEM
MECHANICS AND MATERIALS



A major issue with desert installation, particularly with the oil-injected screw compressor, is the filtration of the air intake. Blutek has developed its own Reverse Pulse Jet intake filter with a sand collection drum to improve efficiency of filtration and the lifespan of the element



Intake pipe from filter to compressor

Sand trap for cleaning the cooling air

Intake with bird screen and water sealer

Intake filter

Sand collection drum

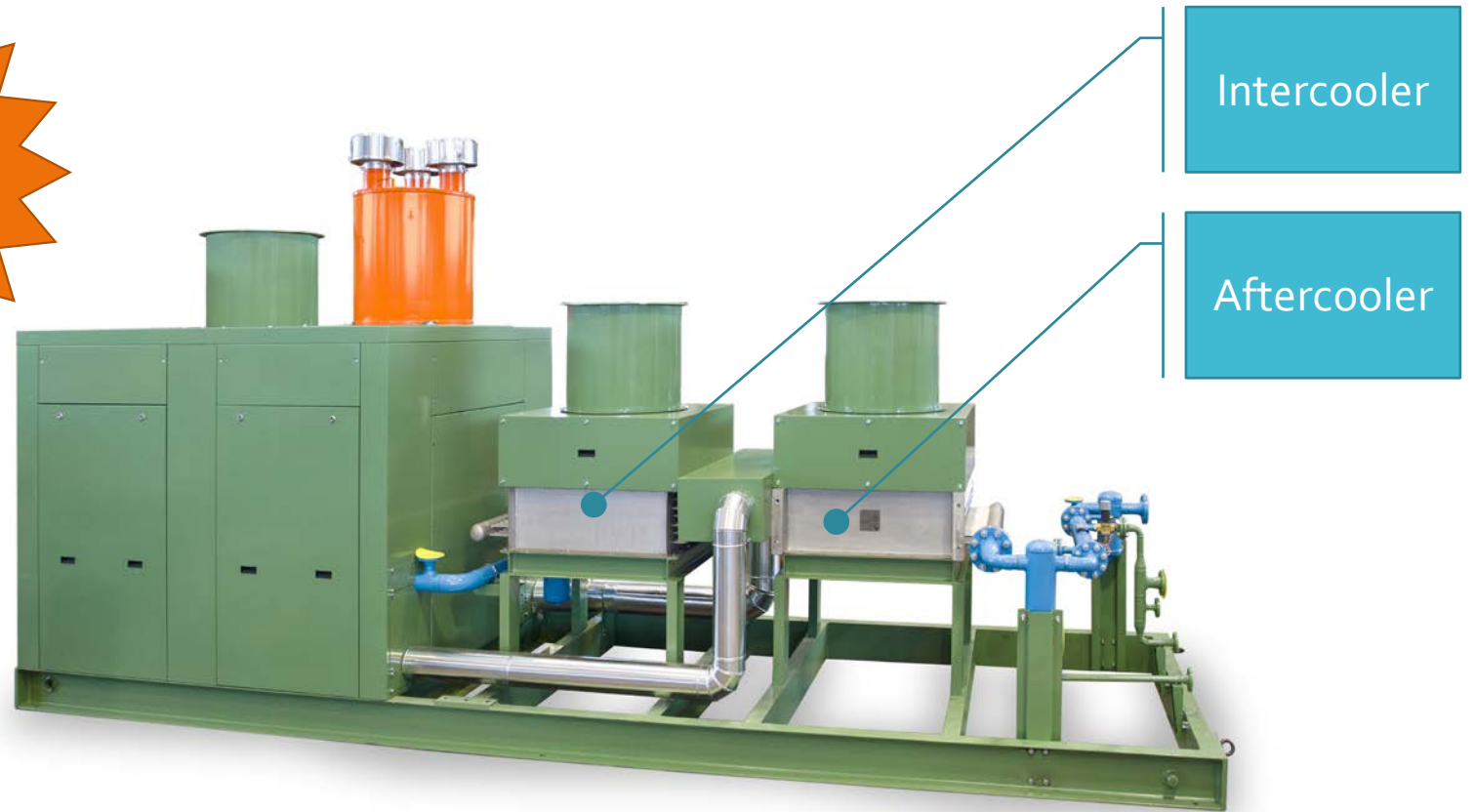


The second major issue in the desert is the cooling system; with no water available the compressor must be cooled by air. Blutek developed 2 types of cooling systems designed to cover the whole application.

