

# SOLUTIONS FOR PRECAST CONCRETE PRODUCTION

Vollert 



MADE IN  
GERMANY  
**ENGINEERING  
YOUR  
SUCCESS**



PRECAST CONCRETE PLANTS

# OVER 90 YEARS OF INNOVATION AND KNOW-HOW

Vollert is the leading expert partner for concrete works, construction companies and property developers when it comes to modern precast concrete production. The passion to produce intelligently designed plant and machinery concepts, which are optimally tailored for you, drives us every day.



**ALL IN PRECAST,  
PRECAST ALL IN**  
*Why our customers are  
so successful, you will  
see here.*

## NEW CONCEPTS FOR THE CITIES OF TOMORROW

Modern precast concrete architecture is changing construction methods around the world. New residential and office space is being created for the growing megacities in Asia, South America and the rest of the world. Nowadays, multifunctional shopping malls, hospitals, hotel resorts, universities, schools and logistics centres are being built with resource-saving precast concrete elements. But we are also your trusted expert partner for infrastructure projects such as bridge beams or noise barriers for new city districts.

We offer solutions for the industrial prefabrication of walls, slabs, beams or special components, from state-of-the-art formwork systems, start-up concepts to highly automated precast concrete plants with capacities of several million square meters of concrete surface annually. Vollert technology ensures economic processes combined with an optimal level of automation. High-tec machines ensure efficient work processes – from CAD/CAM-controlled shuttering robots, through fully automated concrete

spreaders to innovative vacuum turning equipment for double wall production.

## MORE THAN 370 SUCCESSFUL PRECAST CONCRETE PLANTS

As pioneer and trendsetter, we developed the first industrial solutions for precast concrete production in the 1970s. Today we work together with our customers on new concepts for low-energy houses or earthquake-proof construction systems, and develop innovative plant concepts for this purpose. With modern machine technology, the integration of intelligent BIM software and our system solutions for cost-effective control and evaluation of your precast concrete production, you will receive a solution that will ensure your success over the long term. Just like the more than 370 precast concrete plants that we have already completed in every continent of the world.



**Steffen Schmitt**

Vice President  
Precast Concrete Plants

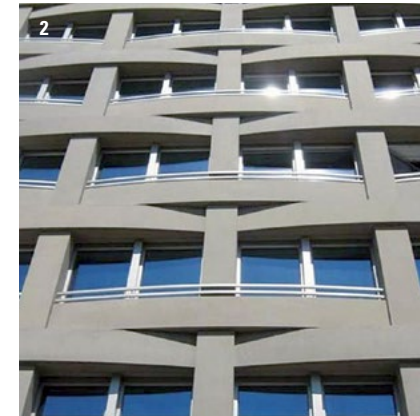
**Hans-Jörg Vollert**

CEO

# PRECAST CONCRETE ARCHITECTURE SETS THE TREND WORLDWIDE

The precast building system is state-of-the-art and setting trends worldwide. From the latest designs of single-family homes and multifunctional residential and office complexes through to logistics centres and multi-storey car parks, it is shaping urban architecture all over the world.





## CREATING SPACE WITH CONCRETE

Precast concrete architecture is today's leading construction method. It not only guarantees high-quality construction and lower construction costs, compared to conventional building systems, but also shortens construction times significantly. Fixed schedules for construction projects and industrially controlled processes in precast concrete production ensure a reliable construction progress in much shorter periods compared to former construction methods.

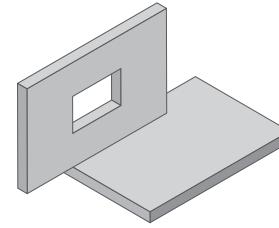
The modern precast construction system simultaneously achieves very good energy efficiency ratings, a high weather and fire resistance, and also makes building projects in earthquake zones possible. In addition, the CO<sub>2</sub> footprint can be reduced by up to 25% and water consumption by up to 50%, compared to the former monolithic building system.



- 1 Moonlight office complex in Luxembourg City, Architect: Felix Giorgetti
- 2 Industrial park Munich, Architect: Architects Hild und K (source: decomo)
- 3 Ministry of the Interior, Kingdom Relations/Ministry of Security & Justice, The Hague, Architect: Prof. Hans Kollhoff Architects (source: decomo)
- 4 Earthquake-resistant city villas in Chile

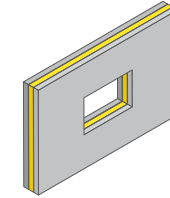
# THE BASIC DECISIONS IN PRECAST CONCRETE PRODUCTION

The choice of the right construction system is decisive for the future design of the production plant. In making this choice, a wide variety of criteria have to be considered, such as climate, the seismic hazard, the labour market, commodity prices or country-specific regulations such as taxes and regulations.



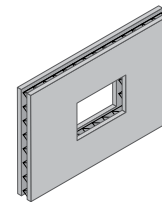
## Solid walls and floors

Solid walls and slabs consist of 10 - 40 cm thick solid concrete elements made of normal or lightweight concrete and built-in structural reinforcement and are often used for basement walls and for ground and upper-floor walls (load bearing or non load bearing). In situ concrete is not needed; large precast elements guarantee rapid construction progress.



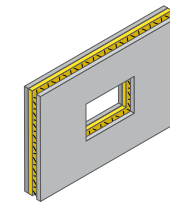
## Sandwich walls

Sandwich walls have an insulating layer enclosed by concrete on both sides. The load-bearing shell, with the structural reinforcement, is on one side and the visible shell on the other.



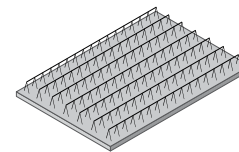
## Double walls

The double wall consists of concrete slabs with a thickness of 5 - 7 cm each, which are held together by a truss-type reinforcement. After installation, the remaining void is filled with in situ concrete – creating a monolithic, dense and extremely solid concrete element.



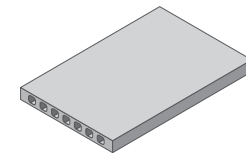
## Double walls with insulation

Core-insulated double walls have insulation installed between the concrete slabs. This combination opens up new application possibilities and ensures high energy efficiency.



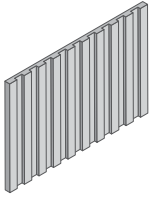
## Floor slabs

The floor slab is a reinforced concrete slab with a thickness of 5 - 7 cm, depending on the concrete cover and amount of reinforcement. The torsionally stiff reinforcement required for structural rigidity and the flexural tension reinforcement required lengthways and crossways are usually pre-installed. Additional in-situ concrete turns the floor slab into a solid reinforced concrete floor.



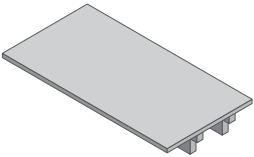
## Hollow core slab

A novel manufacturing process makes it possible to produce prestressed hollow core slabs on pallets in a circulation system. This enables each hollow core slab to be produced to the required component geometry and dimensions without the need for cutting.



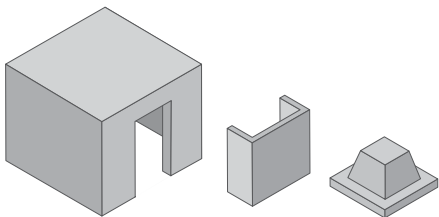
### Façade elements

Façade elements are industrially produced solid walls that are characterised by a wide variety of surface designs. The range is enormous, extending from traditional exposed aggregate concrete surfaces to brick and matrix structures and marbled surfaces. The reinforcement for structural stiffness is pre-installed.



