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Vollert NEWS

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350,000 PRESTRESSED CONCRETE SLEEPERS

GIC is investing in a new precast plant for concrete sleepers in Mexico and also has its eyes set on the U.S. market. Several expansion stages make it possible to increase capacity in real time as demand rises. **Page 2**

AMAG GETS RETROFITTED

At Austria Metall AG, a new heavy-duty transfer car for aluminum coils has replaced the handling system that has been in use for 30 years. Coils weighing up to 55 tons are shuttled. **Page 3**

Precast Concrete Parts Made in Paradise

New Caledonia leverages state-of-the-art precast production techniques to build striking single-family homes, housing complexes, hotels, and public facilities. Due to the geographical isolation of the archipelago in the South Pacific, the systems and machinery employed must be highly reliable and flexible to ensure streamlined production off of the mainland.

PRECAST CONCRETE PLANTS

With average temperatures between 20 and 30 °C and gorgeous beaches and diving resorts, New Caledonia is among the world's most popular vacation destinations. In pursuing the construction of new buildings for residential areas, public administration and touristic projects, LBDP Group (Les Betons du Pacifique) relies on precast production methods. To this end, a precast plant was erected. The project was completed in April 2014, and the plant is set to manufacture up to 100,000 m² of floor slabs and double/sandwich walls as well as columns and support beams each year. "This output could not have been achieved without employing state-of-the-art technology and extremely robust and reliable machinery that requires very little maintenance. We are 2,000 km away from Australia and more than 15,000 km from continental Europe, which is why we need a production facility that we can count on", stresses Philippe Marrié, Sales Engineer at Vollert. "The new facility provides a really competitive alternative to traditional building systems." LBDP chose Vollert as their experienced engineering partner to realize the project. The internationally-active planning consultancy MC2 showed responsible for the knowledge transfer.

High Level of Diversification

Spread out over a relatively small area measuring 1,600 m², the machines installed can produce solid and double walls up to 400 mm thick and floor slabs with thicknesses of up to 60 mm. Solid walls up to 160 mm thick can also be produced thanks to a flexible side rail attachment. Concrete parts measuring up to 3.20 m in height are likewise possible as are semi-insulated variants. A further benefit of the plant is that it can be used to mold V-shaped beams and columns for smaller buildings. "A special pallet design is also available for manufacturing 18 slack-reinforced support beams. A technical challenge to say the least", comments Jürgen Schäfer, Project Manager at Vollert. Shuttering pallets with a forming area of up to 40 m² and distributed loads reaching 400 kg/m² move through each work station in an enclosed conveyor system that is controlled and regulated by a state-of-the-art master computer.

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Dear Readers,

The term "German Engineering" is known around the world and is synonymous with exceptional quality – quality that is frequently observed in the long service life of machinery that continues to operate as intended despite being subjected to high loads on a daily basis. The 50-year-old concrete bucket conveyor exemplified in this issue is just one example of this impressive durability. It is in this context that we regularly encounter Vollert systems engineered in the 1960s and 70s that are still in operation. Such longevity is the product of a well-designed construction as well as routine servicing and maintenance. By referring to the design documents stored in our archive, we can always find the OEM replacement parts needed, including for systems that have been around for decades. Having said that, we do not dwell on the success we have achieved, but are always looking to design even better technologies in the future – an attitude that further underscores what is meant by "German Engineering". The projects described in this issue offer proof of our quest to never stop improving.

Enjoy reading the issue!

Gerhard Geist

Continued from page 1

Robust Technology

Manual work stations were also integrated to handle the reinforcing elements and assembly parts, and complement the semi-automated production system that comprises a pallet and shuttering cleaner, a CAD/CAM-controlled industrial plotter, a guided concrete spreader in bridge-type design, and a low-frequency shaking station that ensures exceptional surface and edge quality. A floor-bound rack feeder that can support concrete loads of up to 400 kg per square meter moves the pallets into and out of the curing chamber fully automatically, and a stationary pallet-turning station was installed for producing double walls. A great deal of engineering finesse can also be found in the system used to extract, lift, and load product. The lifting beam, for example, safely and reliably loads the double walls in the facility and was provided by concrete plant specialist Nuspl. Secured by a dedicated stabilizer, the beam hoists the finished double wall via lifting anchors and loads it onto a support frame. The precast concrete parts are then removed by a lift truck with a rated capacity of up to 20 tons.

„The very latest in technology combined with the right level of automation are the distinctive features of this plant concept", explains Philippe Marrié. „The flexible work processes afforded by the design also make it possible for us to produce a wide variety of precast concrete parts." The end result is that New Caledonia can meet all of its production requirements without the need for assistance from the mainland.

