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Vollert NEWS

PRECAST CONCRETE PLANTS | INTRALOGISTICS SYSTEMS | SHUNTING SYSTEMS | SERVICES

EDITION INDIA

ENGINEERED IN GERMANY, MADE IN INDIA
For the stationary production of precast concrete elements state-of-the-art formwork technology engineered by Nuspl is first choice. Today it is produced 100% in India. **P. 3**

INSPIRING SOLUTIONS FOR 90 YEARS
In the year 2015 Vollert documented 90 years of industrial history. That means 90 years of projects worldwide underscoring the relentless innovative spirit lived out at Vollert. **P. 4**

India Invests in Precast Concrete Technology

With over 360 successful building projects, Sobha Limited, headquartered in Bangalore, is currently one of India's leading construction companies. Founded in 1995, Sobha Limited, a Rs. 25 billion company, is one of the fastest growing and the only backward integrated real estate player in India. Now the next milestone towards precast construction has been set.

PRECAST CONCRETE PLANTS

The construction sector in India is growing progressively over the years. In order to produce the necessary living space at short notice, the national construction industry is increasingly focusing on precast technology. It is considered as low-cost alternative, but offers a better quality of construction due to the industrialized production process. In addition, construction projects are realized in much shorter notice than in the past. Today also commercial properties, industrial parks, modern shopping malls and luxurious hotel complexes are being built in much shorter construction period using modern precast elements.

"Our first precast based residential project, Sobha Dream Acres at Balagere in Bangalore, is yet another milestone in the history of Sobha Limited. The new construction technology made this a challenging project for us from the very beginning. However Vollert's great know-how as a supplier of knowledge and precast technology helped us to take this next big step comfortably," explains Ravi Menon, Chairman of Sobha Limited. Up to 400,000 m² of plane wall and slab elements with diverse geometries and dimensions are going to be produced at Sobha's new precast facility in Bangalore. "Highly automated processes and an efficient circulation system enable us to implement the required output quantities of standardised elements," explains Debashish Roy, Head of Vollert India Pvt Ltd. "In order to support such a large scale project, precast is an ideal solution in terms of cost savings on materials, reduction in labour requirement and timely project delivery." In addition to wall and slab elements complex special concrete parts such as precast staircases, concrete columns and beams are also going to be produced. To ensure that the complete manufacturing process runs in very high cycle times, these elements are manufactured using stationary formwork technology from specialist Nuspl, since 2012 part of the Vollert Group," adds Debashish Roy.

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Dear Readers,

It is my great pleasure to present the latest edition of our customer magazine today. We will take a special look at how the precast construction technology is changing India. It is considered as low-cost alternative, but offers a better quality of construction due to the industrialized production process. In addition, construction projects are realized in much shorter notice than in the past. Sobha Limited, headquartered in Bangalore and currently one of India's leading construction companies has set now the next milestone towards precast construction based on system technology engineered by Vollert. You will also be interested in how German Engineering is manufactured to 100% in India. Project references can be found in this issue.

I hope that you'll enjoy reading our magazine today and I am looking forward to talking to you again next time.

Yours sincerely

Debashish Roy

Debashish Roy
Head of Vollert India Pvt Ltd.

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India Invests in Precast Concrete Technology

German Engineering and the Latest Machine Technology

A special focus was placed on the machine technology, beginning with concrete output and ranging to logistical loading processes. "For the high precast element quality, the overall work preparations are becoming increasingly critical, for example when plotting part contours," explains Steffen Schmitt, Executive Sales Director Asia at Vollert. A large CADCAM-controlled SMART PLOT plotter with an output accuracy of +/–1 mm draws the contours on the formwork surface using waster-soluble ink in 1:1 scale. Automatic operation and plotting speeds of up to 5 m/s significantly increase the efficiency of processes. The concrete application process is carried out by a modern bridge-guided SMART CAST concrete spreader. The concrete is distributed precisely via a pneumatic screw output unit, whereby the screw drives are controlled in automatic mode individually or in groups. In order to set the output volume to different concrete consistencies, the screw output unit may be regulated by frequency. The concrete output is fed by a highly modern concrete mixing system using leading Liebherr technology. "This is a very important quality factor. Only the right concrete mixing enables high-quality, durable concrete parts to be manufactured," highlights Steffen Schmitt. A low-frequency SMART COMPACT vibration station is used to compact the concrete. By reducing the water-cement mixing ratio (w/c ratio) while maintaining the early stiffness of the concrete, the share of cement is reduced significantly. Special smoothing work lines ensure high exposed concrete quality. A power trowel travels in longitudinal and lateral direction and smooths the solid element surfaces using an electrically driven smoothing head with adjustable fins and rotation speeds. "We will achieve high element quality this way," states Raj Pillai, Executive Director of Sobha Limited. Subsequently the concrete parts are cured in an insulated VArio CURE curing chamber. A highly modern, VArio STORE storage and retrieval machine transfers the concrete elements to and retrieves them from storage.