Cooling system 1

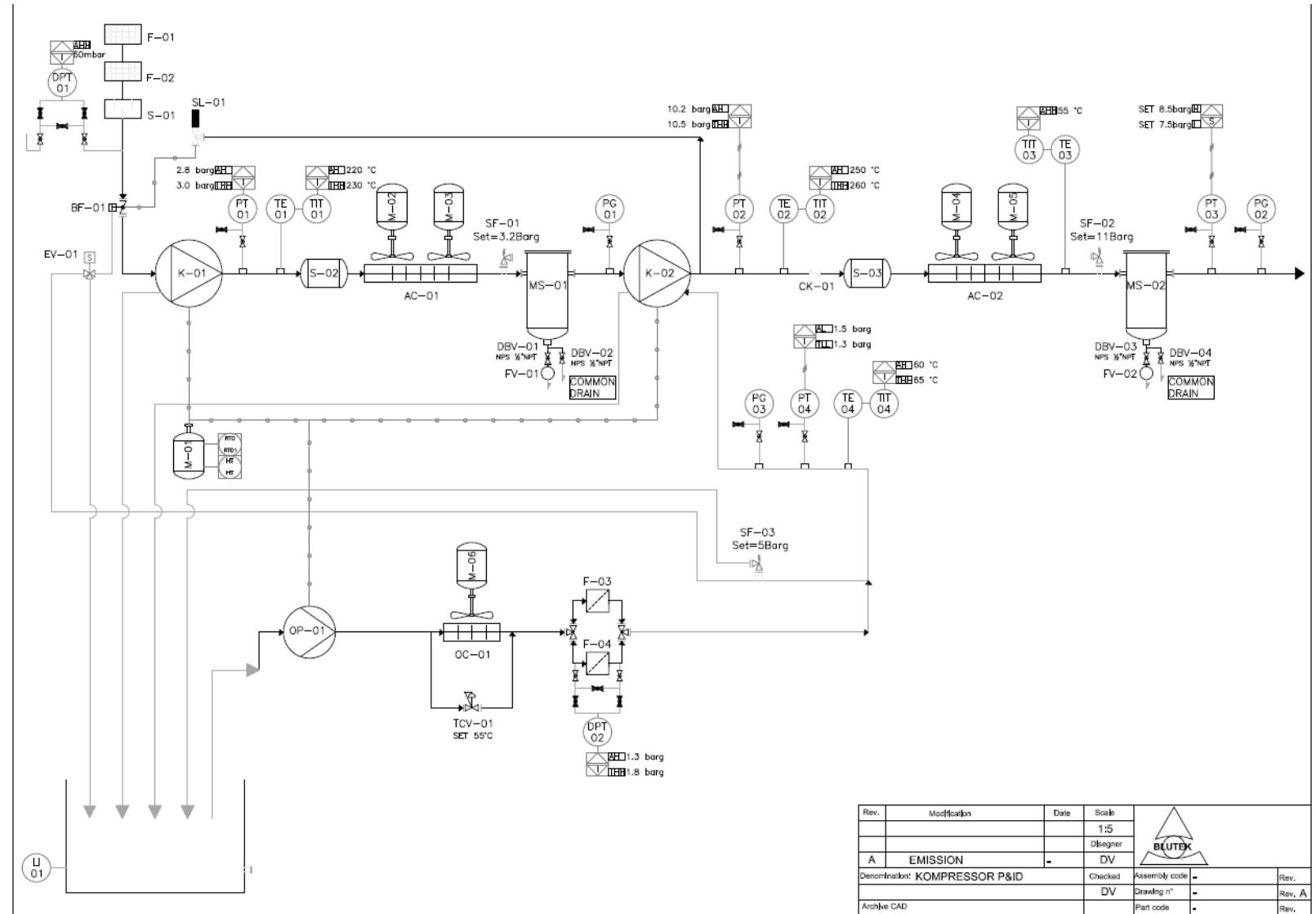
The cooling system is completely air-cooled with external SS316L coolers with aluminum fin and an extraction fan. This application covers the range of working pressure up to a max. of 8 barg with ambient temperature of 55°C

55°C
8 barg





Standard P&ID for cooling system 1



Rev.	Modification	Date	Scale	BLUTEK	
			1:5		
			Drafter		
A	EMISSION	-	DV		
Description: KOMPRESSOR P&ID			Checked	Assembly code	Rev.
			DV	Drawing n°	Rev. A
Archive CAD				Part code	Rev.



55°C
10,5
barg

Cooling system 2

The system is partially air-cooled with a combination of external SS316L coolers with aluminum fin, aluminum coolers which refine the temperature and water coolers that turn on when the ambient temperature reaches 30°C. The water-cooled coolers are fed by a close-loop circuit with chiller, water pump and water tank. This application covers a range of working pressure up to a max. of 10,5 barg with ambient temperature of 55°C