350,000 Concrete Sleepers by State-of-the-Art Precast Plant Technology

Speeds of over 200 km/h and ever-greater axle loads take railroad networks up to the limit of what they can physically handle. Prestressed concrete sleepers are therefore gaining in popularity as they prove to be viable candidates for replacing their steel and wooden counterparts, which do not last as long, require more maintenance, and have a less favorable eco-balance. To this end, the GIC Group has invested in the technology at its headquarter location in Monterrey, Mexico so that it can address the rising demand for the concrete alternative.

GIC Ingeneria y Construcción has been among Central America's leading construction companies for over 30 years and supplies precast concrete parts for over 700 projects involving residential and industrial buildings as well as bridge and road construction. In 2013, the Group invested in a new precast plant for prestressed concrete sleepers. "As the plant concept was being designed, GIC made it clear that a key requirement was to provide for flexible production processes so that capacity could be increased later on. A high level of occupational safety was also paramount. These items then became the focus of our work", explains Steffen Schmitt, Senior Sales Manager at Vollert.

350,000 Prestressed Concrete Sleepers Annually

The compact circulation plant is installed in an area measuring 1,200 m² and features a modular design so that it can be scaled for an annual output of 350,000 prestressed concrete sleepers that are manufactured in two shifts with a combined daily capacity of over 1,300 units. To this end, 280 four-piece sleeper molds circulate in the plant at all times. A system of roller and chain conveyors ensures that a continuous supply of material is available. After the reinforcing elements are brought into position and prestressed, a semi-automated concrete spreader fills the molds with exacting precision. A high-frequency vibrating station then compacts the mixture evenly, at which point a series of trolleys carrying up to eight four-piece molds cycles through the curing chamber on a chain conveyor. A lifting beam with an integrated turning mechanism lifts and turns the molds and completes its routine by placing them back on the conveyor system. The semi-automated demolding station then starts the rechucking process, and an electric lifting device initiates the demolding process.

High Level of Productivity

Prestressed concrete sleepers are delivered ready to install. The tightening torque of each stretched wire is also logged for quality-control purposes, and all transport and storage processes are controlled centrally from a master computer. Analyses are available in real time indicating the productivity of the plant. A second vibrating station is also planned to boost output, and the curing chamber can accommodate three conveyor tracks. This investment takes GIC one step further into the future as the company begins to cater to international markets as well, including the United States. "Vollert was the partner with the know-how GIC was looking for and helped us find the right balance between the degree of automation required and the high productivity we needed", attests Mauricio Gutiérrez, Sales Director at GIC.