"A permanent software-supported, CADCAM-based master control system manages all processes in the complete system structure. Within a closed circulation concept, the 33 formwork pallets move from work station to work station. Deadline delays, for example due to weather influences or due to a lack of raw materials, are able to be eliminated," continues Raj Pillai.

Stationary Formwork Technology for Special Precast Elements

Besides walls and slabs, Sobha Limited will offer complete solutions for modern residential and commercial structures in the future. This also includes finished staircases. Formwork specialist Nuspl provided linear-adjustable step formwork for this purpose. VARIOSTEP step formwork produces the step standing along the cheek side, which ensures 3-sided exposed concrete quality. Every desired combination of ascending slope and step may be adjusted for up to 10 steps. The construction system from Sobha Limited also uses solid concrete parts featuring a wall projection as a sun protection function. For this, special elements are produced in various geometries on multiple stationary Nuspl formwork tables. The surface consists of 8 mm-thick steel plates with polished flat surfaces for top-quality exposed concrete surfaces. Above that, L-form solid walls are produced. Nuspl engineers solved this using special L formworks. The variably implemented side walls and adapters also enable different L geometries to be produced in this way. For modern, large-scale buildings, e.g. example logistics and shipping centres larger span widths and lateral heights are needed. For these new requirements, Sobha Limited also invested in modern formwork technology for concrete beams and columns production.

A Milestone for India's Construction Industry

"With the new precast concrete plant in Bangalore, where we have produced solid concrete parts and structural special elements for our construction projects since July 2015, we have reached a genuine milestone for India with regard to component quality and system productivity," declares Raj Pillai. Project delays in construction plans are minimised or nearly eliminated. "Simply put, precast construction technology is an intelligent combination of optimum cost raw material and highly intelligent system technology," completes Pillai. "Precast technology will reduce construction costs in India by 10-15% thus would become the best response to the increasing demand for cost-effective living spaces."

1.7 Million Reinforced Concrete Sleepers for Thailand

Multiple new rail construction mega projects are planned within the next five years to link Thailand's large cities with the surrounding countryside. The STRABAG group supplies a significant part of the equipment for the rail network

For the upcoming infrastructure projects to expand the Thai traffic network, the globally operating construction company STRABAG will be manufacturing a total of 1.73 million prestressed concrete sleepers over the next five years. "To be able to produce such large output quantity we decided to invest in an ultra-modern precast plant with intelligent plant circulation technology and innovative machine solutions," explains Torsten Spangenberg, Head of Business Unit Railway Infrastructure at STRABAG. The groundbreaking took place in mid-2014 fifty kilometers south-east of Bangkok. For the technology and the know-how, the international construction group relies on Vollert as the worldwide leading systems specialist in prestressed concrete sleeper production.

High-degree of Automation Paired with Intelligent Plant Structure

The modern automated circulation system is designed to handle a yearly capacity of over 600,000 B70 prestressed concrete sleepers. This is equivalent to a daily output of over 2,000 concrete sleepers. Up to 270 sleeper moulds are constantly in circulation. Compared to stationary manufacturing, this results in much more efficient processes and consequently in higher plant productivity. "Ranging from the dowel insertion through the tensioning and detensioning stations to the application of concrete, we rely on high automation in the new precast plant. It is important to coordinate all processes with each other in order to prevent idle times and ensure the machine technology functions flawlessly," explains Steffen Schmitt, Executive Sales Director Asia at Vollert. The quadruple sleeper moulds are first oiled and cleaned before the dowels are inserted for the later step of mounting them to the rails. A reinforcement manipulator then places the prepared tension wires into the concrete form. During the semi-automated prestressing, the Paul screw jacks permanently monitor the tightening torque on every prestressing wire. Lifting shuttles that are coupled together then lift the quadruple form onto a combined concreting and compacting station and electrically driven discharge screws fill the concrete into the mechanically fixated mould with high precision. The high-frequency vibration station enables an evenly distributed concrete compaction.

