

MACHINE SPECIFICATIONS DIE CLEANING SYSTEM

The machine is designed to remove aluminum from the inside of steel extrusion dies up to \varnothing 900mm and 4000Kg . The production rate will vary depending on the amount of aluminum in the dies and the number of dies loaded into the basket. Drawing number MC895001R2 shows the overall layout of the machine'



The cleaning system is installed and commissioned in the year 2000.

In 2005 were installed 2 extra process cleaning tanks and has optimized the manual crane. Also the complete electronic control system of the crane is integrated in the PLC system of the die cleaning system. The crane is automatically controlled by the PLC for loading and unloading the Die baskets into the cleaning process tanks.

On the 2 new cleaning tanks we have installed 2 separate Halifax bifurcated extraction fans with extra H2 controlled safety system for the fumes for each tank.

All the wiring of the components has been renewed and the pneumatic solenoids is changed to plug in mini iso valve islands with profibus .

Regarding the extra of volume of waste caustic from the cleaning tanks, we had installed an extra 304 Stanley steel waste storage tank complete with new level sensors . The pump station we optimize for safety to control loading on the truck with fresh 25% NaOH and unloading waste. Optimizes is made regarding the national regulations.

The machine consists of the following items:

Full Automatic PLC controlled dies basket crane loading system.
Load capacity max 4000kg with loading baskets

Four Etch Process Tanks

Tank capacity with no Dies in the basket: 2700 litres

Ultrasonics in two tanks; 4 x IM series Immersible Transducers (1.5Kw 24" x 15-25" x 3.5") and Neptune 25KHZ Generators

Heating; 3 x Immersion Heaters HBYS/47DSZ, 8kW, 415V-3ph-50Hz , 1 x Ø6mm 1/4"

Thermocouple 4 Wire

Cooling; series H style 60D Double Embossed Platecoils 600mm x 750mm

Level Indication; Vega EL24. EXO.AGBVVAX3PIX/ 132 Omm

Rinse Nozzles; 16 x 1/8" CM20 90° Stainless Steel

Door Cylinder; TPRA/ 182080/ W2/ 720

Rinse Storage Tank:-

Tank Capacity: 5400 Litres

Heating; 8 x Immersion Heaters HBY7.5/75DSZ, 7.5kW, 415V-3ph-50Hz , 1 x Ø6mm 1/4"

Thermocouple 4 Wire

Level Indication; Vega EK21 .XTBBDTXXPIX/2000mm

Caustic Storage Tank:-

Tank capacity: 5400 Litres

Heating; 8 x Immersion Heaters HBY7.5/75DSZ, 7.5kW, 415V-3ph-50Hz , 1 x Ø6mm 1/4"

Thermocouple 4 Wire

Cooling; Series H style 60D Double Embossed Platecoils 600mm x 750mm

Level Indication; Vega EK21 .XTBBDTXXPIX/2000mm

Solution Conductivity; Model C7685 auto ranging controller, S1316 dip cell

Solution Mixer; Mixertech Model 1060 Fluid Mixer , 1.5KW 420V-3ph-50Hz, 116rpm

Storage Tank Extraction:-

1 x Haliíax Bifurcated Fan Size 10

1 x Hydrogen Gas Detector Type S4100C

4 x Jet Nozzles Type 1/8"CM 4 90° Stainless Steel

Process Tank Extraction:-

3 x Woodcock Bifurcated Fan Size 12

2 x Hydrogen Gas Detector Type S4100C

4 x Jet Nozzles Type 1/8"CM 4 90° Stainless Steel

Pumping system:-

2 x Borger Pump Type PL 200 42M3/HR with R60 DT100 L4 motor.

8 x 2" BSP stainless steel ball valves, P.T.F.E Seals, full bore PN16 flange standard manual lever.

11 x 2" BSP stainless steel ball valves, P.T.F.E Seals, Full Bore PN16 Flange with single acting, fail to safe, pneumatic actuator.

6 x 1" BSP screwed stainless steel ball valves. P.T.F.E Seals, with single acting, fail to safe, pneumatic actuator.

Drain pump :-

Sump pump; Verder Air diaphragm pump Type - with 1" BSP 3-way L-port screwed stainless steel ball valve, P.T.F.E Seals, with single acting, fail to safe, pneumatic actuator'

Waterfilling:-

1 x Rinse Water Heaters Type MLH125, 9KW 400V 3PH

4 x 1" BSP screwed stainless steel ball valves, P.T.F.E Seals, with single acting, fail to safe, pneumatic actuator, normally closed.

2 x 1" BSP screwed stainless steel ball valves, P.T.F.E Seals, with single acting, fail to safe, pneumatic actuator, normally open.

Storage tanks NaOH25%

Two Storage steel coated tanks 10m³ liters included vega radar

Storage waste tank

Two Storage steel coated tanks 10m³ liters

One Stanley steel tank 10m³ liters included vega level radar .

Process: remarks

The first caustic cycle with fresh 25 % NaOH will pump the fluid out from the 10 m³ storage tank into the cleaning tank and will heat up in the process cleaning tank. The heat up time till the exothermic reaction of aluminum and 25% NaOH start in the cleaning tank is proximally 7 hours.

The cleaning time depends of the size and aluminum of the dies. (Practically 10 till 17 hours)

After the first process cycle the fluid is be stored into the Storage tank extraction.

The process volume in the storage extraction tank will be temperature controlled by the PLC.

After that a new cycle can start with the used caustic soda. When the caustic soda is saturated with aluminium it is transferred to the waist tanks.

After etching out the aluminium after a pre set time the dies will be rinsed with rinse water, and can be taken out clean, and empty, ready for correcting or use on the press again.