PRECAST CONCRETE PLANTS

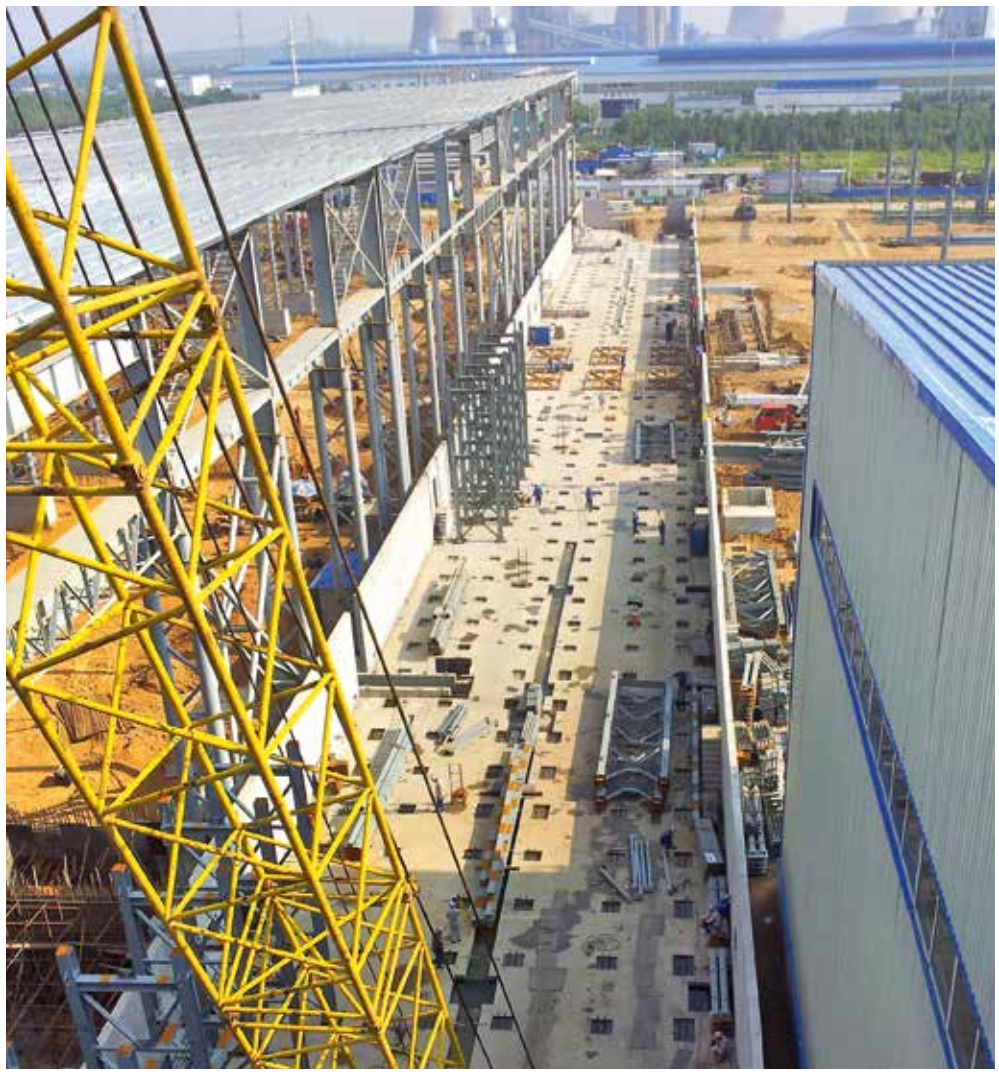
Long Service Life

For 50 years now, Rohrwerke Gaier near Augsburg has been using the same bucket conveyor. Back in 1963, Vollert installed the track to supply two production halls. A half a century later, the unit continues to operate flawlessly. "This is not a one-off case", comments Helmut Schneider, who heads the service division at Vollert. "We regularly maintain and repair Vollert-designed systems that have been used in daily operation since the 1960s and 70s." To this end, his team coordinates and executes all maintenance, retrofit, and repair work, and carries out inspections and statutory audits, including for machines from other manufacturers. "Our service program and OEM replacement parts extend the service life of the systems by a considerable margin", attests Schneider. Customers are also looking for fast response times and dependability, especially when it comes to ordering and installing parts. "We have a unique, well-maintained archive and can access project documents that date back 40 years or more." Complex controller retrofits and modernization measures are also easy to organize. At Rohrwerke Gaier, 400 meters of cable are being replaced as are conveyor rollers and cable pulleys. This will be followed by a performance test and a certificate documenting compliance with the relevant accident prevention regulations. The revitalized system will then be ready to enter production once again and operate reliably for many years to come.

SERVICES

Cool, Large, Fast, and Unique

The new mega high-bay warehouse designed and supplied by Vollert for the China-based Zhongwang Group will measure over half of a kilometer in length and be able to accommodate up to 1,500 aluminum coils. At the new rolling mill in Tianjin, the dimensions will be even greater once Vollert finishes installing three fully automated high-bay warehouses. These warehouses will allow a combined storage capacity of 100,000 tons of aluminum coil product.



Although the 504-meter long high-bay warehouse with 5 levels and 150 rows is currently the largest of its kind, the other two warehouses already under construction also have gigantic proportions and will offer enough space to store 1,300 and 1,200 coils, respectively. This network of warehouses forms part of a comprehensive material flow system designed and engineered by Vollert that extends from the molten ingot furnace area through to the bays where the finished rolled products are loaded onto transport trucks. Zhongwang plans to erect three complete production facilities and integrate the high-bay warehouses as a production buffer. The applications for the products range from parts and components for the aerospace industry, to cans and packaging material, through to high-quality, ultra-thin aluminum foil. Zhongwang has continued to trust the Vollert name by awarding the company this additional contract. The previous contract involved linking several warehouses for supplying and storing ingots and coils as well as erecting two fully automated high-bay warehouses and connecting the cold-rolling mills and processing areas. In addition, Vollert will supply ingot tilting stations, 14 automatic cranes and manipulators spanning up to 27 meters, crane tracks measuring up to 500 meters in length, several tunnel shuttles, automated guided vehicles (AGV), and 15 pairs of sword lifting transfer cars.

Unrestricted Access for the Fire Department

The sword transfer cars are a particularly clever solution, as they allow the coils to be brought from the high-bay warehouses to the rollers without crossing other traffic paths in the plant. Lifting supports (bracing struts) rise above the floor through 6 cm-wide slots to support the coil, which is then transported to its destination above ground while the lifting cars move underground in parallel. The narrow slots in the floor can be traveled over at any time so that personnel manning the on-site fire department, for example, can access all areas of the plant at any time. The bracing struts can also be extended through the roller conveyor assembly to lift coils arranged on the transport pallets.

"We can leverage our entire know-how and expertise to link different areas of the plant in Tianjin", confirms Oliver Wolschinski, who heads the intralogistics systems department at Vollert. "Possibilities to this end include automatic cranes for ingots and coils weighing up to 35 tons, various transport systems such as lifting transfer cars, tunnel shuttles, roller conveyors, and stacker cranes, as well as automatic measurement and identification systems that ensure a continuous supply of material as required." Despite the high loads involved, all conveyor systems employed travel at speeds of up to 4 meters per second.

