PCB050

TWO-STAGE AIR COMPRESSOR TRAINER

Experimental capabilities

- **Study of a two-stage air compressor**
- **Calculation of power, efficiency, performance**
- **Study of air-water exchangers**
- **Representation of the compression on a T-S diagram, determining the polytropic coefficient of compression and of isentropic efficiency of the compressor**
- **Measurement of flow rates and pressures**
- **Flow rate-pressure ratio**

DIDATEC– Zone d'activité du parc – 42490 FRAISSES- FRANCE
Tél. +33(0)4.77.10.10.10 – Fax+33(0)4.77.61.56.49 – www.didatec-technologie.com
email : service_commercial@didatec-technologie.com

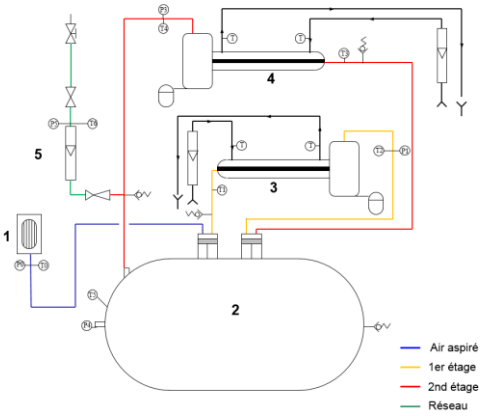
version : FT-PCB050-STD-D

PCB050

Operating principle

The PCB050 bench allows to study the operating principle of a two-stage air compressor.
The ambient air is drawn at the level of a filter is found allowing to measure of pressure and temperature.
The air passes successively through two air-water exchangers (1st stage and 2nd stage) connected to the water network of the institution.
At the output of second exchanger, the air returns in the tank then at the level of a pressure reducer connected to an output of air flowmeter. The robust design of this equipment makes it suitable for use in schools.
Anodized aluminum structure on multidirectional wheels with brakes gives it a very robust as well as a high flexible integration into your premises.The manufacturing of this equipment meets European machine directive

Illustrations



The bench is mounted on an aluminum profile frame equipped with four directional casters with brakes.
It includes an electrical box with a main power disconnect switch and a 30mA residual current circuit breaker.

1. **Air filter**

2. **Air compressor**
   - Compressor with two-stage piston
   - Construction according to CE standards
   - Volume sucked to treat 41 m3/h
   - Maximum pressure : 10 bars
   - Electric engine with belt transmission
   - Power : 4 kW
   - Tank capacity : 270L

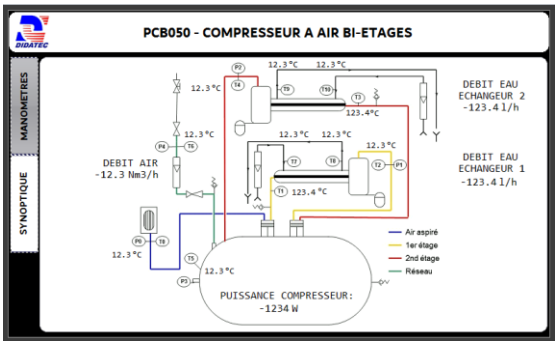
3. **Exchanger air-water first stage**
   - Tubular exchanger cooled by water (exchange counter-current or co-current)
   - Water separator with manual drain valve

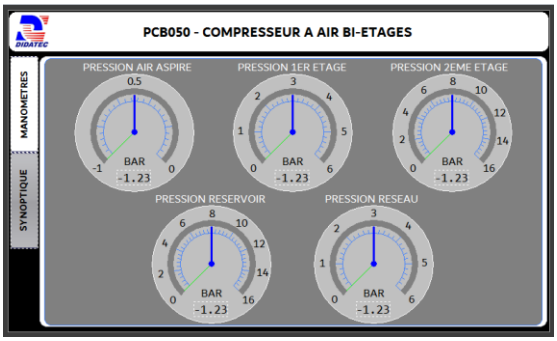
4. **Air exchanger - water second stage**
   - Identical to the 1st stage

5. **Air flow rate measurement**
   - pressure reducer for the output pressure control (3 bar)
   - Float flowmeter
   - Control valve at the output and exhaust silencer

Technical details

6. **Instrumentation**
   - Eleven air and water temperature sensors at various points in the system, read on a touchscreen
   - Five pressure sensors (e.g., at the suction and discharge of each stage)
   - Safety valves
   - A float air flow meter
   - Two cooling water flow sensors
   - A wattmeter to measure electrical power
   - 7" touchscreen for data display





DIDATEC– Zone d'activité du parc – 42490 FRAISSES- FRANCE
Tél. +33(0)4.77.10.10.10 – Fax+33(0)4.77.61.56.49 – www.didatec-technologie.com
email : service_commercial@didatec-technologie.com

PCB050

Services required

- Electrical supply : 400 Vac – 50 Hz – 10 A
- Electrical network : 3 phases + Neutral + Earth.
- Water supply : 15 L/min – 3 bars
- Water drain : on the floor
- Dimensions: (LxlxH mm): 2100 x 800 x 1950
- Poids (Kg): 300

Note : if the equipment installation is operated by our staff, all supplies and exhaust connections required must stand at less than 2m from the machine

Documentation

- User's manual
- Pedagogical manual
- Technical documentation of the components
- Lab exercises
- Wiring diagram
- P&ID diagram
- Certificate of conformity CE

Options

- Data acquisition system
- Ref : PCB051

DIDATEC– Zone d'activité du parc – 42490 FRAISSES- FRANCE
Tél. +33(0)4.77.10.10.10 – Fax+33(0)4.77.61.56.49 – www.didatec-technologie.com
email : service_commercial@didatec-technologie.com