

INNOVATION IN MOTION

New Production Logistics projects



Image: Kraas & Lachmann, Tübingen, Germany

Editorial

RoundTrack®-Technology provides the mechanical engineering industry with a modular system that enables an efficient manufacturing organization as synchronized or flow production. In this edition of the INNOVATION IN MOTION magazine, we present two recent projects.

The **GEA Westfalia Separator Group** has used RoundTracks® for a production line for the final assembly of liquid separators at its headquarters in Oelde, Germany. The company has engineered a number of own features and thereby realized an ergonomic, resource-friendly intra-logistics concept.

The construction of a new headquarters occasioned **Haas Schleifmaschinen** from Trossingen, Germany, to transfer the production of grinding machines to synchronized flow assembly. Objectives included improved production planning and shorter throughput times for the machines weighing several tons. The one-time investment in floor rails and multi-purpose carts enabled Haas to realize a long-life intra-logistics solution that creates no extra operating costs.

Which challenges do you meet in your factory? We look forward to developing efficient solutions with you.

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Production flow for liquid processing technology – STROTHMANN provides transportation solution for separator assembly line at GEA Westfalia Separator Group

The GEA Westfalia Separator Group (henceforth: GEA) has implemented a one-piece-flow assembly line for separators at its headquarters in Oelde, Germany. The line based on RoundTrack®-Technology has recently been put on stream. GEA benefits from the intra-logistics system's excellent running characteristics and resistance to wear.

'We demand efficiency and top quality from our products as well as from our facilities,' says Herbert Kleigrewe, GEA test field team leader. 'RoundTracks® from STROTHMANN have enabled a resource-friendly line layout.'



The new production line consists of clearly defined stations and RoundTrack® floor rails that practically vanish in the hall floor. Lifting platforms integrated in the floor bring the assembly modules to an ergonomic height.

Efficient intra-logistics solution

RoundTrack®-Technology has significant advantages such as easy operation, ergonomics, and a low noise level. Moreover, since it does not require conductor rails or trailing cables, it also increases workplace safety and reliability of the power supply and reduces down-times as well as maintenance. The round, easy-to-clean rails protrude only a few millimeters from the hall floor and do not hinder people or cleaning machines.

In a comparative test of similar transport systems, RoundTrack®-Technology scored by far the best, both in energy consumption and rolling resistance. The study included air cushion transport systems, motorized pallet jacks, skid conveyors, and conventional flat rails.

Since, in contrast to other steel/steel combinations, RoundTrack® wheels have no flanges, they have a significantly lower rolling friction. Flanges on crane, railroad, and streetcar wheels cause considerable friction on the rails. Wheels from the RoundTrack® portfolio feature a concave profile that keeps the carts on track with minimal contact with the rails. The low rolling resistance positively affects the performance rate and results in very low energy consumption. Even loads of several tons can be moved by hand without an auxiliary power supply.

Installation in an existing hall

STROTHMANN installed rails with a total length of 600 m in the GEA factory. In preparation, the floor was opened with high-precision diamond disc cutters. Then, the rails were laid precisely and cleanly by means of levelling platforms and specialized installation tools. The gaps were backfilled with non-shrinking, fast-drying grout.

GEA has installed lifting platforms in the floor at selected stations. Thereby, the assembly carts – also customized by GEA – can be brought to an ergonomic height. The carts are used both for assembly and in the test field. Completed machines are driven to the test field via a RoundTrack® turntable. Thanks to this new setup, the machines no longer need to be especially oriented at each test station.

Kleigrewe says, 'The implementation of synchronized assembly has laid the basis for progressive improvements. We are able to arrange manufacturing processes transparently and reduce unproductive, tedious tasks. Work safety benefits from the decreased use of cranes.'



Company background GEA Westfalia Separator Group

The GEA Westfalia Separator Group is a subsidiary of GEA Group AG, one of the leading international systems providers for the food industry and a wide range of process industries.

Founded in 1893, the GEA Westfalia Separator Group has since achieved technological and market leadership in the field of mechanical separation by means of separators and decanters. The group includes 50 sales and service companies worldwide.

Smooth operations – Grinding machines in flow assembly at Haas Schleifmaschinen

The construction of a new headquarters was the right occasion for Haas Schleifmaschinen to introduce synchronized assembly line production. The example shows that flow assembly does not necessarily mean mass production. Hardly any two grinding centers completed by Haas are the same – their destined applications are too diverse. To meet customer requirements in an optimal, economic way, the company offers three standard machine types that can be customized according to individual specifications by way of thousands of optional features. The manufacturing process consists of various steps that can be organized in standardized modules, allowing for efficient flow production of multi-variant products.