Up to 1,200 Sleepers in the Curing Chamber

In the discharge area of the concreting line, a special lifting beam stacks up to eight concrete forms onto waiting cross-transfer cars. At predefined, intervals they are guided on rails on kiln lines arranged in parallel through the clad curing chamber. Up to 1,200 concrete sleepers are located at the same time in the approximately 13-hour curing process. A semi-automated detensioning station initiates the transfer process. "Certainly, one extremely efficient and economical solution is the bridge-guided turning cross beam, which runs around the detensioned concrete mould, rotates it 180 degrees and lowers it onto the roller conveyer before the switch-off process is initiated via an electric lifting device," describes Steffen Schmitt.

For the stationary production of solid walls and floor slabs, structural construction elements or special parts for infrastructure projects, India's leading construction specialists rely on modern formwork technology by Nuspl – produced 100% in India.

Engineered in Germany, Made in India

Ahura Builders is seen as one of the technology leaders in India for innovative solutions in modern residential and industrial building. This creates cost-effective housing with an exclusive ambience; however modern office buildings and exclusive shopping malls can also be produced today with the latest precast construction technology. Currently in construction process, for example, is Pearl Tower – an exclusive 11-storey, earthquake-resistant residential building with luxury flats in Magarpatta City, a district of Hadapsar in Pune. "To continue setting new trends in building architecture, Ahura Builders is continually investing in the latest plant technology, " explains Debashish Roy, Head of Vollert India. Their capacity is now being further expanded to produce high-quality floor slabs and solid precast elements for future construction projects. In doing so, they rely on the know-how and stationary plant solutions of German formwork specialist Nuspl, which has been part of the Vollert Group since 2012. In future, up to 60 mm thick floor slabs will be produced on 10 vibration formwork tables arranged in-line. These each have an area of 43.75 m² and are equipped with BRECON quick-release vibrators, which can be attached quickly and easily and even moved again to a different vibration position. The formwork surface consists of 8 mm-thick steel plates with polished flat surfaces for top-quality exposed concrete surfaces. A fixed side rail ensures a firm grip on the concrete element during lifting. In addition, two high-performance tilting tables for production of solid parts for walls/floors up to 200 mm thick were delivered. These are of extremely robust construction, consisting of welded structural steel profiles. Hydraulic tilting joints integrated with the tilting frame allow the formwork surface to be positioned at an angle of up to 83°. The hydraulic tilting process ensures that lifting takes place without chipping the sides of the concrete.

Stationary Formwork for Manifold Precast Elements

Precon Structures in Chennai also has comprehensive expertise in precast construction technology. Alongside structural concrete columns and beams, perimeter walls, and blocks, they offer builders a comprehensive range of precast concrete parts consisting of solid walls and floors. To continue to offer the Indian construction industry even more modern construction systems, they are now expanding their plant technology with modern hydraulic tilting tables for solid parts production from Nuspl. Equipped with a formwork area of 28 m² and a surface load of 750 kg/m², they have a height-adjustable side rail to produce different thicknesses of concrete parts. During the formwork removal process, the side rail is folded down. BRECON quick-release vibrators, which can be mounted flexibly to the tilting tables, are also used here. In addition they will also have three stationary formwork tables in future for slab and solid floor production. A RATEC formwork system with different-length, magnetically lockable lengthways and crossways shuttering ensures a reliable shuttering process.

However bridge girders, sewer pipes, silos or retaining and dividing walls, for example, are increasingly being produced in India using precast construction methods too, especially in infrastructure projects. This is the speciality of construction material producer RBBR Infrastructure in Hosur, close to Bangalore. Here too, they rely on modern formwork technology from Nuspl. Using a formwork table with a basic length of over 11 m and a formwork width of 3.5 m special retaining walls in different dimensions, moulds, and wall thicknesses. Further formwork tables have already been planned for other projects.

