

Heatseal Machines

Mecelc Design Ltd has manufactured two identical machines for a customer in the pharmaceutical industry. These were supplied via a repeat order from the customer, following the successful fulfilment of an initial order.

The machines perform the task of clamping and heating between heater blocks, a number of aluminium collars at a pre-set temperature and duration, to bond them to a flexible hose passing through each of them.

The machines had been designed some time ago in the US by a third party. Mecelc Design Ltd offer a flexible approach and in this case were able to assist the customer by producing to machines essentially via a "make to print" route. Some of the electrical items were re-specified by Mecelc Design Ltd to suit UK electrical supply.

During a review of the existing design, some of the geometrical tolerances of the heater block designs were optimised following a detailed tolerance stack-up analysis, for improved heat transfer to the collars.

Fine control of the bonding temperature is crucial for product quality; the heater blocks of the machines are therefore heated by embedded, PID-controlled heaters with adjacent thermocouples.

Heat-resistant PTFE coating on the heater blocks ensures the collars are released from the heater blocks once bonded.

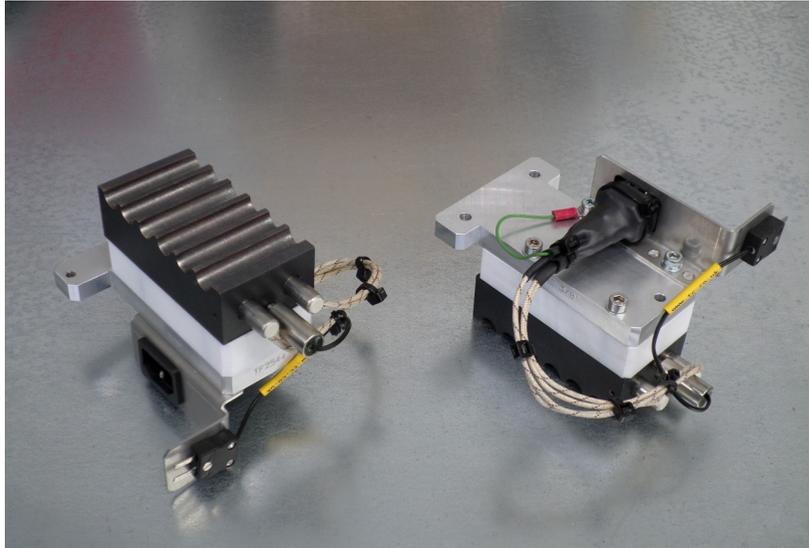
The machine may be worktop-mounted, making it a straightforward task to achieve a correct working height for the Operator, and a two-handed start arrangement ensures Operator safety.

The machine is stand-alone, requiring connections only to electrical and compressed air supplies.



Technical Data

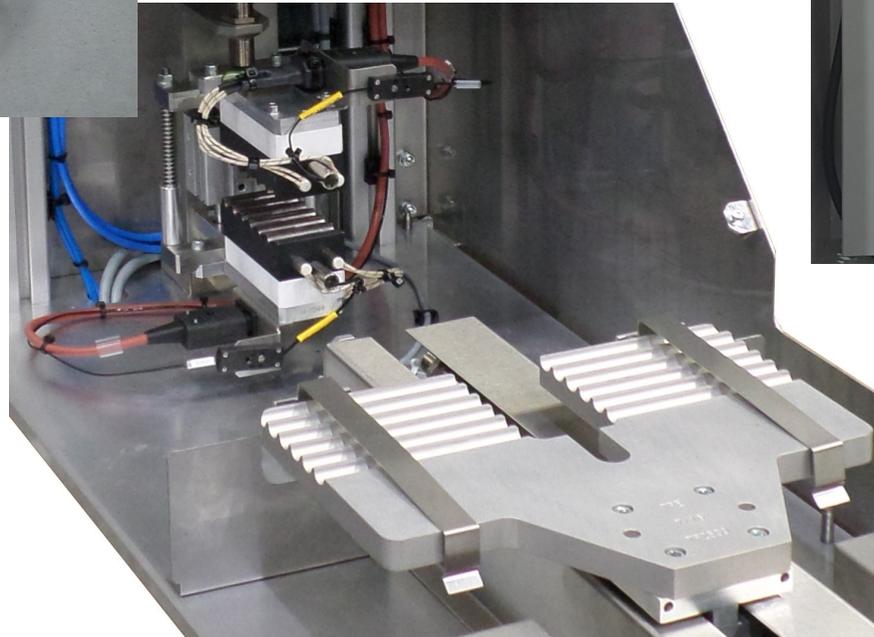
Air Supply	6 Bar
Electrical Power Supply	240VAC 1ph; 16A
Controls Voltage	240VAC
Control System	Relay logic
Operator Interface	Panel-mounted modules / two-handed start
Cycle Time	Dependant upon desired heating duration



CNC-machined interchangeable heater block assemblies permit the fusing-together of various size of collars and tubes.

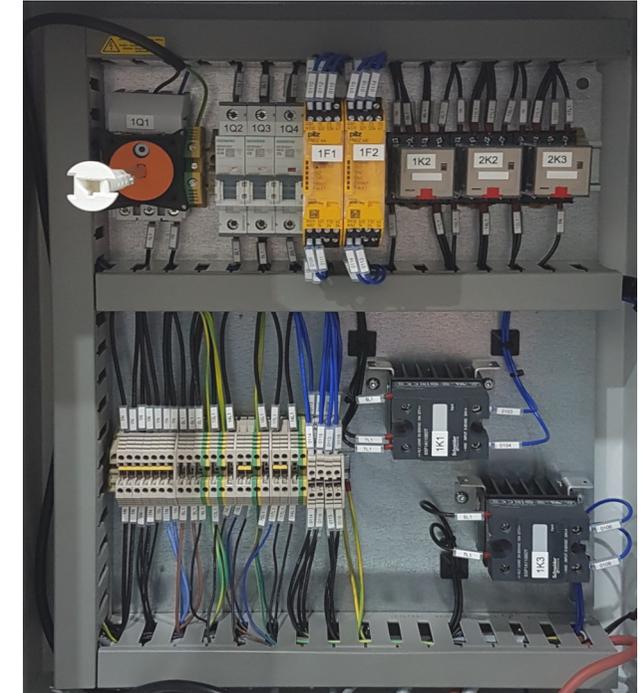
Once mounted into the machine, the electrical supply and thermocouple connections are made simply by plugging in.

Fusing temperature and time are fully programmable via the modules conveniently located on the front of the electrical cabinet.



Alloy carriages are matched to the heater block assemblies. These advance the collars and tubes into the heater block area, ready to be fused together.

(Polycarbonate guarding in front of the heater block area is not shown in this photograph)



Electrical cabinet containing safety relays, supply and control equipment. These items were selected by Mecelec Design Ltd to suit UK electrical supply; an adaptation of the original US design.