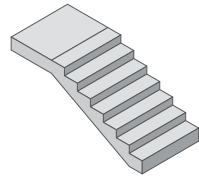
### TT slabs

TT concrete slabs are used for high loads of 25 kN/m<sup>2</sup> and more, which is the case, for example, for wide-span floors/slabs in multi-storey car parks. These prestressed slabs can cope with spans up to 20 m with similar heights. Variants, with and without supplementary in-situ concrete, are possible.



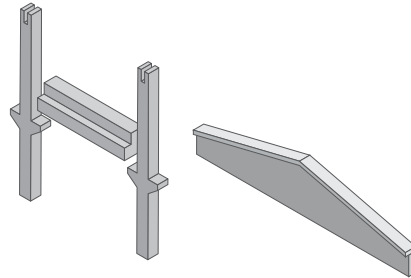
### Special precast concrete parts

Special precast concrete parts are used today in modern infrastructure construction for such structures as bridge beams, sewers, tunnel shafts and noise barriers. But nowadays, special architectural components and room modules are also able to be prefabricated industrially.



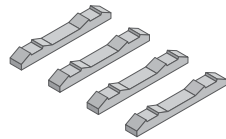
### Stairs

Due to industrial prefabrication and the very short set-up and assembly times, precast stairs offer significant cost advantages, while simultaneously representing a high quality exposed concrete.



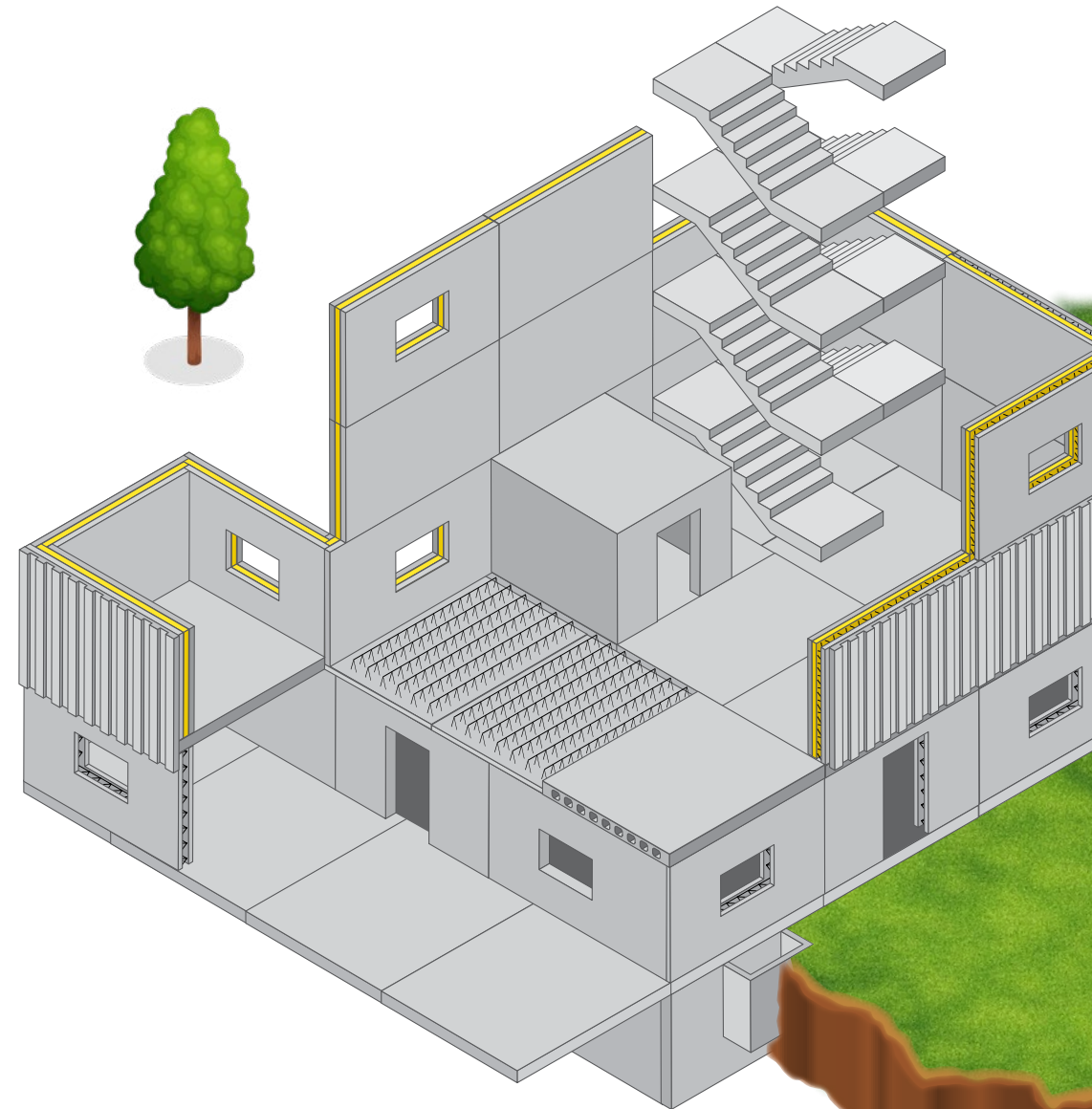
### Columns and beams

These days, logistics centres, industrial halls or multi-storey car parks are being created with ever-increasing spans and side heights. Prestressed columns and beams are ideally suited for this.



### Concrete sleepers

Nowadays, concrete sleepers are the standard in tracks in rail networks. As a material, concrete is durable and low-maintenance, as well as environmentally friendly. The railway sleepers are delivered completely ready for laying. For this, the entire reinforcement is installed and prestressed in accordance with the required standards.



# EXPERTISE, STATE-OF-THE-ART MACHINES AND INDUSTRY 4.0

## DESIGN MEETS DATA AND TIME

Close cooperation between the builder, planner and engineers is essential to achieve optimal time management on the construction site. To achieve this, architects and building contractors are working with up-to-date BIM (Building Information Modeling) technology as early on as the design phase. This ensures a transparent exchange of information between all participants in the construction project. Scalable model data of the necessary walls and slabs will later be created from the 3D CAD building data, which will be optimally scheduled in terms of production technology, using CAD/CAM control.



Whether a project requires solid and sandwich walls, floor slabs, beams or special concrete parts, our experts will work out an individually designed system concept for you using 3D visualization models. Modern system solutions, such as the Vollert Control Centre, control all processes in the production of precast concrete elements and provide you with an evaluation of the productivity of the production plant.

We turn your vision and ideas into reality. As a result, you are always able to produce the required capacities for the next construction projects.



To be successful today, a precast production plant needs a manufacturing concept adapted to the building system, state-of-the-art machine technology and integrated data flows from the architect's first 3D models to the installation of the concrete elements on the site. That demands the expertise of experts.



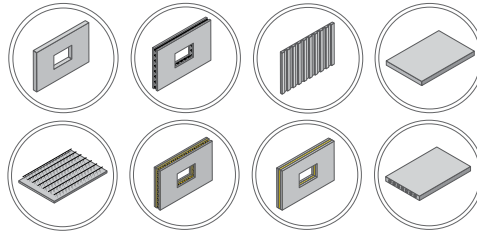


# CHOOSING THE RIGHT PRODUCTION SYSTEM CONCEPT

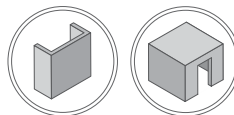
The right production system concept provides for long-term success – as is proven by many of our customers in Europe, Asia, America, Australia and the rest of the world. Regardless of whether you are new to precast construction or are already implementing mega construction projects, our experts will take you further and show you construction systems and the ideal system solutions for your requirements and associated conditions such as climate or raw material situation.



