



STROTHMANN

Machines & Handling

R o u n d T r a c k ®



Deckel Maho kicks off flow production

Deckel Maho, a subsidiary of the Gildemeister group, officially inaugurated a flow production line. In a nutshell, this brings about the following advantages: the new facility requires less floor space, has considerably shortened throughput times and facilitates adherence to delivery dates. The two track systems, which the machine tool manufacturer from Seebach (Thuringia) mainly uses for the assembly of the universal milling machines DMU 50 and DMU 70, measures 2 x 74 m. The facility is based on RoundTrack® technology from STROTHMANN Machines & Handling. With a low rolling resistance coefficient of 0,01, the patented system provides extremely smooth running and ensures excellent positioning accuracy for machines in their assembly positions. The East Westphalia-based handling specialist was the main contractor for the new flow production facility.

DECKEL MAHO

Machine tools pick up more speed on the factory floor

After evaluating a wide range of other concepts in advance, Deckel Maho negotiated with a number of potential suppliers and in the end decided upon STROTHMANN's system. The RoundTracks® are mented to the hall floor. They are used to carry mobile trolleys with transport platforms as the second core component of the system. The platforms rest on four consoles in their idle state. During transportation, pneumatic cushions lift the platforms slightly and set them down once they reach the next assembly station.

Always under pressure

This set-up may at first appear rather simple, but in practice it turns into a challenge for machine builders, since all machine tools under construction must be continually supplied with energy and compressed air as they move along the line. Power supply is ensured by two conductor lines (50 and 60

Hz) to the right and left of the path, but providing a continuous compressed air supply posed something of a challenge to the STROTHMANN developers. This task was solved by means of two separate compressed air lines. During assembly, the platforms on the trolleys are supplied via an air coupling on one of the four resting consoles. Before the transport to the next station, the connection is not disrupted until the air supply within the lifting cylinder has docked on properly. This line is carried along by the trolley on its energy guiding chain. As soon as the platforms have reached their new position, the lowered trolleys return to their starting position beneath the platforms until the next unit is due

for transport about eight hours later. The two lines opposite each other are synchronized, including the transfer of empty platforms to the neighboring line via a transversing trolley. The new system's key feature is indeed the continuous power and air supply during transportation, which allows Deckel Maho to start the 25 h final test run for the milling machines already on the assembly line.



Reliable vibration prevention

Test-running the machine tools leads to vibrations, which can in the worst case result in resonance affecting the machine and handling equipment. "To prevent that, we have thoroughly braced the shearing platform. With an unloaded weight of 2.8 tons, this is a really massive steel construction", explains Helmut Wiesing, a STROTHMANN sales staff member. Placed on top of the platform is a 2 x 2 m steel bearing area, which is precisely aligned with a tolerance of only 0.1 mm. The welded construction could additionally have been filled with a compound material to further increase the inertia of the platforms. This precision within the production facility eventually ensures high operational quality of the machine tools.

Increased productivity

Due to the smooth, continuous assembly, Deckel Maho has succeeded in reducing assembly lead time, thereby increasing productivity. The company's competitive position is further strengthened by increased material turnover in the plant, optimized use of space and a decreasing stock of unfinished goods. The advantages of flow production are especially obvious in a direct comparison of throughput times: in a stationary box, a DMU 50 or DMU 70 machine takes about 21 days to be fully assembled. The new assembly line shortens this process to twelve workdays.

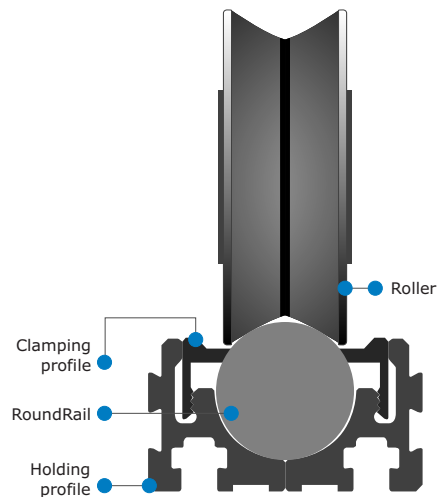
"The flow production, which has much in common with a conveyor belt, now brings the machines to our employees, which primarily saves time we used to lose in the in-house transport phase. Moreover, the workers can now fully concentrate on their tasks due to division of labor and job specialization, which also minimizes the risk of errors", emphasized Martin Boelter, Deckel Maho's managing director, during the official inauguration of the new facility. This also means that no one needs to search for components or tools that have been carried all the way through the plant by a co-worker because they were needed elsewhere.



Piggy-back ride to the next station

Deckel Maho has invested a total of 1.6 million Euros into this project. The result is a visually and technically stunning system with a floor space of 1,000 mc². The two assembly lines with 14 stations and 13 trolleys each operate in opposite directions, but form a closed system with assembly platforms for the machine tools and trolley modules which serve to transport the platforms from one assembly station to the next in piggy-back fashion. Both lines are connected via a traversing trolley, which means that the platforms do not need to be transported back, but reach the starting position of the neighboring line immediately once they come around. Since there are also parallel preassembly stations, Deckel Maho can now produce two finished machines in an eight-hour cycle, with one step of the assembly line per day. The main products of the Seebach plant currently are the universal milling machines DMU 50 and DMU 70.

The RoundTrack[®] system was developed and patented by handling specialist W. STROTHMANN GmbH from East Westphalia, Germany. It is employed in a wide variety of industrial production facilities. Due to their circular cross-section, RoundTracks[®] eliminate the typical disadvantages of conventional rail systems, such as grooves that easily get dirty and edges that are tripping hazards during operation. The rails are embedded in aluminum holding profiles that are laid in the hall floor. The round, grooveless upper edge of the rail protrudes only 3 or 4.5 millimeters from the ground. Persons or vehicles, e.g. cleaning machines, can pass over the tracks without any risk of accident. RoundTracks[®] are made from hardened and polished steel – the wear-free material easily withstands even a hammer dropped on the tracks by mistake. The floor rail system also includes trolleys with ball bearing rollers, whose "gothic arch"-shaped profile ensures that contact with the rails is limited to two small surface areas. Rolling friction is therefore minimized, and even loads amounting to several tons can easily be moved along the tracks.



Innovation in Motion

Since the foundation of the company in 1976 W. Strothmann GmbH has become a synonymous for innovations in transportation and material handling equipment. Over the years Strothmann has gained vast experiences in press shop automation and is well known as specialist supplier of press to press transfer systems, blank destackers, sophisticated centring units and highly dynamic loading and unloading feeder; including gripper and tooling systems. Our patented stationary and linear inductive drives for high speed shuttles show that the linear feeder exceeds the known borders. Many branches of industry, including automotive, machine tool manufacturers and the timber processing, trust our expertise and experience. The patented RoundTrack[®] floor rail system allows new approaches in manufacturing system engineering (Flow- and pulse assembly lines). The rails are easy to install, and due to the low rolling resistance heavy loads like aeroplane body sections and big electrical transformers can easily be moved.



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