

## We are proud to be the partner of many top-tier companies

(An extract from our list of references)

- Airbus
- DMG Mori Seiki
- Egger
- GEA
- Häcker
- Kaldewei
- Kirchhoff Automotive
- Mahle
- Miele
- MTU
- Nobilia
- Nolte
- Rittal
- Schüller
- Siemens
- Spig
- Systematics
- J. G. Weisser

### Strothmann Maschines & Handling GmbH

Altenkamp 11  
33758 Schloß Holte-Stukenbrock  
Germany

Phone: +49 (0) 5207 / 9 122-0

sales@strothmann.com

A member of the Siempelkamp group.



# YOUR SPECIALIST FOR AUTOMATION SOLUTIONS

# Handling Systems



Information about quality and application of products does not constitute a guarantee of properties, it is only intended for information purposes. The decisive factor for the scope of our delivery is the respective contract portfolio

In the past decades, *STROTHMANN* has specialised in the automation of serial manufacturing processes. Notable companies worldwide put their trust in *STROTHMANN*.

Our motto is "Innovation in Motion". This represents the constant further development of our products and services. We are not afraid to journey down new, unconventional paths in order to ensure the competitive advantage of our customers. Years of experience, our membership in the Siempelkamp group and the down-to-earth outlook of a company from the Eastern Westphalia region are what makes us a reliable partner.

Our services include:

- Research
- Development
- Planning
- Training
- Service
- Production support
- Simulation
- Design
- Production
- Assembly
- Commissioning
- Programming

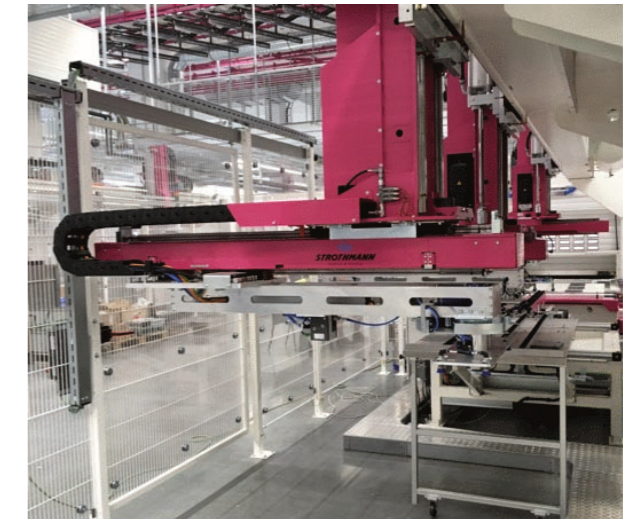
Our employees are key to the high quality of our automation solutions. We provide our expert staff with professional training in various fields. We also ensure that our experienced employees receive continuous further education.

Based on years of experience, *STROTHMANN* provides customised, well-designed handling solutions for various industries. Among other things, we handle board-shaped workpieces, e.g. panels, particle boards, gratings, etc. at high speed, with incredible precision.

Typical functions are the infeed and outfeed of stacks, stack separation (including hard-to-separate materials), rotating, turn-ing, centring, loading and unloading, etc.

All machines and the user-friendly Siemens- based control system are manufactured by *STROTHMANN*. In certain cases we also integrate externally procured components, e.g. robots. We also provide interfaces for communication with the customer's existing machines and higher-ranking computers.

We will offer you a professional complete solution from a single source, tailor-made for your requirements, ensuring your competitive advantage in the market.



Feeder for blank handling



Stacking device for fuel cells



# Wind energy industry

## Application:

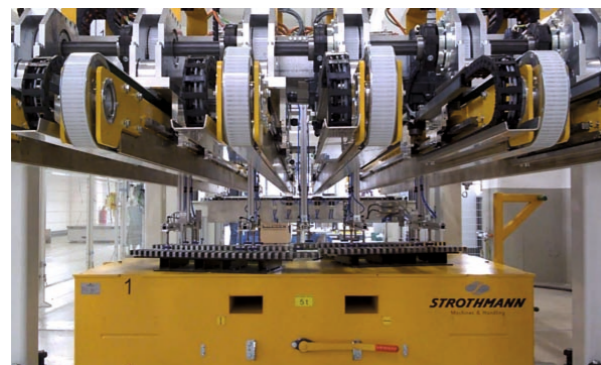
Automatic stacking of stator plates for wind energy generators