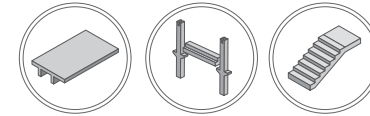
**PRODUCTION SYSTEM CONCEPTS FOR WALL AND SLAB PRODUCTION**



**FORMWORK SYSTEMS FOR ROOM MODULES AND SPECIAL PRECAST ELEMENTS**



**FORMWORK SYSTEMS FOR STRUCTURAL BUILDING ELEMENTS**



**SYSTEM CONCEPTS FOR CONCRETE SLEEPER PRODUCTION**



© AlpTransit Gotthard AG

# AUTOMATED SYSTEM CONCEPTS

Automated system concepts stand above all for high plant productivity. Modern machines and innovative robot technology guarantee economical processes and reliable on-time supply of the construction sites with precast concrete elements.



## HIGH-TECH, ROBOTICS AND AUTOMATION

State-of-the-art machine technology ensures efficient work processes – from CAD/CAM-controlled shuttering robots to fully automated concrete spreaders and pallet turning equipment. Vollert technology guarantees economical processes combined with an optimal degree of automation. Innovations ensure more rational work stages, lower utilization of material and personnel and high quality finished parts.

In consultation with our clients, we jointly plan and build the precast concrete manufacturing plants of tomorrow, from simple, modularly expandable basic solutions to complex multi-functional plants producing several million square meters of concrete surface a year.



- 1 SMART CAST concrete spreader
- 2 SMART SET shuttering robot
- 3 ISO-MATIC working station

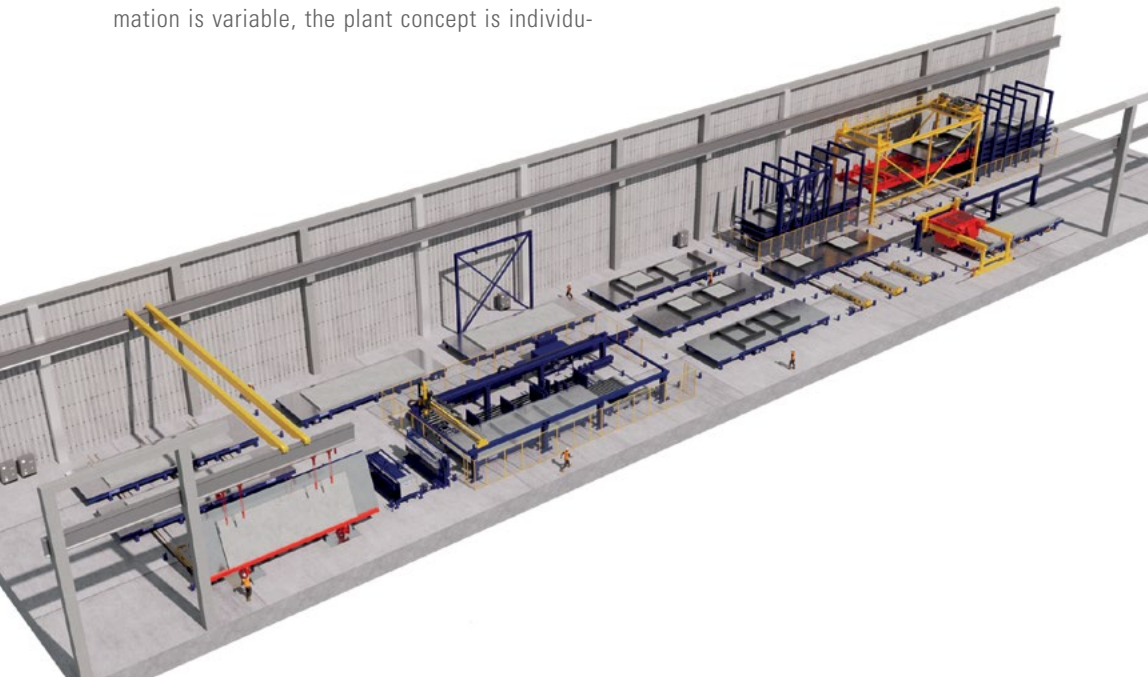
# PALLET CIRCULATION SYSTEMS FOR WALLS AND FLOORS

## MAXIMUM PLANT PRODUCTIVITY

Flexible, circulation-based plant concepts from Vollert now set the standard worldwide when it comes to modern precast concrete production. From the point of view of production technology, all processes from concreting to loading/lifting operations are centrally scheduled and administered, while machines, auxiliary items and materials are fed in at the optimum time. The degree of automation is variable, the plant concept is individu-

ally tailored to the requirements with regard to the construction system and the required capacities.

Especially in terms of plant productivity, the pallet circulation system is unbeatable. The investment compared to stationary production processes is usually higher, but this is amortized very quickly with corresponding outputs.



- 1 State-of-the-art pallet circulation system at Wallex Home in Spain
- 2 SMART SET shuttering robots ensure a high plant productivity
- 3 Fully automated concrete application
- 4 Trowels ensure optimum surface quality
- 5 Lifting of double walls for transport to the construction site

REFERENCE PROJECT

# KERKSTOEL, BELGIUM

Kerkstoel 2000+ and Vollert in cooperation with Prilhofer Consulting are currently setting a high-light in the industrial series production of architecturally sophisticated precast concrete parts in Belgium. Various precast concrete elements of the Kerkstoel Group can be found in modern residential and office complexes, but also in shopping centres, railway stations and airports. In order to continue setting trends, the Belgian building materials specialist invested in a new production plant for solid, double and sandwich walls in Grobbendonk for versatile component geometries and customer designs.

### OUTPUT



### LEVEL OF AUTOMATION



### INVESTMENT



- 1 Kerkstoel production plant in Grobbendonk, Belgium
- 2 Highly automated turner in the double wall production
- 3 Precast architecture with that certain extra



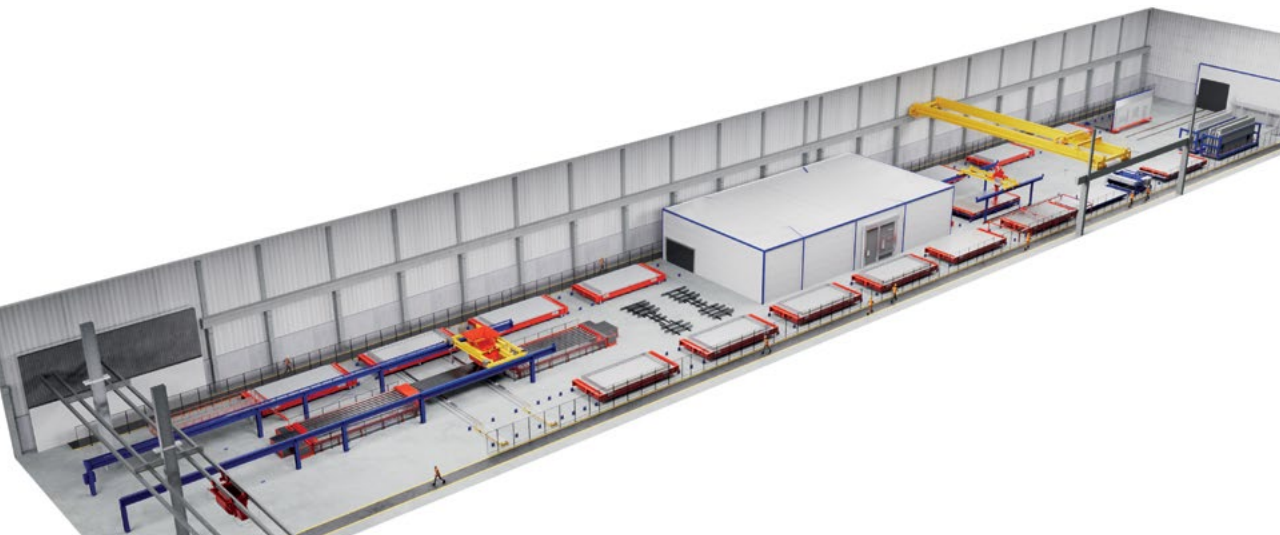
Highly automated system technology in live action: [youtu.be/ew6nJby0XnA](https://youtu.be/ew6nJby0XnA)