Cooling System Reduces Storage Time of Coils

Another major time saver is the integrated active cooling system designed by Vollert for the high-bay warehouses. The hot-rolled coils, which reach 350 °C, can be cooled in under 50 hours. In other facilities, many more hours are required to achieve the same effect. A stand-alone cooling system installed in special storage areas ensures that all storage bays are cooled in a uniform and controlled manner. The reduced cooling times afforded by the configuration also minimize the space required for interim storage. By 2018, Zhongwang plans to have almost tripled its annual output from 1 million to 2.8 million tons of aluminum. INTRALOGISTICS SYSTEMS

Retrofit: AMAG Streamlines Production

AMAG Austria Metall AG, Austria's leading manufacturer of aluminum semi-finished and foundry products, is using a new heavy-duty transfer car from Vollert to move aluminum coils into and out of the furnace area. Weighing up to 55 tons, the coils can be shuttled between a buffer warehouse and six furnaces. During the retrofit process, the previous transfer car and control system were removed and replaced with the new variants to upgrade the handling system that has been in place for over 30 years. Existing installations such as the tracks, transfer areas, and heat treatment furnaces were retained, and the new transfer car was adapted in line with the space and mechanical interfaces available. Each unit comprises up to four coils. A trolley on the Vollert transfer car is positioned underneath the support frame and lifts it onto the car. The conveyor line then moves in transverse fashion to the furnaces or the buffer warehouse. To safeguard the travel path, which can be walked on by workers, Vollert installed a safety system and personnel scanners to ensure occupational safety and allow preselected positions to be approached automatically during semi-automatic operation. The retrofitting exercise is a subproject of "AMAG 2014", an investment program that also includes the installation of a new hot-rolling plant in Ranshofen. The program involves modernizing the upstream and downstream areas of the plant to achieve better continuity. Complementing this is a separate project that has been awarded to Vollert, which will be designing an all-new high-bay warehouse for aluminum sheets that features a fully automatic re-stacking unit in the outbound goods zone. SERVICES

The Best of German Engineering

The VDMA (German Engineering Federation) presents over 2,000 top manufacturers in Germany in its lexicon titled "The Best of German Engineering". It goes without saying that Vollert also receives mention. German manufacturers play a key role in mechanical and plant engineering as it is practiced around the globe.

In 29 out of 32 comparable industries, German companies are among the top 3 providers and even lead the market in half of them. Spanning over 1,000 pages, the lexicon is the first of its kind to group leading providers in the industry and offers a compact overview of this fascinating high-tech arena. "We are proud to say that we are included among these premiere companies," comments Hans-Jörg Vollert.

Important dates:

Among other places, Vollert will be exhibiting at the following trade fairs:

CTT 2014
Moscow, Russia, June 3 to June 7, 2014

Concrete Show South America 2014
São Paulo, Brazil, August 27 to August 29, 2014

InnoTrans 2014
Berlin, Germany, September 23 to September 26, 2014

ALUMINIUM 2014
Düsseldorf, Germany, October 7 to October 9, 2014

Project Iraq 2014
Erbil, Iraq, October 20 to October 23, 2014

BIG 5 SHOW 2014
Dubai, UAE, November 17 to November 20, 2014

bauma China 2014
Shanghai, China, November 25 to November 28, 2014

ICCX Russia 2014
St. Petersburg, Russia, December 2 to December 5, 2014

bc India 2014
Delhi, India, December 15 to December 18, 2014

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Less Diesel, Noise, and Soot

GreenTech Robot: High-Torque Output and Impressive "E-Power" Right From the Start

Zementwerk Hatschek in Gmunden, Austria is now home to a new DER 120 shunting robot that maneuvers and loads product safely and in an environmentally-friendly manner. This move has allowed the company, which is part of the Rohrdorfer Group, to secure a forward-looking technology that will offer good service for the next 30 years. Hatschek already owns stationary shunting systems from Vollert for loading train waggons. The new diesel-electric drive system with variable operating speeds promises to considerably reduce fuel consumption and increase long-term profitability as a result. The operating speed of the diesel engine continually adapt to the power required at a given moment thanks to the combined alternating and direct current setup.

Technology as Found on Snow Groomers

An actively controlled alternator provides a constant supply of power to the electric drive motors despite the fluctuating operating speed of the diesel engine. The motors also act as a brake and make it possible to fit smaller diesel engines without losing performance while at the same time further lowering fuel consumption. "The benefits offered by the new drive system include reduced fuel intake, lower noise and emissions levels, as well as higher profitability and environmental compatibility. A similar technology is also employed in the latest generation of snow groomers", explains Jürgen Schiemer.

SHUNTING SYSTEMS

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