

Rotary Table Machine

Mecelec Design has designed and built a machine for a pharmaceutical application that precisely stamps out small discs of membrane material, places them accurately on to a clear polystyrene filtration tube, and fuses the two together.

The fusing temperature, duration and pressure are all controlled by PLC and configurable via the HMI.

An operator loads a reel of membrane material onto the machine, and two tubes into each nest of the rotary table. The stamping and fusing operations are carried out automatically as the tubes are indexed around the rotary table. Vacuum generated inside the tubes holds the membrane onto each tube prior to the fusing operation.

The integrity of the fused assembly is then checked on a 100% non-destructive basis. The vacuum pressure is switched to a test pressure (adjustable) and a check is made that the test pressure is met.

A Pass/Fail result is displayed on the HMI for each assembly.

The membrane is advanced by two PLC-controlled servo indexers which operate in combination with a rising and falling tensioner. An outfeed indexer pulls the membrane through the stamping assembly whilst a second indexer lets out membrane to the tensioner.

The machine is stand-alone, requiring connections only to 3-phase electrical and compressed air supplies.

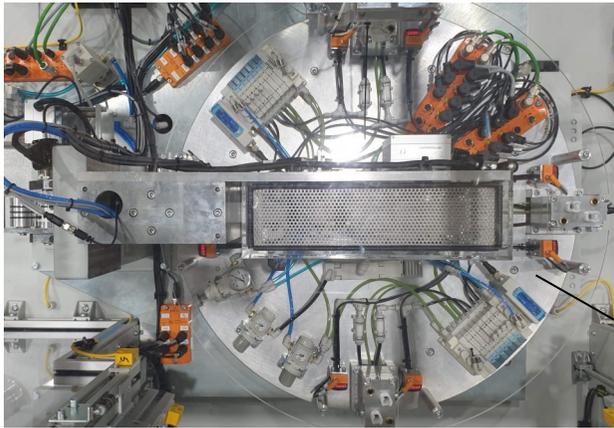


Technical Data

Air Supply	6 Bar
Electrical Power Supply	400VAC 3ph+N+E ; 16A
Controls Voltage	24VDC
Control System	Siemens S7 1200
Operator Interface	Siemens HMI
Cycle Time	~10 seconds

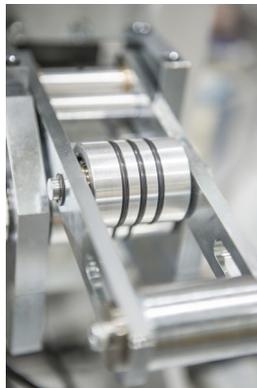
Case Study Pharmaceutical

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Pneumatic equipment for control and test pressure, and vacuum, rotates with the table. The equipment is controlled by I/O-Link communication with wired signals passing through a multi-way slip-ring located in the centre of the table.

Miniature heaters located behind each weld head are independently driven by PID heater controllers.



Outfeed assembly is driven by a PLC-controlled indexing unit



A touch-screen HMI permits user-friendly operation of the machine.

Maintenance-level functions are password-protected



The electrical enclosure is located for ease of access

An integrated Wi-Fi module connects the machine to connect to the customer's network. This provides remote access for diagnostic and software update purposes, without the need for an Engineer to be on site.