

Fuel Conditioning Unit

Introduction: The Fuel Conditioning Unit is designed to enhance the features of the FMS-400 and FMS-1000, or other Fuel Measurement Systems. It provides computer controlled fuel supply temperatures, to either combat extreme ambient conditions, high fuel return line temperatures or to match specific test requirements. There are two elements to the FCU these are the Control Enclosure and the Process Enclosure.

The Fuel Conditioning Unit’s Process Enclosure main components are:

- Circulating Pump
- Selector Valves
- Header Tank
- Immersion Heater
- Flat Plate Heat Exchanger fed by Chilled Water Circuit
- Temperature and Level Sensors

The Control Enclosure marshals the mains switching and i/o associated with the control of the Process Enclosure. The Process Enclosure requires one set of Feed and Return lines for the Process Water Circuit and one for the Chilled Water Circuit, this minimises the pipe-work in the test cell. The temperature in the header tank is maintained or adjusted by directing the intake closed loop water two ways. To cool the process water, it is diverted through the chilled water circuit’s heat exchanger before return to the header tank. To warm the process water circuit, the heat exchanger is by passed and the immersion heater in the header tank is turned on. A PRT mounted in the header tank constantly monitors the temperature of the process water. There is also a water level safety switch in the header tank. This sends a digital signal to CADETV12 which prevents the Immersion Heater being operated when there is insufficient water, and provides feedback to the operator via the display.

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Coordinates for Notes Below



Fuel
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tioning Unit (FCU) : Stainless Header Tank (B3/4) Fill Cap (A3), Heat Exchanger in black insulation (C4), Selector Valves (C2&D3), Immersion Heater (B1), Circulation Pump (D2) Process Water Lines (E2), Chilled Water Lines (E3/4), Electrical Connector (A1).

CP Data Sheet

The process water from the header tank is fed through a second Flat Plate Heat Exchanger to cool or warm the fuel from the FMS-400/1000 unit before it is fed to the engine. This second Heat Exchanger should be mounted as close as possible to the final fuel intake of the engine to reduce the 'slug' of fuel proceeding the newly conditioned fuel.

Options :

A further Flat Plate heat exchanger can be included with the system where fuel return temperatures are expected to be high. This Heat Exchanger can be fed by a branch off the chilled water supply, to reduce the temperature of the return fuel before it is returned to the FMS unit, temperature control of this Heat Exchanger is manually adjusted with a by pass valve.

Specification:

Header Tank Size:	8 Litres
Immersion Heater Power:	3kW
Pipe Fittings for Process Water:	1" BSP Female & 22mm Compression
Pipe Fittings for Chilled Water:	15mm Copper pipe for on-site connection
Circulating Pump Flow Rate:	
Outer Dimensions of Process Enclosure:	500x500x250mm
Outer Dimensions of Control Enclosure:	150x150x100mm
Secondary Heat Exchanger Fittings:	1/2" BSP Female
Cadet Digital Outputs Required:	2 off
Cadet Digital Inputs Required:	1 off
Cadet Analogue Inputs Required:	1 off
Power supply for Control Enclosure:	13A mains

