**Working and controlling of the DL 500 spray etching machine**

The DL 500 is a double sided conveyorised spray etching machine with an integrated rinsing zone. An etching machine is a device that uses various means to etch designs and characters onto a metal surface. Then the etchings can be used in various electrical applications or simply as a decoration.

There are various means to etch designs onto metal: laser, chemical spray or stylus based. Out of these, the DL500 uses the spray method. The chemical spray method of etching utilizes a specific combination of chemicals to accurately etch designs onto a surface. It can be directed either by software dedicated to designing etches, or manually by the use of a control panel.

It has an integrated rinsing zone which recycles rinsing water for reuse, after checking chemical composition doesn’t exceed required values. So it doesn’t waste water by reusing rinse water for the etchant. The rinsing unit is also conveyorised which means it is a squeeze drying roller with an integrated magnetic valve for fresh water inlet.

It has a submersion centrifugal pump which propels the etching medium to the 4 manifolds each with 14 nozzles to spray with. The liquid goes back to the tanks via the drain pipes. The conveyor is made of 13 conveyed rollers and in feed and out feed rollers. The sponge clothed rollers are directly coupled to a gear motor. The water access is controlled by a magnetic pump. And finally the control unit is found at the top of the machine and is easily accessed because it can rotate to any direction.

The controlling of this machine is done as follows. Setting up, you need to switch off all the switches on the panel. And set all positions to the zero state. We connect the plug to a socket. The machine consumes about 1.9 kW on 220 V and 50 Hz. Turn on the main switch. We wait for the heater to warm up the water, check the conveyor is rolling properly and make sure the pump has no leaks on the device. You can change the temperature on the heater. Make sure the rinse component has enough but not too much water.

All electric functions are controlled by the front panel on the control unit. You can set the flow capacity and pressure of the etchant on the panel. The tank capacity is about 55 liters. The conveyor rotates the boards put on the roller and carefully continues onto other boards. If there is no trap table that removes boards, you may need to manually remove the boards. The heater must be activated only after the tank has filled. A temperature of more than 50 degrees Celsius is not recommended. You can rinse either with fresh water or using closed loop rinse(reuse).