Air cooled
section

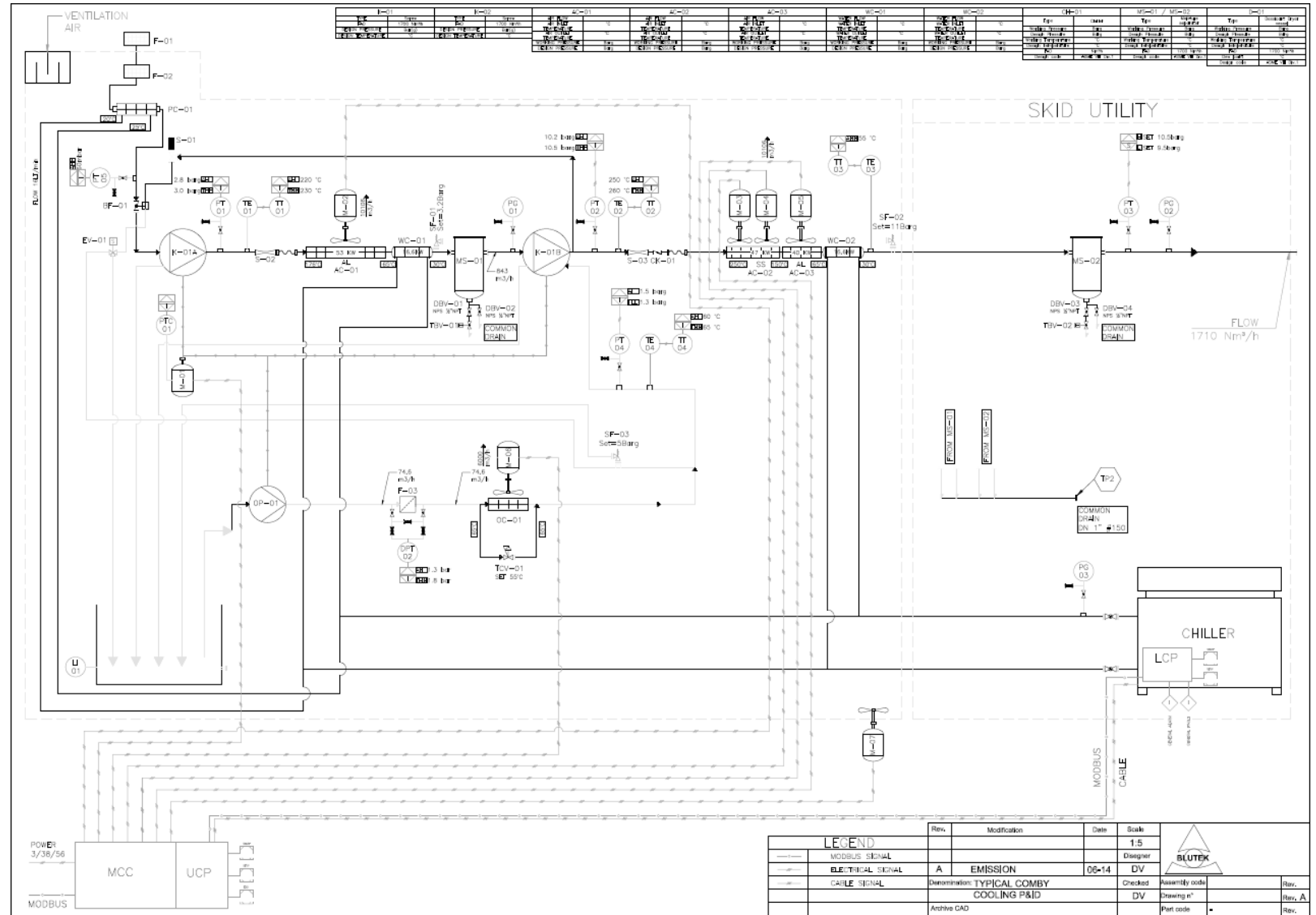
Water
cooled
section



Chiller and
water tank



Standard P&ID for Cooling system 2





The standard manufacturer coupling is Wrapflex model or as per API671 with flexible disc and spacer.

Falk
Wrapflex
type



API 671
John Crane





Air piping made according to the category chosen by the client, butt welded, with 100% HT as per ASME B31.3





The moisture separator for the first and final stages, designed for use with max. water content, is provided with automatic and manual drainage routed to common drain point





