

Automatic cleaning installation

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Specialization Preparation programme for Master of Electromechanical Engineering Technology

Company:



Figure 1: Company

The company, located in Opglabbeek, Oudsbergen produces quartz composite plates. Because of the possibilities in appearance, their strength and their durability, they are mainly used for kitchen worktops.

Situation:



Figure 2: Situation

After removing the plates from the casting molds, there is always some residual material left behind. This must be removed by 2 employees before the molds can be used again.

Solution:



Figure 3: cleaning brush

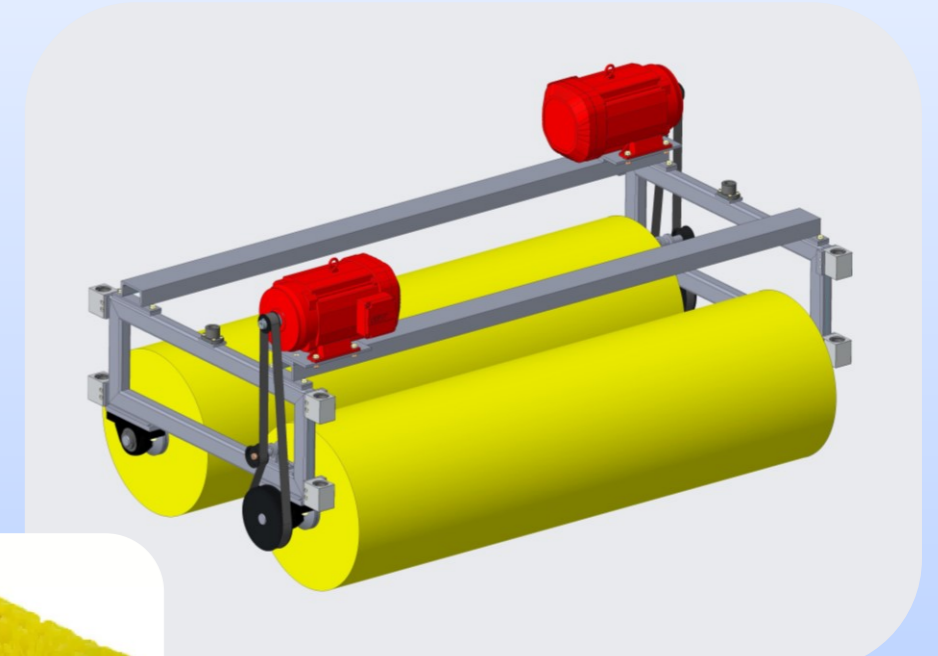


Figure 4: cleaning brushes installation

Two cleaning brushes will automatically clean the molds.