RoundTrack®-Technology combines well with overhead cranes that are used to provide heavy parts and to transport finished units to the test field. Image: Kraas & Lachmann, Tübingen, Germany

Brought into line

Up until recently, Haas had completed the machine tools in conventional box assembly. This took an average processing time of six weeks per machine. There was never a fixed completion date, but unscheduled service calls or missing materials caused delays. Today, there is a fixed cycle time.

The assembly line consists of nine stations. The machines are moved ahead one station every three days. Thereby, every three days a machine is completed and consigned to the test field. Final assembly takes exactly 27 days. Customers can be given the precise acceptance date seven weeks before the start of final assembly.

You've got to move it

Once completed, the machines are transported to the test field and brought into place for delivery by overhead cranes. Why was this not a valid solution for the assembly line?

'We did consider various means of transport,' says Thomas Bader, managing director at Haas. 'STROTHMANN's RoundTrack®-Technology was a promising contender from the start. As we started discussing the implementation of an assembly line, we researched how other machine tool manufacturers operate. We also visited factories and

noted that several companies had been using RoundTracks® for a long time. It allows you to move a machine to the next station very quickly and with little effort. The machine frame remains standing on the carts throughout assembly. To transport it, you simply release the index pins and manually push the entire setup to the next station. In contrast, the overhead crane needs to be positioned first; if there are any loose parts lying on the machine, they must be put away; then the crane hook needs to be safely fastened.'

'All in all, working with a crane is relatively time-consuming and requires some logistics. Conversely, transportation on trolleys just happens and does not present a challenge,' says Bader.

The basis for order

RoundTrack®-Technology provides a straightforward and unobtrusive solution. Three rails have been installed on the shop floor and back-filled with grout. The polished rails pose no obstacle when walking across, nor even to rolling shelves and pallet trucks. The accompanying carts are highly compact. They are part of STROTHMANN's catalog of transport components. The grinding centers, weighing several tons, are placed on two carts each. Due to the RoundTrack® system's minimal running resistance, even fully loaded

carts can be moved by hand. The carts can be fixed in position by means of index pins.

Highly precise and safe

Haas machines contain radio touch probes for monitoring the work pieces. The grinding disks are continuously checked for wear, allowing for adjustments or exchange, if required. All crucial parts are temperature-stabilized. Of course, the new assembly line must also fulfill the highest performance standards. There is quality monitoring after each production step.

And, accordingly, Haas had high demands on STROTHMANN installing RoundTracks®. The track lines were exactly measured and the rails were laid absolutely evenly.

Work safety was another central aspect in the reorganization of production.

'Certain processes require workers to climb on top the machines,' says Bader. 'They need to be secured which is easily implemented with the new line layout. We planned the integration of safety measures at stations that require them, early on. Likewise, we included suitable ergonomic solutions according to the job profiles at various stations.'



The reorganized new assembly is characterized by transparent processes and transparent material and information flow.
Image: Kraas & Lachmann, Tübingen, Germany

Job variation and transparency

How do employees take to the production line?

Bader says, 'We switched to flow assembly simultaneously to the move to our new, air-conditioned factory. That already raised the spirits. And the work environment is impeccable. Workers are not limited to menial jobs, but there are three teams that manage three stations each. That means well diversified tasks.'

And what is the management's perspective?

'We have achieved genuine transparency. We can now use our resources much more efficiently. For example, we used to do box assembly; when there was a service call, a trained worker was pulled out of assembly to carry out the maintenance. In a global company like ours, this can mean a trip of several days, especially when another call comes in from the same region – "Ah, yes, we have someone close-by. They will see to it." That is an everyday occurrence. Logically, we would be mis-

sing a production worker for the entire period, and the projects would be delayed.'

Bader continues, 'With the shift to flow production, we have implemented a new, strict system. The three-day schedule is fixed. There are stand-by personnel, but production workers are not recruited for other tasks. We commit ourselves to our customers. Of course, we want to give them reliable dates. Most importantly, this reorganization has helped us make our production more efficient. We use the space optimally. The provision of resources is transparent. It is obvious at a glance whether a station has all the necessary materials. Used-up materials are regularly refilled.'

Bader sums up, 'In conclusion, work has become less hectic for workers and managers. The new flow production line is a pleasant work environment.'

Company background Haas Schleifmaschinen

Haas Schleifmaschinen develops, manufactures, and distributes grinding centers for complex geometries and the accompanying software. Haas universal grinding machines are used amongst others for manufacturing precision tools and turbine blades with the smallest possible number of settings.

The company is the worldwide leader in grinding machines used for orthopedic implants. The factory located in Trossingen, Southern Germany, can put out 120 machines a year. About 150 employees generated an annual turnover of approximately EUR 40 mn.

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