# MOTUS PRESTRESSED CONCRETE HOLLOW CORE SLAB PRODUCTION

## HOLLOW CORE SLABS PRODUCED IN CIRCULATION

Hollow-core slabs are up to 40% lighter than solid slabs and require less concrete to manufacture. The hollow-core slab is usually laid without support and can be fully loaded immediately. Yet, in the traditional production system, comprising a continuous casting process on long production beds, transverse reinforcements, cross connectors, built-in parts, lifting rings, tensioning steel overhang or concrete recesses can only be incorporated with considerable expenditure. Because of this, prestressed hollow-core slabs are often not permitted for construction systems in earthquake zones.

Vollert's innovative solution takes completely different approach in order to rid the undoubted advantages of the prestressed hollow-core slab from the disadvantages it incurs from its traditional manufacturing process. For the first time, prestressed hollow-core slabs are produced on pallets in a circulation system. Tensioning and additional reinforcements, coupling elements and recessed place-holders are vollert motus construction system: Earthquake-resistant hollow-core slabs easily installed on the pallet. Hollow-core creators are only used temporarily during the concreting process.



- 1 The hollow-core generators are inserted by the pipe drawing machine only during the concreting process
- 2 The typical failure problem of slabs during earthquakes is solved by a protruding reinforcement
- 3 With the MOTUS hollow core slabs, a tension wire projection can be realized

REFERENCE PROJECT

EGI, UZBEKISTAN

Affordable living space, new architecture highlights, and high earthquake-resilience – the MOTUS construction system combines multiple advantages in one. In addition to solid and sandwich walls, in particular 3-dimensional hollow-core slabs in a variety of design types are the main feature of the new system structure. Uzbek construction company EGI relies on automated manufacturing processes and the know-how of German plant specialist Vollert in its construction system and industrial pre-production.

OUTPUT



LEVEL OF AUTOMATION



INVESTMENT



More information about this project: [vollert.de](http://vollert.de)



- 1 MOTUS reinforced concrete hollow core slabs and the solid and sandwich walls required for the building system are produced in parallel at EGI
- 2 Highly efficient robots and machines ensure the best possible plant productivity on the production side
- 3 The first MOTUS reinforced concrete hollow core slabs are loaded for the construction sites in Tashkent

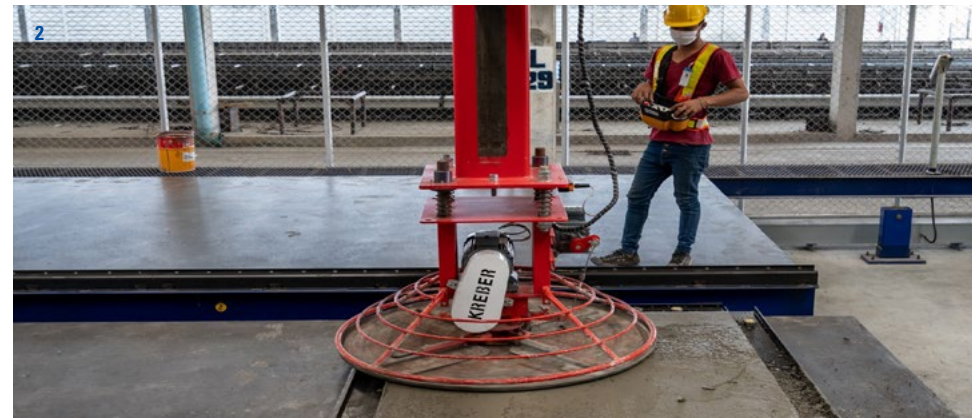


# CSP CENTRAL SHIFTER PLATFORM SYSTEM

## CENTRAL SHIFTER PLATFORM AS THE CENTERPIECE

A Vario SHIFT central shifter platform is the heart of the system and makes the plant processes as flexible as possible. It combines the advantages of the circulation principle with those of a stationary production line. Individual work processes such as time-consuming reinforcement operations, concreting or curing times of varying lengths are carried out independently of each other. Even differently reinforced and complex precast concrete parts can be produced in parallel.

The central shifter platform transports the shuttering pallet along the longitudinal side to the circulation position where it is needed at any given time. Cross-lifting trucks then move it to the transfer positions, either crosswise to the left or right to the respective processing station. This means that there are no downtimes or waiting times, and everything runs completely independently of the cycle time. There are also several buffer places for the intermediate storage of semi-finished walls or floors.



- 1 The developed CSP plant concept at DSC in Thailand includes a capacity of 180,000 m<sup>2</sup> of solid concrete parts per year.
- 2 Finishing of the surface of the solid concrete parts is then carried out by an electric Vario SMOOTH rotary trowel



REFERENCE PROJECT

STARWORTH, INDIA

Starworth is one of the fastest growing construction companies in India with 18 residential projects and more than 15 years of expertise. The Provident Park Square construction project in Bangalore is now the first to rely entirely on precast concrete elements as a construction system. Starworth opted for Vollert's Central Shifter Plant (CSP) concept. This reduces costs by 15 to 20% compared to conventional construction methods. In addition, the CO<sub>2</sub> footprint is reduced by 25% and water consumption by 50%.

OUTPUT



LEVEL OF AUTOMATION



INVESTMENT

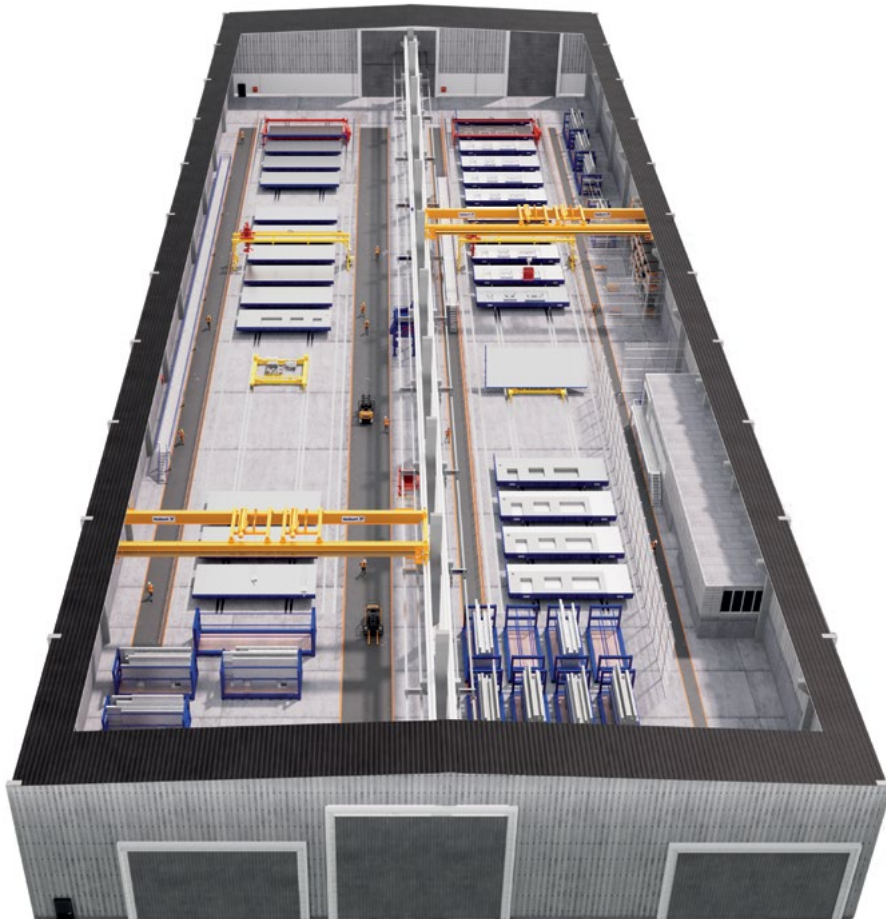


More information about this project: [vollert.de](http://vollert.de)