Design of the complete installation

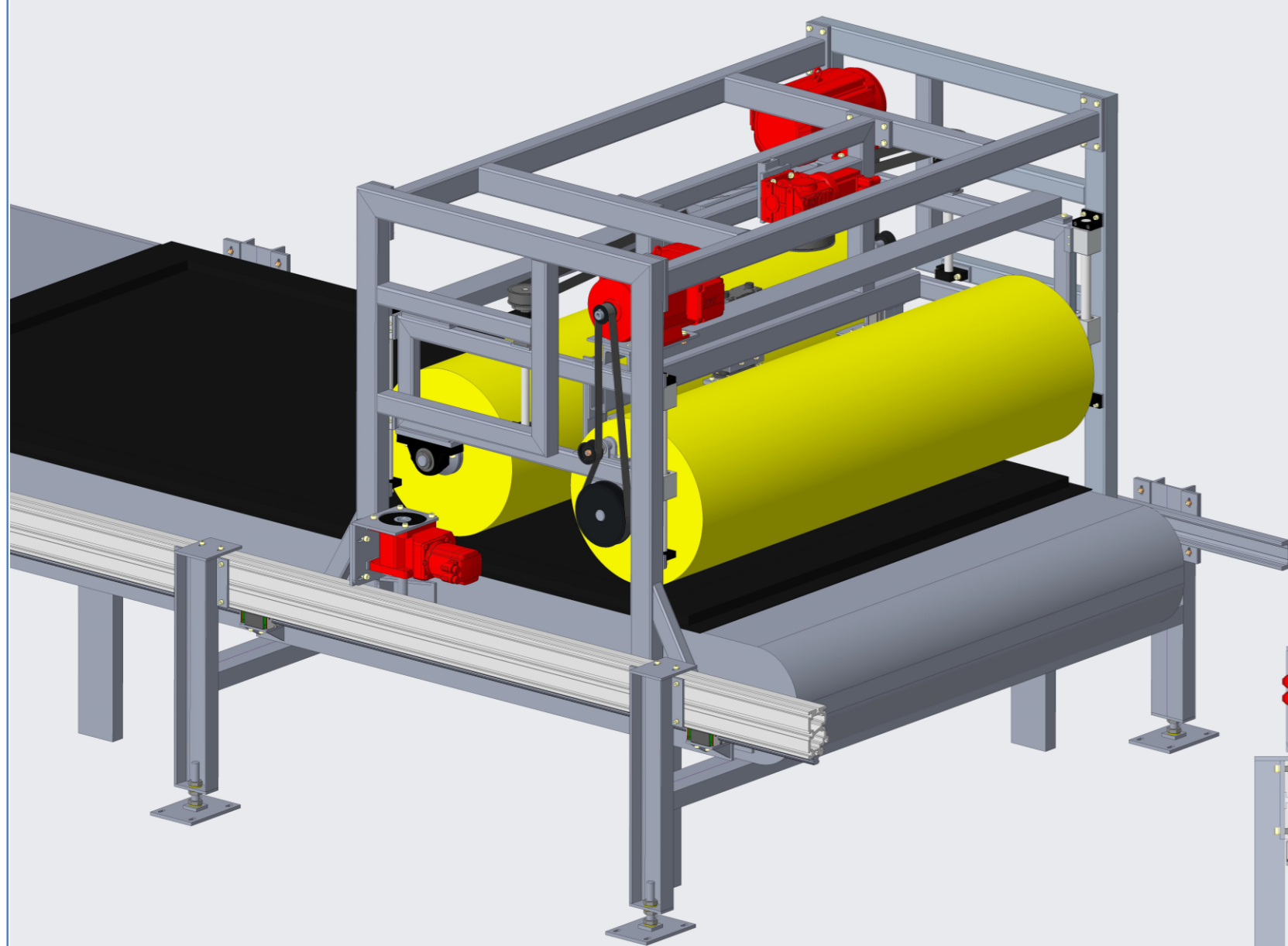


Figure 5: 3D Complete installation

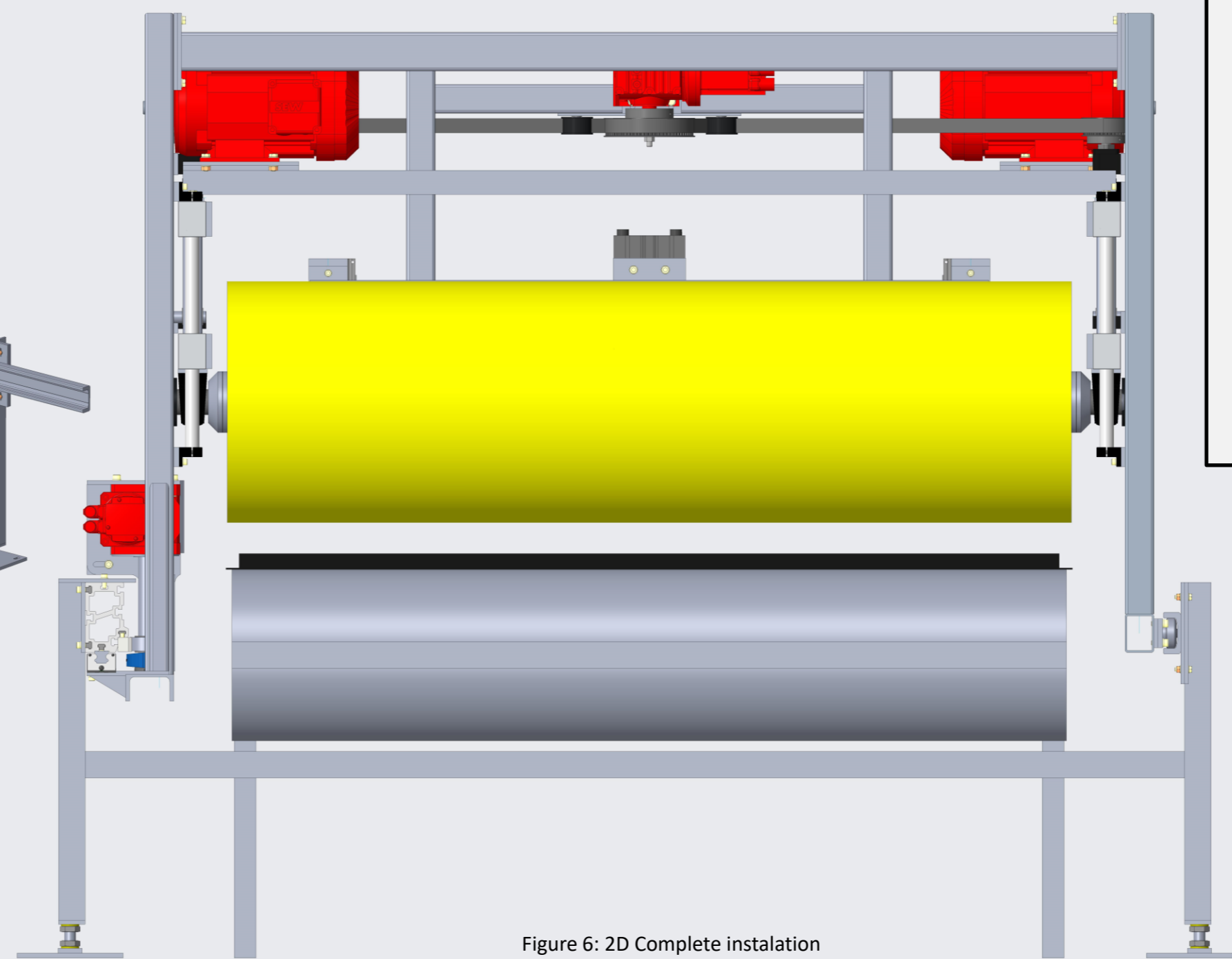


Figure 6: 2D Complete installation

Process

A casting mold is placed on the conveyor belt. At that time, the cleaning installation is located on the right side.

Start

- 1: The polishing installation moves above the mould.
- 2: The brushes start to rotate while the pinch roller clamps the mold.
- 3: The brushes come down and brush the mold cleanly from the centre to the sides.
- 4: The brushes go back up and stop spinning.
- 5: The pinch roller moves back up.
- 6: The installation returns to its initial position.

Finished

Drives

- The counter-rotating brushes are individually driven by a 4kW motor via a toothed belt.
- They are adjustable in height by two spindles driven by a servomotor with gearbox in combination with 4 linear guides.
