Press release

FIBROMAT heavy-load positioning table 2015-06-20

Rotary table transfer increases reliability in the core production of foundries

While conveyor solutions in core shops are widespread, the NEUE HALBERG-GUSS GmbH is going in a different direction: On a fully automatic core machine system for engine blocks, it is completely forgoing linear conveyor technology and instead using maintenance-free FIBROMAT rotary tables for the transport of the parts. Downtimes due to handling have since fallen to virtually zero since then. And other plants will soon follow.

Since the fully automatic core machine system at the Saarbrücken site has gone into operation, it has literally been an "all round" success at HALBERG GUSS. With a previously unimagined and unique process stability, 3,000 core packages for engine blocks leaves the plant each day. Eight modularly designed FIBROMAT heavy-load positioning tables handle the transport of the cores and core packages on two lines arranged in parallel. No conventional belt conveyor technology is needed. "By using rotary tables for transferring the parts, we have been able to achieve a significantly higher process stability of the entire system when compared to the previous solutions", explains the Head of the Core Shop, Christian Ast. "The FIBRO rotary tables run so stably that our servicing team has not had to intervene once even after 18 months of continuous operation", adds Sebastien Becker, Segment Manager of the Core Shop and responsible for the running operation of the system.

High precision and reliability even in dirty environments

Before the investment, the team tested the positioning tables and the associated transfer principle in two smaller applications. The weaknesses of the conventional belt conveyor technology were clearly apparent: positioning inaccuracy, problems with transport or susceptibility to wear of the individual components, which the new solution had none of. "The rotary tables behaved absolutely reliably in the test system – and despite the very dusty environment, underscores Christian Ast. "They facilitate a significantly higher precision and process relia-

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bility than other transfer solutions, without increasing the procurement costs for the entire system." And with the running costs as well, the rotary table transfer is the clear winner thanks to the extremely low susceptibility. As a result, the decision was an easy one to make.

Immediately after the core shooter, a robot now positions the cores for deburring on the first FIBROMAT rotary table. On a second and larger FIBROMAT, the cores are then stacked, transferred as subpackage to the third rotary table station and packetized there to approx. 80 kg complete packages. The fourth station subsequently serves to feed the screwed together complete packages to the sizing process and to finally eject them from the system.

Modular design facilitates efficient solutions

The decision by HALBERG-GUSS to use the heavy-load positioning tables from FIBRO for all stations was a perfectly consistent one. Since its premier roughly four years ago, the modular, and thus price-performance-optimised rotary table has been writing its exemplary success story ever since. Regardless of the type and number of motors, size of the centre borehole, roller bearing or stiffness-optimised cross roller bearings, media distributor, collector ring transfers, or absolute measuring systems needed, the maintenance-free quick-change artist offers such a high freedom of design that extensive and thus expensive and lengthy special solutions have become the exception rather than the rule. Depending on the size, the repeat accuracy lies at around 10 arc seconds; with absolute measuring systems, this accuracy can be increased to 5 arc seconds. Since the gearbox is not self-locking, this prevents any damage to the mechanical system of the rotary table in the event of a sudden power failure or emergency stop. In addition, the table does not swing open during positioning, even with superstructures on the table top. The precision required by HALBERG GUSS in the decimal range are easily ensured. And absolutely no comparison to the fluctuation margins of conventional transfer systems in foundries. All seals are already covered as standard and thus ideally suited for use in challenging environments such as in foundries or welding in automobile body construction.

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A clear advantage is FIBROMAT's flexible range of application. With pneumatic indexing, for example, up to 38 divisions are possible. If a master-slave drive is alternatively utilised, any arbitrary position can be freely taught and tensioned using the motor brake without play by software with a master-slave drive. Even though HALBERG GUSS hardly exhausts this potential with the current pivoting movements of 90°, 180° and 270°, it still offers leeway for modifying the process over time or for integrating new versions and products into the system. The heavy-load positioning tables are available in four sizes, with tabletop diameters of 800 mm, 1,000 mm, 1,250 mm, and 1,600 mm. The smallest size allows set-ups up to 4,500 mm in diameter and transport loads up to 10,000 kg while the largest setup permits up to 9,500 mm and 25,000 kg respectively. The central borehole measures between 320 mm and 1,200 mm. Special connecting dimensions and customer-specific drilling templates can be implemented quickly and easily.

Rotary table transfer will soon be the new standard

From Sebastien Becker's perspective, the system concept has proven itself outstandingly. "With only two employees per line and per shift, we are able to completely finish the immediately ready-for-decantation core packages." In comparison to a different system with conventional conveyor technology and five robots, the significantly larger rotary table system with 26 robots performs exceptionally well. This applies to both the pure system availability as well as for broken cores and bearing changes. It makes perfect sense that Christian Ast and Sebastien Becker are planning to apply the rotary table transfer concept to other systems. "We are assuming that this principle will establish itself as the new standard", emphasise both specialists.

Info box

HALBERG GUSS

The NEUE HALBERG-GUSS GmbH is one of the leading foundries in Europe for the development and production of engine blocks, cast iron cylinder heads and cast crankshafts. Its products range from sophisticated three-cylinder blocks for automobiles to large volume V8 aggregates for commercial vehicles.

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In addition to this are also spheroidal graphite iron bearing tunnels as well as aluminium bedplates. Due to the high level of competency and the close cooperation during the development of efficient, inexpensive, powerful drive units and other cast components, the NEUE HALBERG-GUSS GmbH is a sought-after partner in the European automotive industry. The Saarbrücken site has a workforce of approx. 1,200.

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FIBRO GmbH

FIBRO is a pioneer among rotary table manufacturers and offers the world's most extensive rotary table programme from a single source with more than 150 types of rotary tables. The rotary tables are used as swivelling or positioning axes and as workpiece carriers in highly productive machine tools, assembly and production systems. The greatest possible standardisation of the individual series also makes the company an interesting partner with regard to cost aspects. Numerous projects in various industries around the globe prove how strongly customers profit from the high solution competence and worldwide service network of the rotary table specialists from Weinsberg.

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Captions

Rotary table transfer	HALBERG GUSS utilises a total of eight FIBROMAT rotary tables in the fully automatic core machine system.	  
Core-shooting system	On the core-shooting system (left), the grains of sand are initially deburred and then transferred to the second station (right).	
Mounting of the core packages	A total of 26 robots are active in the system. During the mounting of the core packages, the FIBROMAT rotary tables ensure a high process reliability and precision.	
FIBROMAT application	The flat FIBROMAT rotary tables facilitate an optimal accessibility of the individual stations and are extremely easy to maintain.	
Group photo	Christian Ast (left) and Sebastien Becker (right) speaking with Thorsten Schauder (centre), responsible at FIBRO Business Development.	
FIBROMAT	The modularly designed FIBROMAT heavy-load positioning table is available in four sizes with tabletop diameters of 800 mm, 1,000 mm, 1,250 mm and 1,600 mm	

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