Oil piping,
duplex oil filter
and fittings
made with
SS316L



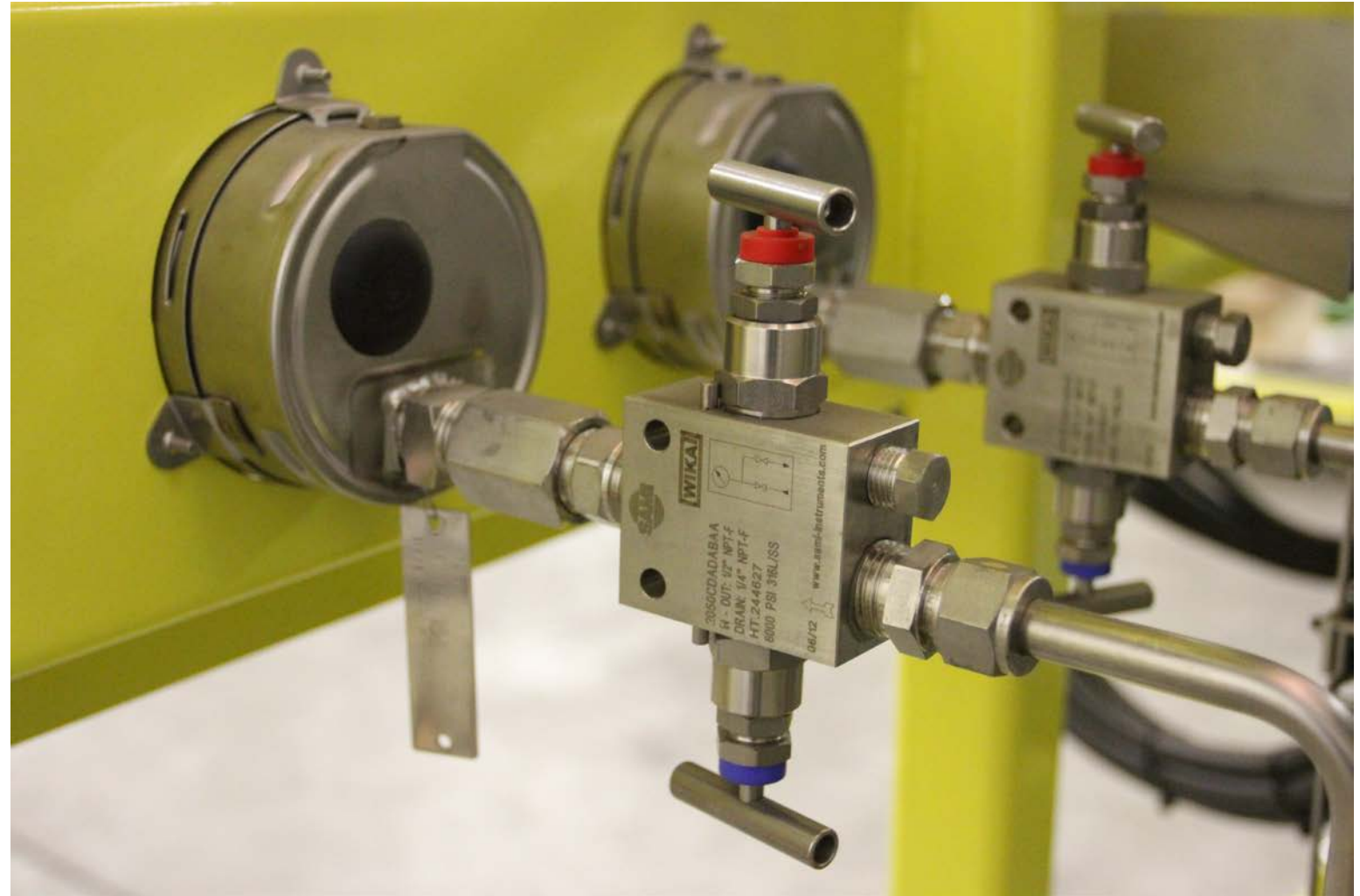


Canopy made with CS, painted with a cycle as selected by client or made with SS316L, unrefined or painted