- 1 A Vario SHIFT central transfer platform is the heart of the system and makes plant operations maximally flexible
- 2 The new owners are offered architecture and luxury in a unique living environment

# TCT TILTING TABLE LINE PRODUCTION



1 The TCT concept combines the advantages of a stationary tilting table with modern automated manufacturing processes



## PRODUCING ON TILTING TABLES IN LINE

The production of precast concrete elements on tilting tables already has a long tradition and has proven its worth. However, stationary prefabrication also entails disadvantages, above all the output quantities of walls and floors required today for ever larger construction projects can no longer be realized with this manufacturing process.

With TCT line production, Vollert combines the advantages of the tilting table with modern automated manufacturing processes. In this process, several tilting tables positioned one behind

the other are moved semi-automatically between the individual formwork, reinforcement and concreting stations before the precast elements are being taken over by the hydraulic tilting device and set down on the prepared transport racks.

More information about  
TCT line production:  
[vollert.de](http://vollert.de)





## 3D ROOM MODULE CIRCULATION PRODUCTION

### AUTOMATED PREFAB- RICATION OF 3D MODULES

Building with prefabricated volumetric modules (PPVC) in residential construction, but also pods for kitchens and sanitary rooms, for example, is becoming increasingly popular worldwide. Here, free-standing three-dimensional modular systems are industrially prefabricated and fully equipped with interior fittings and fixtures before being delivered to the construction site and installed on site.

The reduction in labor and assembly time costs results in productivity gains of up to 40%. At the same time, dust and noise pollution is minimized and occupational safety is improved, as most

of the installation work takes place off-site. Not to mention improved quality control as industrial prefabrication takes place in a controlled factory environment, resulting in higher quality end products.

We have the expertise and the right production solutions as well as innovative handling solutions to automate the storage and handling processes in the factory.



More information about  
3D room module production:  
[vollert.de](http://vollert.de)

**1** Modern modular construction systems are industrially prefabricated and delivered turnkey to the construction site for final assembly

# STATIONARY CONCEPTS FOR PRECAST CONCRETE PARTS



Columns, beams, TT slabs or stairs – stationary formwork systems offer a proven solution. But also in the precast concrete production of walls and slabs, stationary tilting tables or battery formwork from Vollert represent an interesting alternative.



## FORMWORK SYSTEMS AS THE IDEAL SOLUTION

New trends and innovations in the industrial pre-production of precast concrete elements are opening up new markets for many building material manufacturers. Modern architecture, high-quality building systems and industrial manufacturing processes are no longer a contradiction in terms.

Simply stationary, low automation: that is definitely a good option here. Whether it's beams or columns for modern industrial construction,

walls, slabs, facades or precast staircases for cost-effective and energy-efficient residential construction – with the right formwork technology, the sky's the limit. Many examples show the massive advantages this offers and how successful investments can be implemented.



- 1 *Beam mould*
- 2 *Structural precast parts for loading on the construction site*

# STATIONARY CONCEPTS FOR WALLS AND FLOORS

## HIGH PERFORMANCE BATTERY MOULDS

High-performance battery moulds are ideal for the vertical production of single-layer, large-area wall and slab elements or other large-area precast concrete elements with mould-smooth surfaces on both sides. A large mould area is provided on a relatively small base area. Shuttering work is minimal and surface area utilization is maximized, which ensure high system productivity.

Optional integrated partitions in a chamber enables several concrete elements to be manufactured at the same time. The design makes for easy access to the open casting panels and demoulding. Opening and closing the chambers can mechanical or electrical. Sophisticated hydraulics for tightening the individual casting panels as well as their own stable construction ensures that the hydrostatic pressure is absorbed during concreting.

A sophisticated vibration system ensures effective compaction of the concrete.

Battery moulds are built in mono or duplex configurations. In the duplex version, the fixed centre casting panel is located between the moveable casting panels so that the relevant chamber sections can be filled independently. Alternatively, semi-mobile battery moulds can be provided if precast concrete production is required near to the construction site.

- 1 *High-performance battery moulds ensure maximum system productivity*
- 2 *Versatile building systems can be created by using battery moulds for walls and floor slabs*

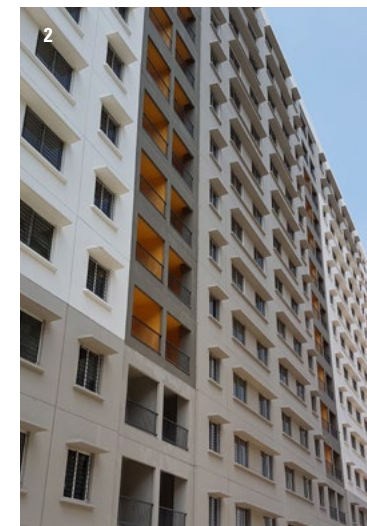
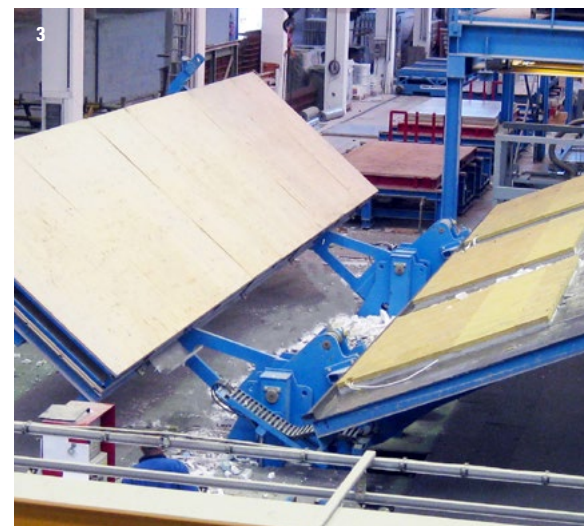




## TILTING AND FLIPPING TABLES AND LONG-LINE BEDS

Tilting tables enable the flexible, horizontal production of wall/façade elements and plane special parts. Hydraulic tilting joints stand the mould surface upright and ensure lifting without chipping the edge of the concrete. First class exposed concrete surfaces are guaranteed by the plane-ground mould surface. Whether as version with fixed side rail, height adjustable side rail in the range of 120 – 350 mm or wooden shuttering with a height-adjustable support base – the construction is designed so flexibly that any number of wall heights can be manufactured. Torsion stiffness guarantees large-dimension construction.