- On the chassis, the cleaning installation moves over the mold to be polished and is driven on one side of the conveyor belt by a motor with gear and rack. The other side follows by means of guide wheels.

The chassis



Figure 7: Chassis

A sturdy base separate from the existing construction must ensure that the cleaning installation can move stably.

Pressure roller

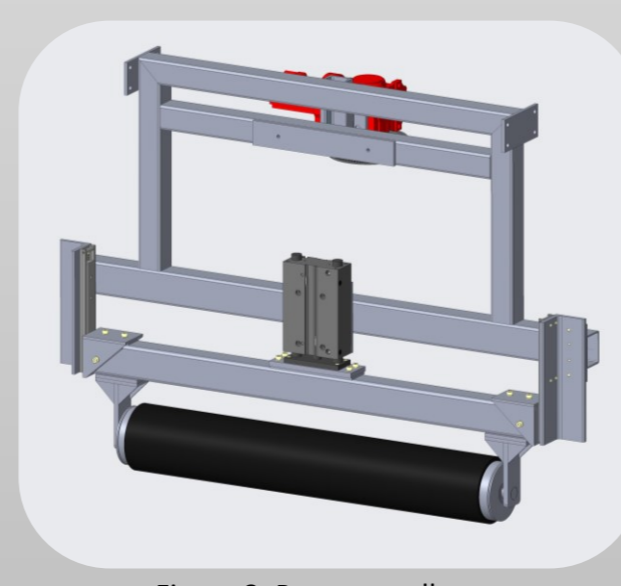


Figure 8: Pressure roller

A pressure roller that sits between the two cleaning rollers ensures that the mold stays in place. The pressure comes from a compressed air cylinder.

Moving Construction

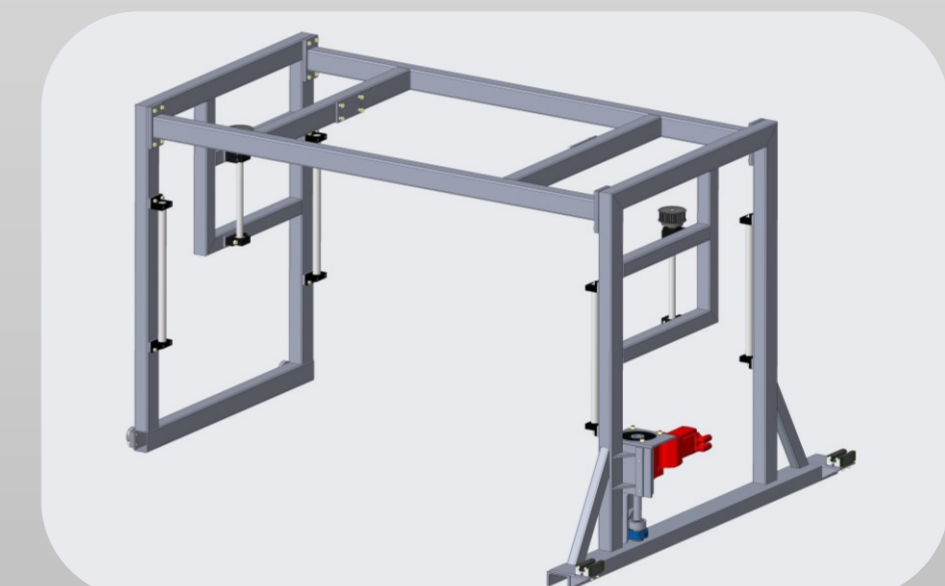


Figure 9: Complete installation

A sturdy and very compact construction ensures that the installation as a whole can move back and forward.

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