Instruments,
manifolds,
fittings and
tubing in
SS316L





ENGINEERING DETAIL

ELECTRICALS

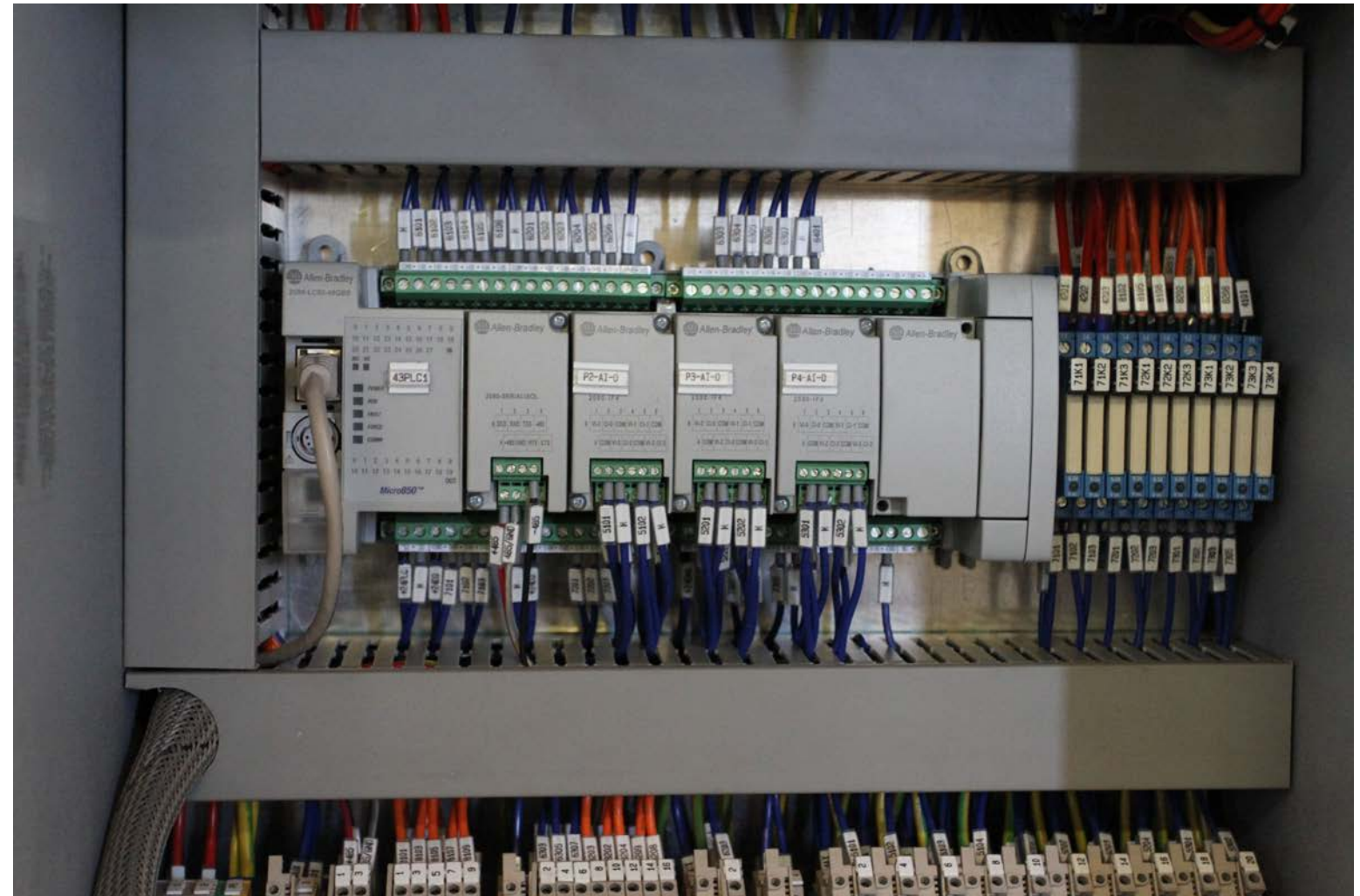


Clean and simple
cable layout routed
on SS316L or HDG
steel cable tray
with cover.





Clean internal layout of control box with clearly numbered components and wiring





MHCL or armoured cable connections, fixed to the container with SS316L or brass coated cable glands (either sealed or open) protected by its hood.





Motors available in all voltages and protection as required by the area classification. Motors selected based on the max. ambient temperature, max. shaft power at a lower intake density and PSV setting.



Ex_de motor low tension
3/400V/50/60 Hz



Ex_de motor MV tension
3/3,3 or 5,0 or 11,0 kV /50
/60Hz



Compressors also achieved with Caterpillar diesel engine for black start conditions. Motors are sized based on the max. ambient temperature, max. shaft power at a lower intake density and PSV setting.