Long-line beds or simple formwork tables are also suitable for the production of solid walls and slabs. These stationary solutions are also optimally suited for small quantity production or frequent mould changes. They are characterized by a low basic investment. An interesting first step into precast concrete production, especially in low-cost countries. A variation on the production line is the flipping table. It is used to produce a double wall as a supplementary product to a floor slab.



- 1 Tilting tables are versatile and an interesting start-up solution
- 2 Present-day precast architecture is setting the standards in construction
- 3 The multivariable flipping table
- 4 Long-line beds and formwork tables for small quantities

# FORMWORK SYSTEMS FOR STRUCTURAL CONCRETE ELEMENTS



## COLUMN, BEAM AND TT SLAB MOULDS

Vollert's hydraulically controlled beam moulds offer you flexible equipment options for the production of structural concrete components. These enable the production of standard or special profiles with different heights, I, T or TT cross-sections and the ability to convert to rectangular cross section or V purlin. Length is freely selectable, while beam heights are continuously adjustable over the 900 – 2,400 mm range, as is the upper flange width up to 900 mm.

Hydraulic column moulds also offer maximum flexibility. Heights of 400 – 1,200 mm and

widths of 100 – 1,000 mm are possible as standard, and an optional height and width extension can be undertaken at any time – whether as mono or duplex moulds.

Prestressed TT concrete slabs are often used for slabs with high spans. TT mould systems can be used to produce spans of more than 20 m, with or without the addition of in-situ concrete.

- 1 Multifunctional column mould
- 2 Hydraulic beam moulds for spans of up to 100 m
- 3 TT slabs are very popular today in the construction of industrial buildings



## MULTIFUNCTIONAL STAIR MOULDS

Precast concrete stairs are now an indispensable part of modern residential and industrial construction. Construction times are significantly reduced, a consistently high level of exposed concrete quality is guaranteed and the final assembly is simplified. Straight adjustable stair moulds provide the optimal solution for every requirement. Stairs, with or without landings, are produced either overhead or standing. The following continuously variable dimensions are possible: tread depth between 220 – 320 mm, riser between 150 – 220 mm and tread widths between 900 – 1,200 mm. The soffit thickness is variable.

For clockwise and anticlockwise stairs, the individual steps are simply adjusted by turning. The steps can be produced with a sharp or bevelled edge, while the step shape can be rectangular or produced with an undercut. Up to 17 steps can be produced in the standard form, and up to 24 steps with an extension. Staircases are the ideal solution for extra-wide stairs with access and exit landings.



- 4 Versatile stair configurations can be achieved with stair moulds
- 5 Access and exit landings can be integrated in the mould
- 6 Precast stairs are an indispensable part of modern residential construction
- 7 Precast stairs also have their uses in multi-storey car parks

# FORMWORK SYSTEMS FOR SPECIAL CONCRETE ELEMENTS

## MULTIFUNCTIONAL SPECIAL MOULDS

As an experienced specialist, we offer technically multifunctional special moulds for light and lift shafts, infrastructural concrete elements such as bridge beams, sewer and tunnel shafts or special architectural elements.

We also offer a special portfolio for the production of room modules made of precast concrete elements; for example for sanitary modules or mobile office buildings, which are currently very

popular and offer many advantages. As they are completely pre-assembled with interior fittings, installations, etc., they can be installed straight onto the construction site as a self-supporting structure.



- 1 L-angle moulds
- 2 Bridge girder mould
- 3 Special mould
- 4 Tower mould

REFERENCE PROJECT

# RAKENUSBETONI-JA ELEMENTTI, FINLAND

The Finnish building materials specialist Rakenusbetoni- ja Elementti is expanding its capacities in the production of serially prefabricated bathroom modules. High-performance room cell formwork from concrete plant specialist Vollert ensures high-quality surfaces and watertight room cells. Bathroom installation is carried out in the shortest possible time, as the electrical and sanitary fixtures are already pre-assembled.

OUTPUT



LEVEL OF AUTOMATION



INVESTMENT



More information about this project: [vollert.de](http://vollert.de)

1 Prefabricated sanitary cells  
2 Room cell formwork

# PLANT CONCEPTS FOR PRESTRESSED CONCRETE SLEEPERS

Prestressed concrete sleepers are now used worldwide in track systems and rail networks. Industrial prefabrication requires special expertise in the various manufacturing processes and the latest machinery and plant technology.

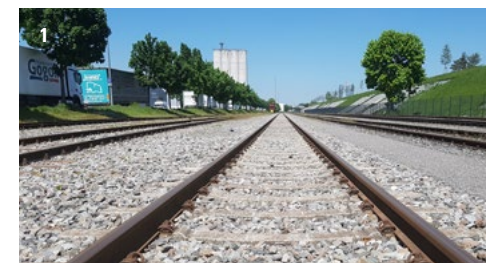
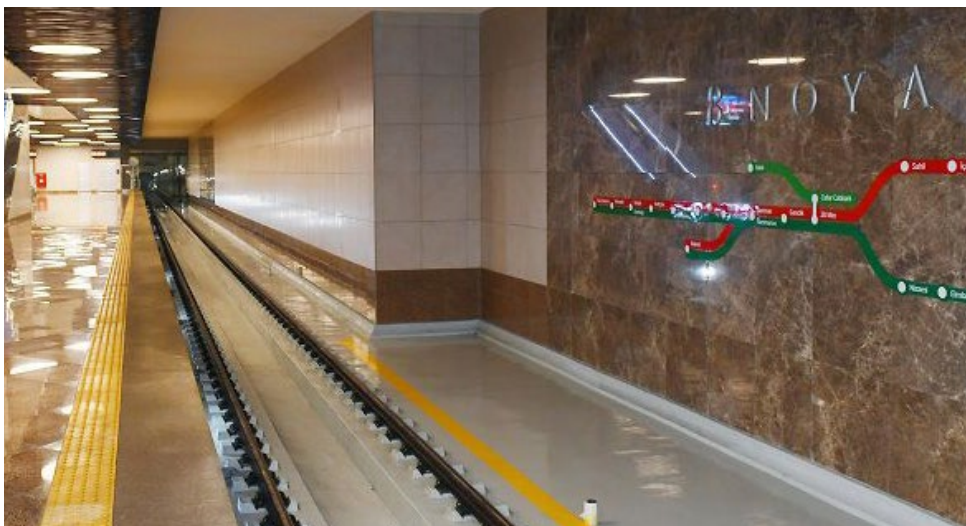


## RAILWAYS AND NETWORKS WITH KNOW-HOW FROM THE EXPERTS

Nowadays, railways and railway networks are equipped with concrete sleepers. Industrial pre-production and highly automated machine technology is needed to meet the high demand from private industry and the public sector.

Vollert's state-of-the-art mould circulation systems are now the worldwide standard for the manufacture of prestressed concrete sleepers and low-vibration tracks for the railway industry. Whatever the project – monobloc sleepers, bi-block sleepers, late demoulding processes or immediate

demoulding processes, from low automation and upgradeable start-up processes through to the world's largest concrete sleeper plants in Germany, Mexico, Thailand or Turkey – our experts bring their know-how to bear.



- 1 *B70 concrete sleepers*
- 2 *Low-vibration tracks in the Gotthard Base tunnel © AlpTransit Gotthard AG*



## INDUSTRIAL PREFABRICATION OF RAILWAY SLEEPERS

Baku's congested subway network will be expanded from 36.7 km to 119 kilometres by 2030, while in Thailand 1.73 million railway sleepers will be produced over the next few years for infrastructure development and for connecting rural areas to the boom cities – such mega-projects are only feasible through the industrial precasting of railway sleepers.

