

WALL MOUNTED CASCADE BOILERS



Experimental capabilities

- Identification of the components of a heating circuit with modulating gas wall boilers and control circuits
- Commissioning of a heating system and verification of operation
- System adjustment and basic measurement readings (consumption, temperatures, pressures, flow rates)
- Advanced measurements and calculation of the powers involved and consumption
- Study of heat transfer
- Study and adjustment of a heating network with direct circuit and circuit by 3-way valve
- Study and adjustment of a modulating cascade boiler control system
- Study of the combustion of wall-mounted gas boilers
- Use and configuration of a connected Centralized Technical Management (CTM)

Operating principle

The TCF150 trainer allows the study of a cascading heating system with modulating boilers, it is composed of a production system (wall-mounted gas boilers), a primary circuit, a buffer bottle, two dissipation circuits, one with a 3 way valve for regulation and a direct heating circuit. A CTM with touch screen manages the operation of the production area and the dissipation area according to the parameters that will be simulated (outside T°). Students will first have to commission the system and then make basic measurements to validate the operation. They will then be able to make a more complete study of the system using the integrated instrumentation (heat balance, study of the regulation ...) and the optional modules proposed.

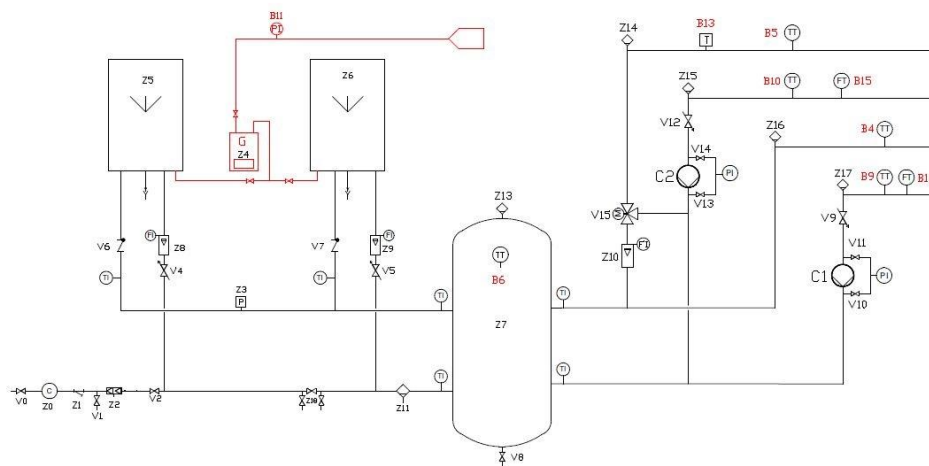
The robust design of this device makes it suitable for use in schools.

The equipment is set up on an Anodized aluminium frame on casters wheels. This gives it great strength and a flexibility of integration into your premises.

The manufacture of this equipment complies with the European standard for machinery manufacturing.

This equipment can be used alone or with other compatible equipment from our range (see last section of this document).

Principle diagram



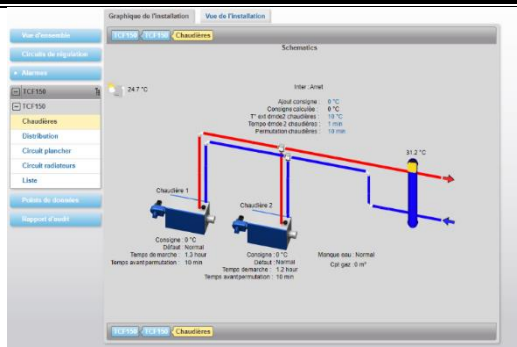
Illustrations

Technical details

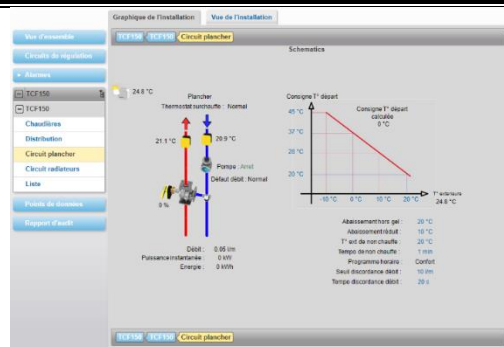
1. Two wall-mounted modulating gas boilers with a power around 11KW. Boiler equipped with valve, drain, drain valve, expansion tank.
2. A natural gas supply line with isolation valve, meter with report on GTC and pressure gauge
3. A circuit dedicated to each boiler including at least: A float flow meter, a dial thermometer and a balancing valve and a non-return valve.
4. A primary circuit common to both boilers including injection connection with set of valves, a 100L insulated buffer tank with drain valve and air trap, a pressure gauge and a pressure switch, four dial thermometer and a sludge deaerator pot.
5. A water filling line including shut-off valves, volumetric meter, strainer and disconnecter.
6. A high-temperature direct circuit comprising a circulator with gauge kit, an electronic flow meter, a temperature probe linked to the regulation and a balancing valve.
7. A low temperature regulated circuit comprising a circulator with gauge kit, a float flow meter, an electronic flow meter, a three-way valve with electric servomotor, a temperature probe related to regulation, a balancing valve and a safety thermostat.
8. Quick connections for connecting optional dissipation modules
9. Structure :
 - Screwed anodized aluminum profile with shutter seals
 - Directional castors with brake and non-marking tread.
10. an electrical box with general power disconnecter and 30mA differential circuit breaker. A touch screen is used to display circuit measurements and manage system regulation (CTM).

Supervision of the CTM

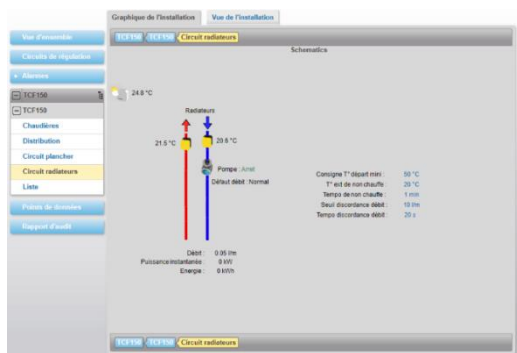
The bench is equipped with a CTM that can be controlled remotely by a PC. The screens below show examples of accessible pages:



Primary circuit



Regulated circuit



Direct circuit

Services required

- Electrical supply : 230 Vac – 50 Hz – 10 A
- Electrical network : 1 phase(s) + Neutral + Earth.
- Water supply : water filling-3 bars
- Water drain : on the floor
- Smoke exhaust: diameter 60/100 mm
- Fuel supply : natural gas
- Dimensions: (LxWxH mm): 4000 x 800 x 2000
- weight (Kg): 500

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
- Technical documentation of the components
- Lab exercises
- Wiring diagram
- Hydraulic diagram
- Certificate of conformity CE

Options

- Gas analyzer
- Ref : ANA100

Recommended equipment

- Heater
- Radiators
- Heating floor
- Hydraulic balancing unit
- Fan convectors
- Ref : AER033
- Ref : TCF120
- Ref : TCF121
- Ref : TCF122
- Ref : TCF124