Oil-free screw compressor block

Diesel engine CAT





ENGINEERING DETAIL

CONTROLS AND AUTOMATION

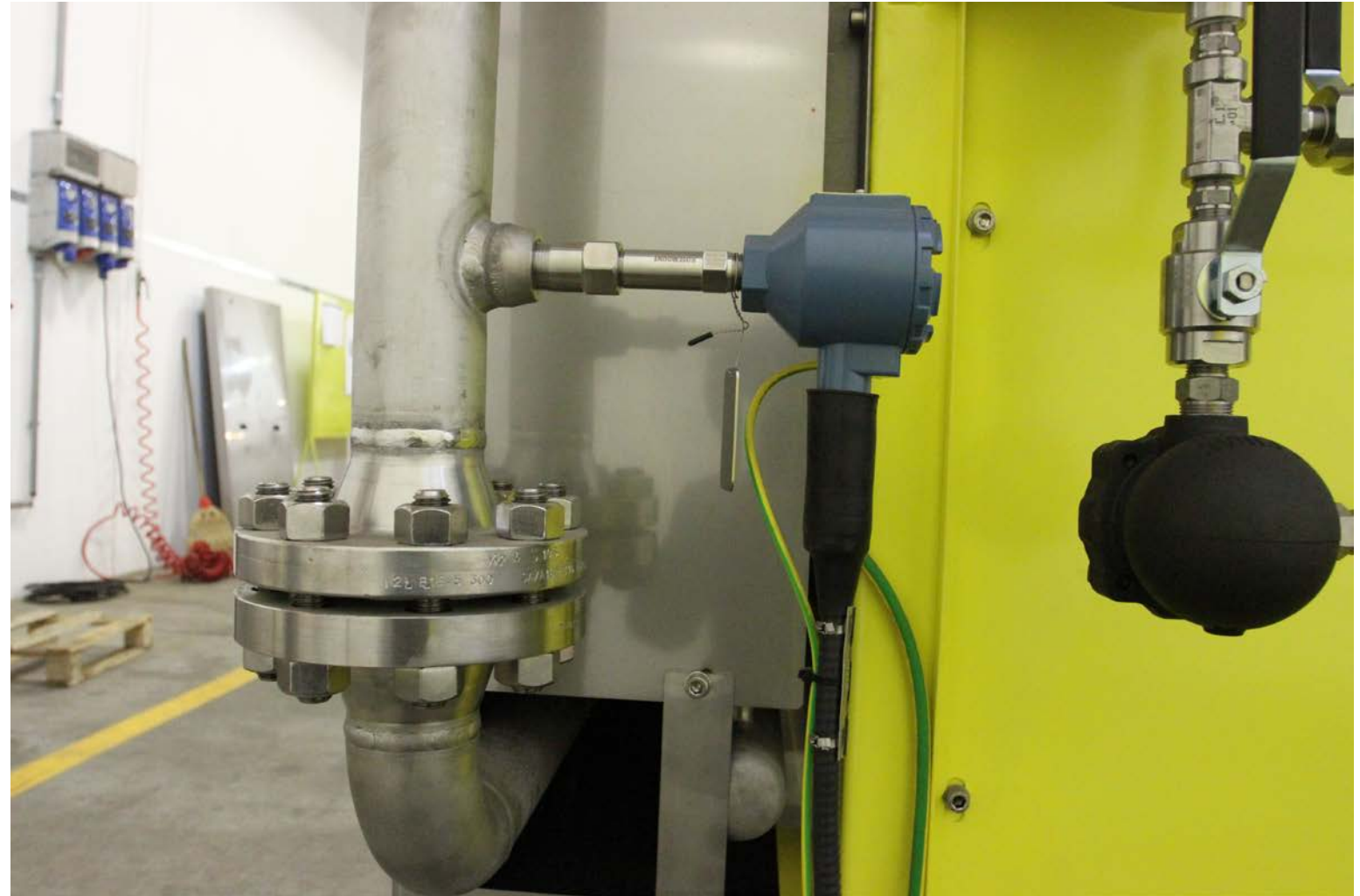


Process type
pressure
transmitter by
Emerson
Rosemont in
SS316L with
isolation and
drainage
manifolds



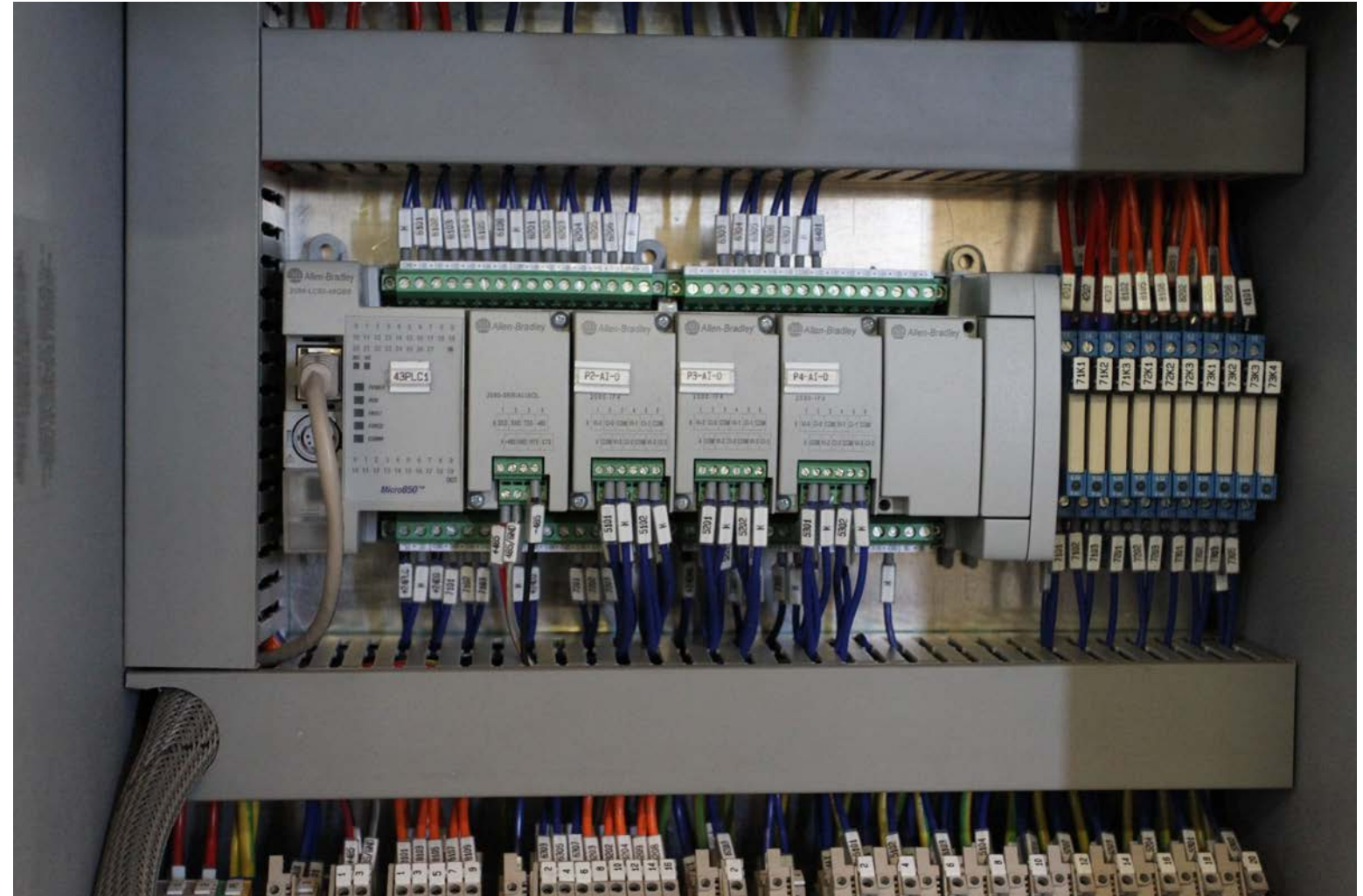


Temperature transmitter made by Emerson Rosemount and installed in a thermowell in SS316L





