

AUTOMATED DOOR PRODUCTION LINE

USING AUTOMATION

TO ACHIEVE 3.3 DOORS/MINUTE



High quantities mean high consumption values and high personnel costs, right? Not in this project. Our customer, a well-known door manufacturer from the Netherlands, has taken the next step and modernized its production with us. In addition to a wide variety of machining operations and various assemblies on both the lock and hinge sides, all processes in this system are meaningfully linked by automation. Entirely without any cost-intensive interfaces between individual machines, the doors in our turnkey solution are detected, processed, assembled, cleaned, engraved and finally even palletized on an order basis depending on the type - and all of this at a cycle rate of up to 3.3 doors per minute!

At the same time, the concept focused on sustainable and cost-optimized production. Thanks to the targeted selection of special drive systems, the door production machine now impresses with particularly low air and power consumption values, which are additionally supported by energy recovery mechanisms. Personnel costs are another point of long-term cost optimization: This shows once again that the devil is often in the details. Skillful automation has enabled time- and resource-intensive secondary processes, such as protective board handling, to be optimized and staff utilization to be significantly reduced. The door production line is rounded off by state-of-the-art control technology with parts traceability, linked to the customer's master computer system.

THE PROCESS STEPS

- At the beginning, the different door leaves are fed in stacks.
- The door stacks are identified via a scanner.
- The doors are then fed into the line via a robot, which simultaneously also performs a plausibility check.
- As soon as all the doors in a stack have been removed, a smart secondary process automatically conveys the protective boards to the end of the line.
- Depending on the door leaf type, hinge drilling is performed in the first door processing machine, and hinges are also mounted directly afterwards. The material is fed automatically.
- In the next machine in the line, hinge milling is possible, such as tab hinges, Tectus hinges, etc.
- Directly afterwards, the side edges of the hinge side are cleaned.
- Automatic laser engraving of barcodes or DMCs can then take place in a special device. In this application, the customer logo was engraved.
- Even before engraving, the respective door is automatically rotated on a door turning station.
- The third machine in the line now performs forend, door handle and/or key milling on the lock side, as well as pre-drilling and rosette drilling.
- This is followed by various lock case milling operations at another station.
- With the help of the automatic tool change system, a wide range of tool lengths and diameters can be used.
- This is followed by cleaning of the upper and lower surfaces and the lock case using brushing, vibrating and vacuum technologies.
- The next process step involves the lock assembly with robot-controlled feeding from magazine units and automated bolting, with the magazine shafts being filled by bunker feed units.
- Of course, all machines with noise-intensive machining operations are equipped with a soundproof enclosure.
- At the end of the line, two robots take care of the order-based palletizing onto the protective boards. This prevents surface damage.



FACTS

- the available space is 9m width/30m length
- Part length: 280 - 3500 mm
- Part height: 50 - 120 mm
- Part width: 50 - 200 mm
- required performance: 2.5 parts/minute in single wood processing
- required performance: 4.0 parts/minute in double wood processing

Watch the machine video for this project
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SPECIAL FEATURES IN THE PROJECT

- Consistent parts tracking throughout the process
- Durability due to solid construction and proven designs
- Large number of machining and assembly steps implemented in a space-saving manner
- Use of clockwise and counterclockwise milling motors for maximum quality
- Exclusive use of known components for fast service availability
- High, but at the same time individually adjusted degree of automation, adapted to the customer's requirements
- Flexible control options between individual assembly steps
- Drilling unit with individually selectable drilling spindles
- Hinge screw-in unit, including 8-fold magazine for different screw-in hinges
- Significant reduction in ongoing production costs



CONTACT

ARE YOU FACING SIMILAR CHALLENGES?

We will be happy to advise you on comparable projects and answer any questions you may have about our references.

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