As experts, we have been automating concrete sleeper plants since the 1980s. For example, Vollert developed a circulation system for the production of the concrete sleepers for the 57-km long Gotthard Base Tunnel, based on the Low Vibration Track System, for the Swiss company Vigier Rail. In 2011, two production plants for a total of 1.1

million prestressed concrete sleepers were completed in just twelve months for Inkol Insaat in Turkey – 180 sleepers per hour. 450 quadruple moulds are constantly in circulation in highly automated plants. In Monterrey, Mexico, GIC has been using a Vollert system for the production of concrete sleepers for the Central American and US markets since 2014.

Here, we not only supply the plant production technology but also provide engineering services for the planning and implementation of track systems.

- 1 Concrete sleeper mould circulation system
- 2 Sleeper forms in the curing chamber
- 3 Sleepers after the production process

REFERENCE PROJECT

STRABAG, THAILAND

The global construction company STRABAG is supplying 1.73 million railway sleepers for infrastructure projects to expand the Thai transport network. The B70 prestressed concrete sleepers are produced in a new state-of-the-art precast concrete plant near Bangkok. Up to 270 moulds are in constant operation in the circulation system, which ensures significantly higher plant productivity compared to stationary production. The railway sleepers are delivered completely ready for laying. The system is highly automated, from assembling the anchors, through the tensioning and detensioning stations to the concrete application.

OUTPUT



LEVEL OF AUTOMATION



INVESTMENT

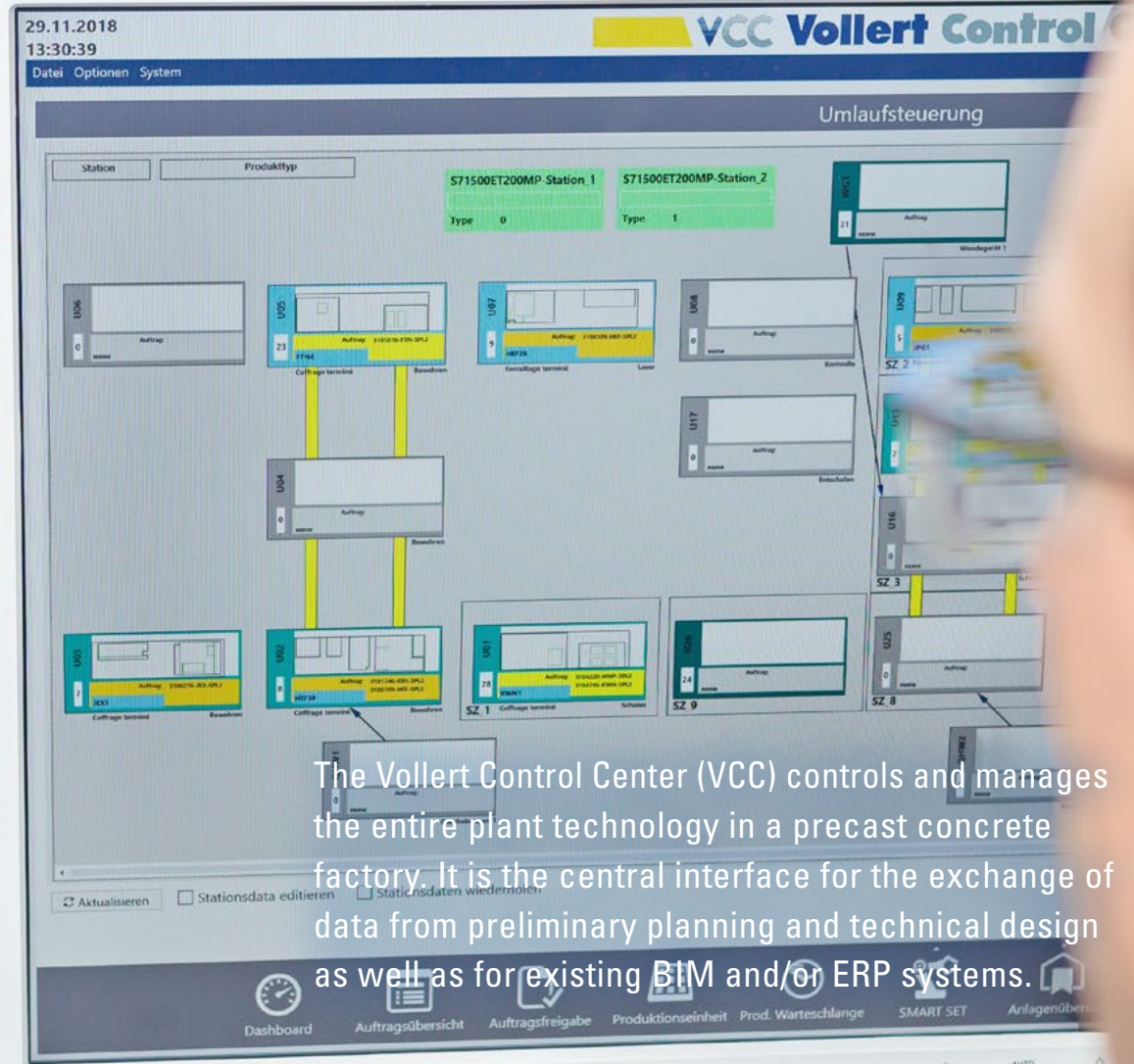
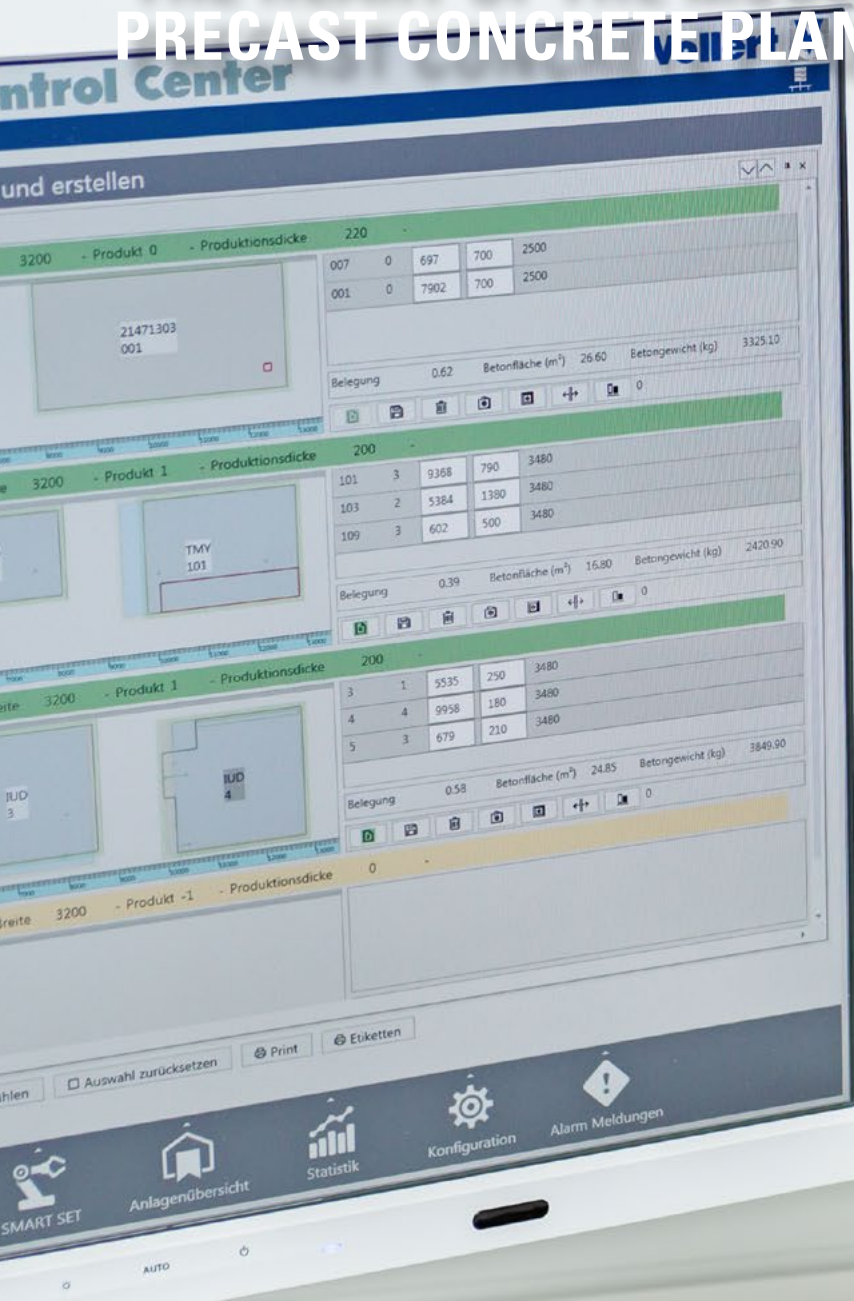