German Technology – 100% Produced in India

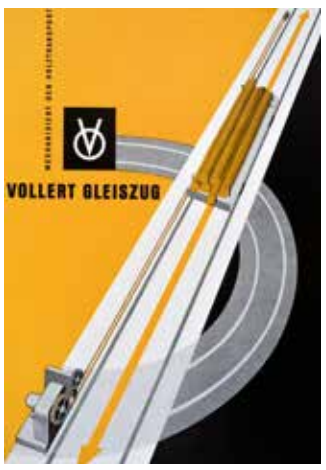
"The extremely notable thing about all these projects is that the installed formwork technology was produced to German quality standards in India," outlines Debashish Roy. "As the engineering partner, Nuspl brought its years of experience, took on the construction part, and also monitored the formwork construction and assembly work." During this process, only materials and steel components produced 100% in India were used. "The situation is certainly unique. In this way we are able to significantly reduce manufacturing costs with no loss in quality. This gives our customers a major 'leg-up' over other Indian precast concrete suppliers."

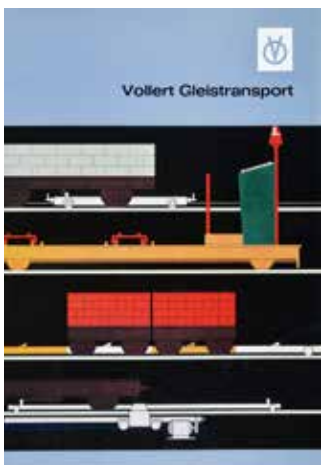
The Best of German Engineering

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, Managing Director of Vollert Anlagenbau.

Solutions That Have Inspired for 90 Years

Cable cars spanning the width of an ocean, mega high-bay warehouses that can accommodate up to 100,000 tons of aluminum coils, and the most advanced precast concrete part plants worldwide are just some of the projects underscoring the relentless innovative spirit lived out at Vollert. In 2015, the company celebrates its 90th anniversary.





What began as a small locksmith's shop in 1925 fast evolved into a specialist in automation systems catering to the requirements of heavy-duty operations. The family enterprise Vollert continued to grow into an international general contractor, with subsidiaries in Asia, Russia, and South America. Originally founded by Hermann Vollert, the company is now managed by the third generation of the family, and business couldn't be better.

Inspired moments have been more the rule than the exception for Vollert in the last few decades and have practically become part of the firm's core business offering. In the 1930s, the first vineyard cable cars developed by Vollert became an international bestseller as orders were received from the Americas to Hungary. Later on, this design served as a springboard for constructing bucket and cableway conveyors used to haul payloads of up to 20 tons in limestone and sandstone quarries. In the 1960s, Vollert developed a cableway in Venezuela that held the world's record for the longest distance between support pillars at one kilometer. By leveraging their keen sense of mechanical understanding and technical know-how, the engineers always thought outside the box to also advance automation in new industries. The principle of the cable car was applied to floor-bound rope conveyors in the 1950s revolutionizing the timber and ceramic industries, for example. Sawmills, brickyards, and porcelain manufacturers such as Villeroy & Boch then seized the opportunity by converting to production circuits. Later, Vollert was the first provider to introduce this technology to the precast concrete industry.

Customers in Over 80 Countries

Vollert today is an international player and specialists for realizing intelligent material flow and storage systems for the metal and aluminum industry. It is also a leading technology and innovation driver in the precast concrete industry as it has already erected over 350 production plants for manufacturers of precast elements. The worldwide customer base, with customers in 80 countries, includes such well-known organizations as Daimler, Liebherr, Hydro, Aleris, APT, SSAB, Terex, Esso, BASF, STRABAG, Kemmler, and Laing O´Rourke. At the Munich BMW Welt facility, a Vollert fully automated high-bay warehouse continually supplies new vehicles, while concrete railway sleepers using Vollert-designed equipment are being installed in the Gotthard Tunnel and the world's largest high-bay warehouses for aluminum coils are being under construction in China. Vollert engineers also develop overhead painting booths for large excavator and crane parts of up to 50 tons and automatic cranes with a curb weight of no fewer than 260 tons.

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