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DEPRAG 5-Axis Screwdriving Station



The Hager Company in Germany contracted us for the design and construction of two identical machines to assemble prefabricated part supports, which are used for the installation of frames, boxes, or cabinets into buildings and machinery. Each part support has two parallel rows of 5 screws. The first and last screw in each row is at a different elevation than the middle three screws. The part supports are presented to the machine on a 600 x 500 mm large palette. The required cycle time was 30 seconds per palette, including the time required for the conveyor to move the palettes into place. With both machines running, 20 screws are inserted every 30 seconds. Both machines will be run two shifts every day.

Each machine has two Motor Size 2 spindles, mounted to a five axes linear motion system. Each spindle is attached to an independent Z-axis with a vertical travel of 100mm (4 in.). Each Z-axis is mounted to an independent Y-axis that has 600mm (24 in.) of horizontal travel. Each Y-axis is mounted to a common X-axis that has 900mm (36 in.) of horizontal travel. This means that the two spindles move together in the X direction, but independently in the Y and Z directions. Each spindle is fed automatically by a Model SZG 0522-EP Screwfeeder with belt-driven hopper refill.

Each machine is controlled by a Siemens S7 controller, and equipped with OP-37 touch screen panels for operator interface. The frames are welded steel. The control box is mounted on casters with retractable cables so it can be positioned as best suits the operator.