## Task:

Automatic feeding and separation of stator plates

Subsequent automatic stacking of stator ringsections with very low position tolerances

Automatic transport of the stator ring packages to the downstream production step



Overhead magnet conveyor with width adjustment



Suction toolings

## The STROTHMANN solution:

- Infeed of four stator plate stacks at a time on round rail carts
- Synchronously driven overhead magnet conveyors with crosswise and lengthwise adjustment driven by a servo motor
- Deposit of stator blanks at precise positions using solenoids which can be switched off
- Stator blank intakes with pneumatic centring sliders
- Automatic lifting device
- Automatic discharge of the complete stator packages using RoundTrack
- Siemens-steering S7

# Switch cabinet production

## Application:

Automatic blank restacking

## Task:

Continuous destacking of supplied blanks from various wooden pallets

Fault-free destacking of wooden pallets and sheet metal stacks despite high tolerances

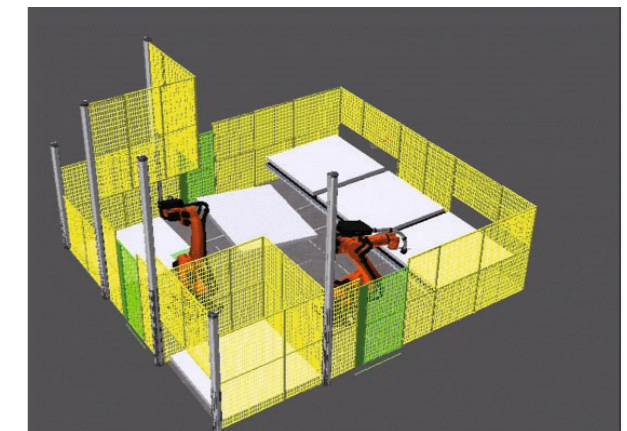
Centring of blanks

Stacking blanks on a system pallet without posts according to an individual stacking pattern

Very wide range of blanks from 180x180 mm to 2.000 x 2.200 mm, max. blank weight 50 kg

Moving system pallets of various sizes

Fully automatic operation



Automatic blank restacking system

## The STROTHMANN solution:

- Two separate destacking cells with pallet stops for continuous destacking
- Blank separation in the tooling using special air jets
- Universal toolings
- Destacking robot
- Gravity-based centring station
- Destacking robot
- Fully automatic pallet station with mechanical link to customer's transport system
- Connection to customer's main computer to compare product and process data
- Option: Multi-destacker to increase destacking capacity while maintaining the same space requirements

# Switch cabinet production

## Application:

Blank handling as well as press loading and unloading

## Task:

Handling of full and empty system pallets with transfer and return to customer's transport system

Separating steel blanks without magnets

Centring and oiling blanks

Inserting a blank in the press

Removing the formed blank from the press

Fully automatic operation



Feeder for blank handling

## The STROTHMANN solution:

- Fully automatic pallet station
- Suction tooling with automatic adjustment for blank sizes from 180 x 180 mm to 800 x 1.400 mm
- A blank separating device integrated in the tooling using a special air jet
- Centring station with servo drive, cycling stops and integrated oil application
- Three feeders, two of which have an integrated rotary axis
- All three feeders on a joint transverse traversing axis
- Siemens S7-1500 control system with TIA gantry
- Connection to customer's main computer to compare product and process data