Allen Bradley PLC for control and protection of the compressor and dryer. Various PLC models available in different solutions with spare channel and different communications available





Allen Bradley /Exxor graphical HMI . For Zone 2 application, the HMI is specially rated for direct installation and external accessibility

12" HMI touch screen with protection

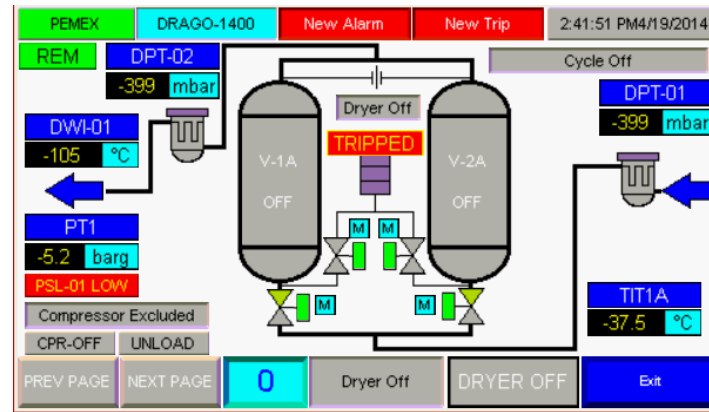


4" HMI touch screen with protection





Dedicated control software for the protection of the package with specific pages for alarms, faults and trend records.

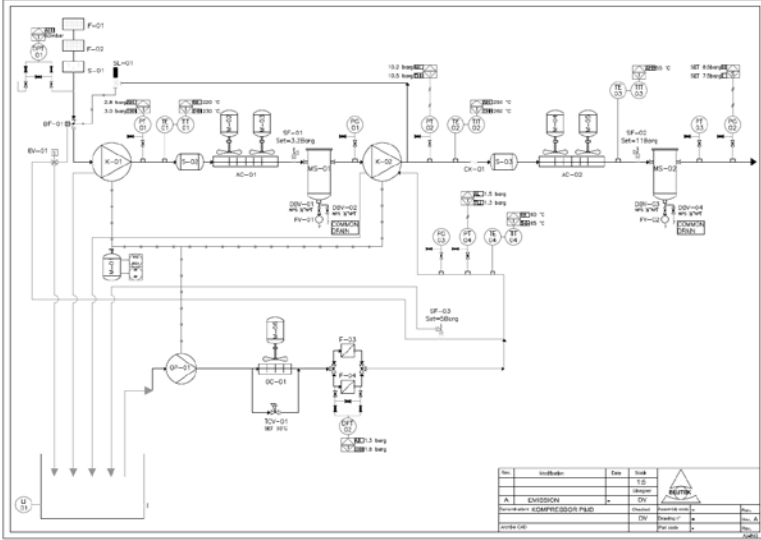
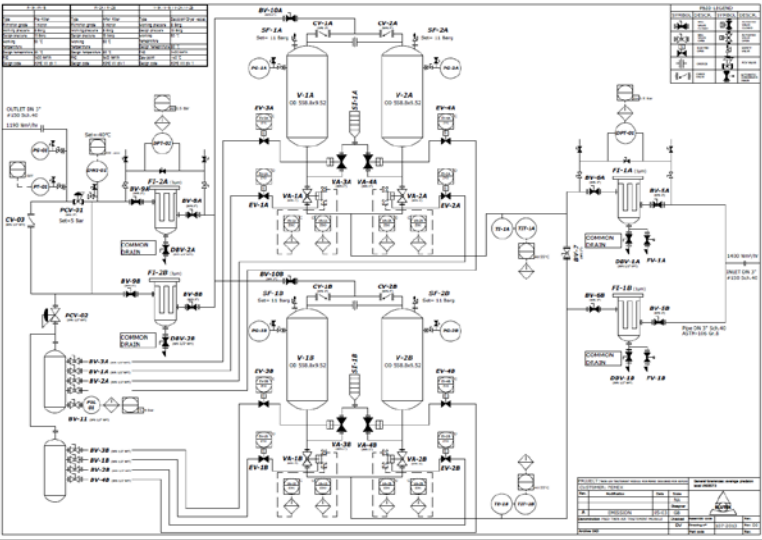
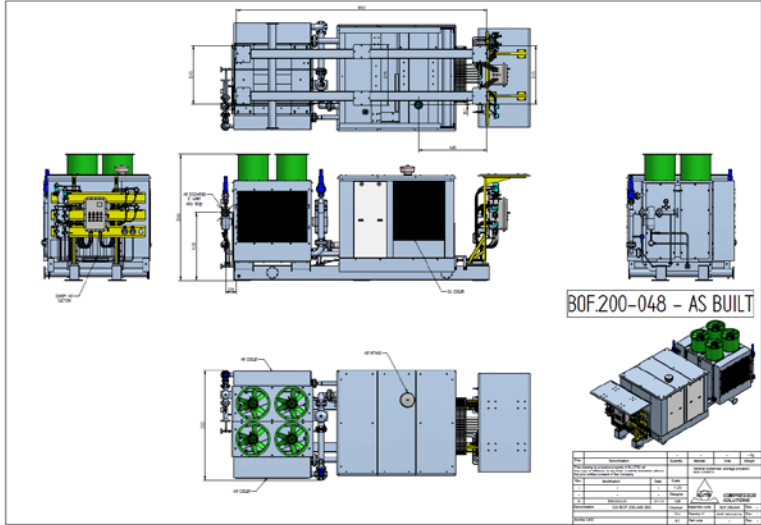
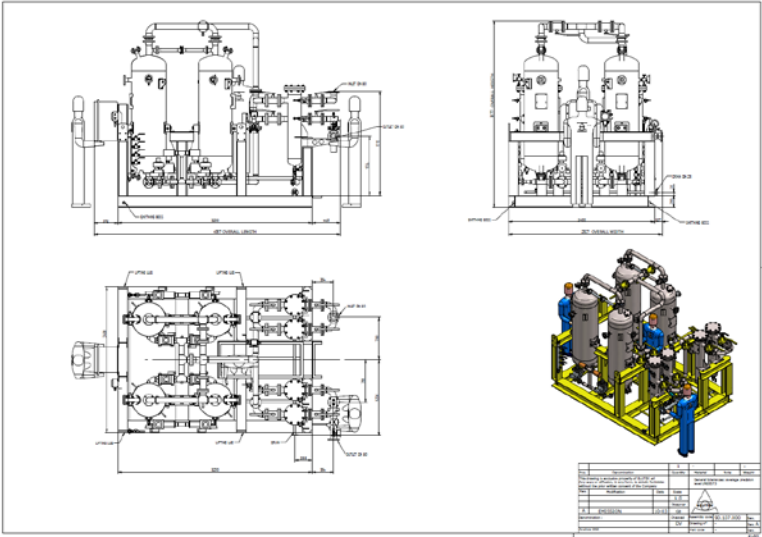