More information about this project: [vollert.de](http://vollert.de)



- 1 The reinforcement wires are semi-automatically prestressed with a tensioning force of 460 kN
- 2 Electrically driven discharge screws pour the concrete into the mould with high precision
- 3 Turning crosshead for the demoulding process
- 4 A lifting traverse in the entry area of the curing chamber

# THE HEART OF THE MODERN PRECAST CONCRETE PLANT



The Vollert Control Center (VCC) controls and manages the entire plant technology in a precast concrete factory. It is the central interface for the exchange of data from preliminary planning and technical design as well as for existing BIM and/or ERP systems.



# VOLLERT CONTROL CENTER (VCC): WORKFLOW AND HIGHLIGHTS

## PRODUCTION CONTROL SYSTEM OF THE CONCRETE PLANT

Today, a state-of-the-art production control system ensures an optimal and punctual supply of the required precast concrete elements to construction sites and customers. It continuously controls and monitors all processes and machines in the precast concrete plant, from work preparation and work stations to storage and loading processes. It is the central interface for the constructively created data from the BIM model and existing ERP systems. Consequently, it is also called the brain of a modern precast concrete plant. The Vollert Control Center incorporates all the usual CAD/CAM industry interfaces for this purpose.

Pallet allocation is optimized, all machines are controlled, data is automatically tracked and processed, retrieval sequences and curing times are managed and, of course, a large number of statistics are made available. This way you have all important order lists and key figures in view at all times. Printouts of label, element or allocation plans or their visualization at the workstation facilitate the production process and the subsequent storage location management.

Here, the achievement of a simple operating concept has been taken into account in the development phase itself – simply “learning by doing”.



## THE TECHNOLOGY

The Vollert Control Center is designed as a multi-tiered, service-oriented application. The business logic and data access level are integrated into a web service running on a Windows-based operating system with .NET Framework 4.5 or higher. The VCC's database is based on MS-SQL Server (version 2012+). Both applications can be run as direct installations or on virtual machines. They can also be run locally or remotely and can even be cloud based (e.g. Azure) if required.

The web service-oriented architecture enables the implementation of different user interfaces. The VCC's main application is a WPF (Windows Presentation Foundation) application. This application requires a Windows operating system with .NET Framework 4.5 or higher.



# ONE-STOP OFFER WITH PERSONAL CONTACT

## PLUS SERVICES

Is your system technology fit for the next 5, 10, 20 years? Our engineers know your machines and processes and know what weaknesses and faults can occur in their life cycle. Whether it concerns a concrete spreader, curing chamber or vacuum turning equipment, our Lifecycle

Planning concept makes unplanned downtimes or dangerous everyday situations for man and machine a thing of the past. In addition, with our modernization packages, we can bring your machine technology back up to the latest state of technology, simultaneously increasing your plant productivity.

Our experts advise you in face-to-face discussions and develop a solution concept optimized for the task. Training, suitable spare parts and worldwide call readiness are a matter of course for us.



# ALWAYS THERE FOR YOU – YOUR PRECAST CONCRETE EXPERTS



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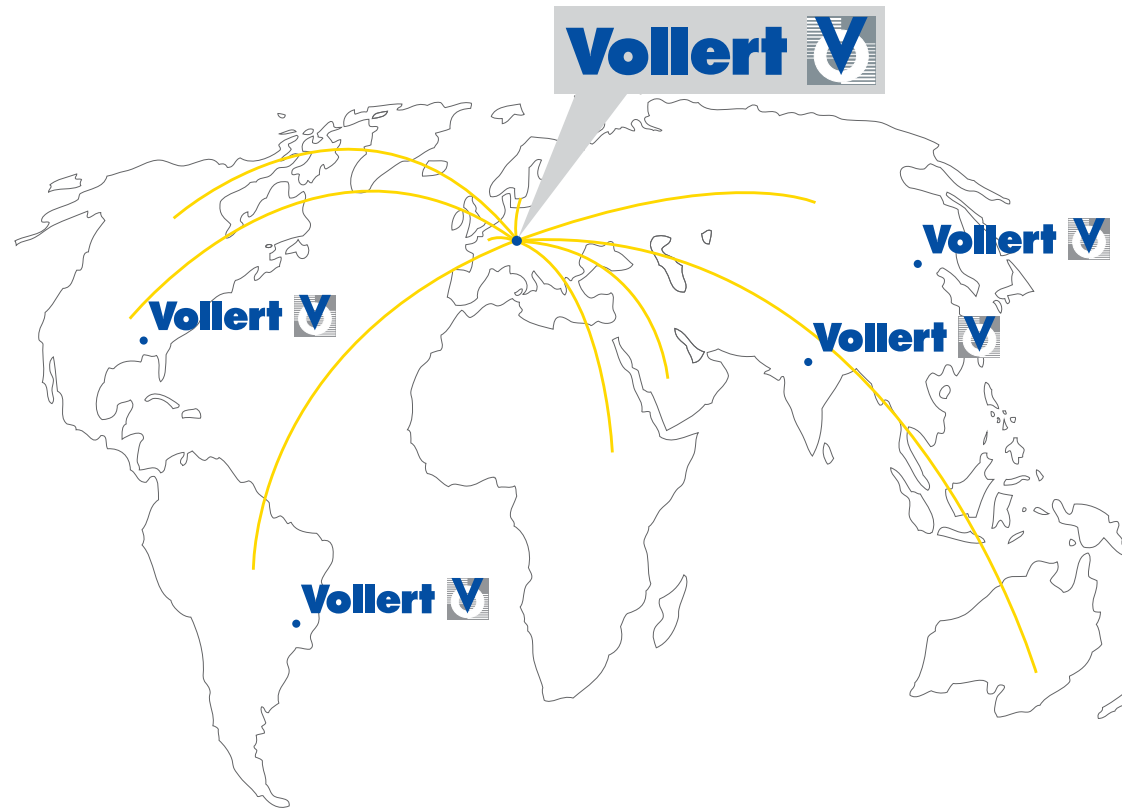
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 SOLUTIONS FOR PRECAST CONCRETE PRODUCTION

 SOLUTIONS FOR INTRALOGISTICS PROCESSES

 SOLUTIONS FOR SHUNTING PROCESSES

 PLUS SERVICES

[www.vollert.de](http://www.vollert.de)