# Bathtub production

## Application:

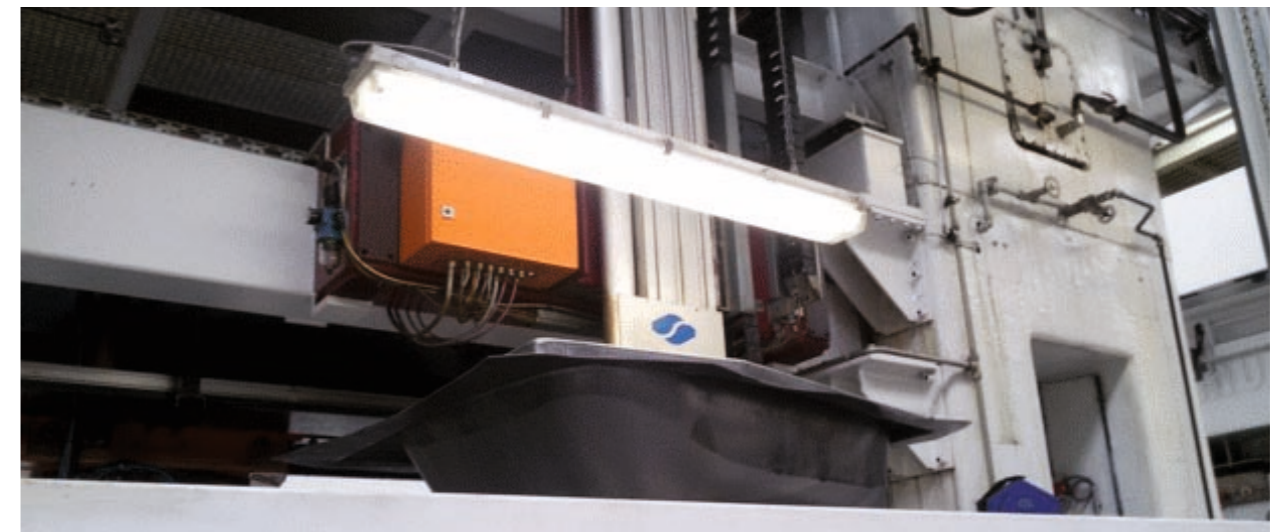
Bathtub handling during thermoforming

## Task:

Destacking of bathtubs on a pallet with a workpiece-specific attachment

Part weight up to 100 kg

Bridging of a vertical stroke of 2.500 mm



Destacking system for bathtubs

## The STROTHMANN solution:

- Telescopic vertical axis with counterweight integrated in the Z-slide
- Energy chain and interface with a suction tooling
- Control system interface with handling robot
- Mechanical connection to the steel structure of the 7th robot axis

# Fuel cell production

**Application:**  
Automatic stacking system

**Task:**

Automatic stacking of different layers of the fuel cell

Moving the complete fuel cell from a vertical to a horizontal position



Source:  
Research centre Jülich GmbH



Automatic stacking system for fuel cells

**The STROTHMANN solution:**

- Stacking robot on a lifting frame with special suction tooling and optical position detection
- Automatic quality check of specific layers
- Stacking frame with tilt-and-turn unit
- Spindle-driven scissor lifting table with four individual motor-driven spindle drives and evenness monitoring by position sensors
- Lifting platform as emergency strategy (for manual stacking of the different layers)

# Special switch cabinet production

**Application:**  
Blank handling

**Task:**

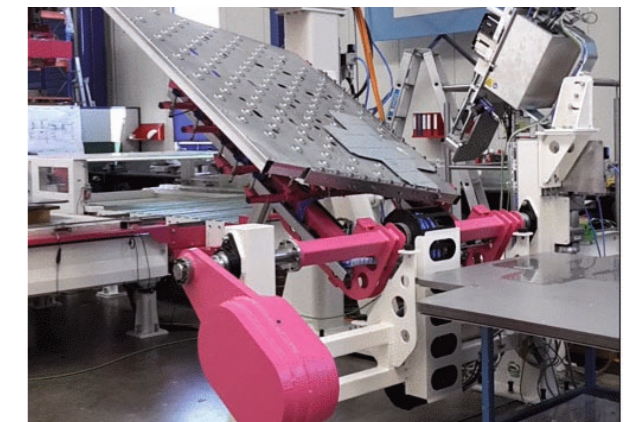
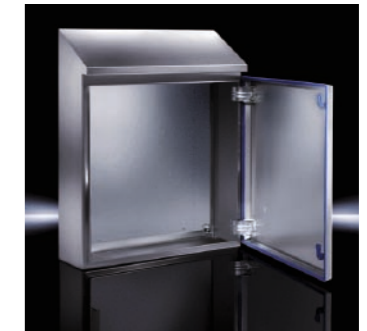
Handling of full and empty system pallets with transfer and return to customer's transport system

Separation and transport of stainless steel blanks with lamination on one side

Centring and labelling blanks

The blank is then turned

Transport to the downstream machining station



Blank turning station with integrated centring

**The STROTHMANN solution:**

- Fully automatic pallet station
- 3-axis destacking gantry with universal tooling for blank sizes from 750 x 750 mm to 1.640 x 1.840 mm, blank weight max. 35 kg
- Fully automatic turning station with integrated gravity-based centring station
- Fully automatic label application with automatic check of the label text
- Careful deposit on the customer's conveyor system
- Siemens S7-1500 control system with TIA gantry
- Connection to customer's main computer to compare product and process data