Alarm Message	Time	Date
Alarm Message	Occurrence*	Occurrence*





Complete set of approved documentation is supplied during the detailed engineering and at the end of the project





ENGINEERING DETAIL

Tests after manufacturing



All packages are finally tested with a dedicated procedure as agreed with the client. Flow, power consumption, vibration and noise are typical tests performed on Blutek assembly plants.

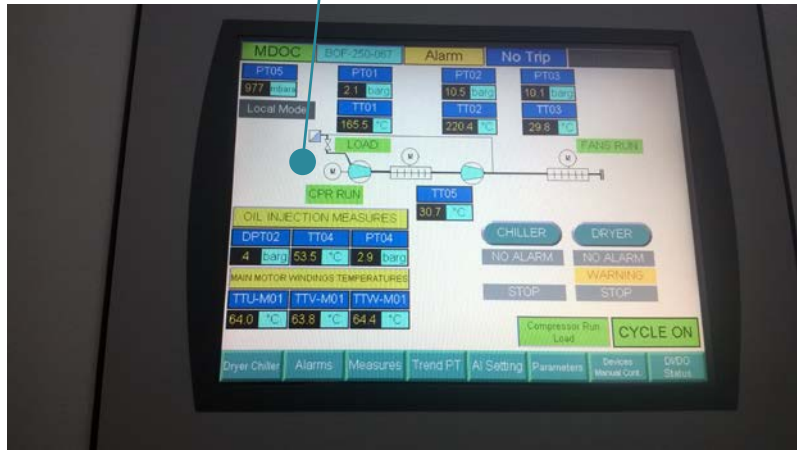


Compressor Bearing vibration inspection

Compressor performance test

Flow measurement

Power measurement





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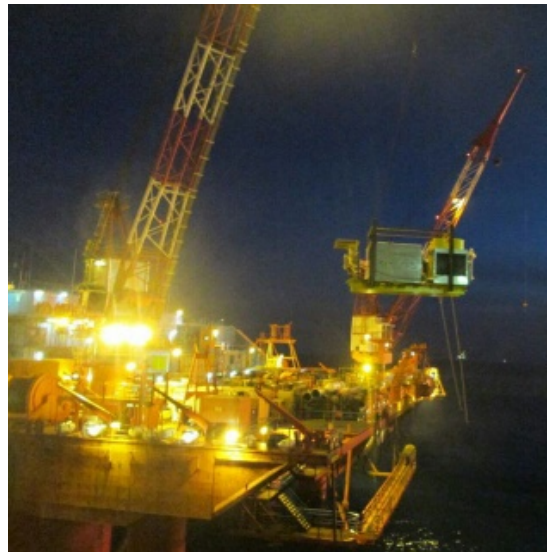
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