# Kitchen production

**Application:**  
Handling of particle boards

**Task:**

Particle board separation, lifting, transport and deposit on customer-provided conveyor systems, starting from a stack



2-axis gantry with universal tooling

## The STROTHMANN solution:

- 2-axis gantry with modular design
- Horizontal beam designed as aluminium profile with integrated circular guides
- Suction tooling with individually controllable suction groups for different particle board formats
- Counterweight of the Z-axis integrated in the Z-slide
- X-axis with rack-and-pinion drive and automatic lubrication
- Maintenance-free rack-and-pinion drive in Z-axis
- Siemens drives
- Integration into customer control system

# Condition Monitoring

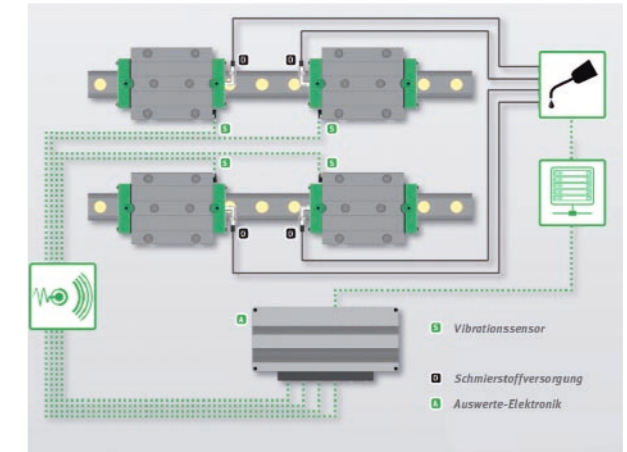
The trend toward digitalisation represents a strengthening of communication and co-operation between man and machine with the aim of optimising the entire value added chain.

One step in this direction is permanent monitoring of critical wear parts. For this purpose, STROTHMANN has developed an extensive Condition Monitoring System. It comprises the areas of data acquisition, data evaluation and data visualisation.

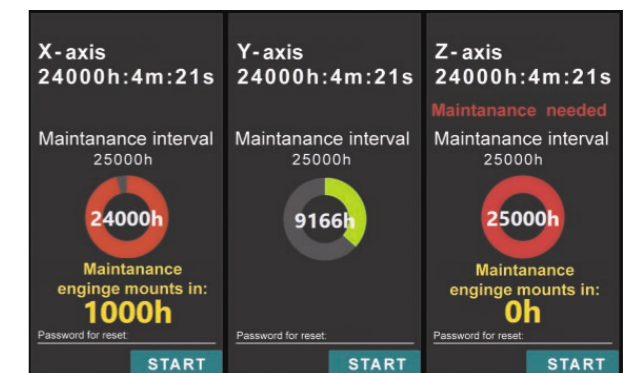
These methods are used to derive predictive measures in order to avoid unplanned production downtimes. This creates the following advantages:

- Only truly necessary components are replaced, but they are replaced in time (condition-based maintenance). This leads to a significant reduction in cost compared with conventional preventative maintenance, in which components are replaced irrespective of their actual condition.
- Machine availability is increased even more.

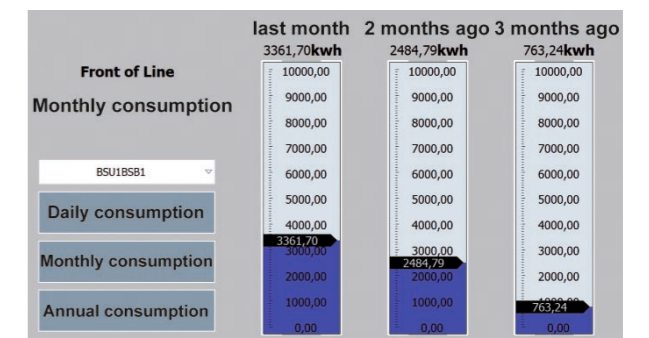
The extent of condition monitoring can be adapted to the individual customer's requirements.



Example 1: Guide carriages of linear guides



Example 2: Motor maintenance intervals



Example 3: Consumption measurements