SOLUTIONS FOR INTRALOGISTICS PROCESSES

Vollert V

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ENGINEERING

SUCCESS

Vollert V



OVER 90 YEARS OF INNOVATION AND KNOW-HOW

As one of the leading partners of the aluminium and metal industry we develop turnkey plant solutions to ensure the connectivity of your production process. We are driven every day by the passion to design intelligently thought-out logistics concepts that are optimally customized to your requirements. We combine tradition and experience with forward thinking ideas to design intralogistics systems for metals, heavy loads and materials with special requirements.

INTRALOGISTICS SOLUTIONS FROM THE EXPERTS Here you can see why our customers are so successful.

INTRALOGISTICS SOLUTIONS FROM THE EXPERTS

Highly automated, high-performance intralogistics concepts ensure productivity and competitiveness – in the aluminium industry, the automotive industry or generally where heavy and large loads have to be handled.

As a general contractor and full-service provider, our range of services includes state-of-theart material flow and storage technology, whether as a stand-alone solution or integrated into a larger logistics environment. We focus on optimum throughput times, automated processes without material damage, and accurately repeatable processes for efficiency and high product quality. Our solutions work reliably around the clock, 365 days a year. Customers particularly appreciate the comprehensive technical know-how of our experienced team. Anyone who orders an intralogistics solution from Vollert gets more than just plant technology, they get engineering know-how "made in Germany" and a contact person who understands their needs. That's our guarantee.

INDUSTRY-WIDE PIONEER AND TRENDSETTER

From fully automatic mega-high-bay warehouse systems for leading aluminium producers to intelligent material handling systems for the steel industry, Vollert can provide them, as well as the world's most efficient automatic stacker cranes for the storage of body parts, automatic crane systems for 50 t ingots and coils, and the most modern paint shops.

Vollert has been awarded several prizes for innovation. The company is also actively involved in research and standardization projects, including those of crane and rope technology. Furthermore, Vollert has been a recipient of the Blue Competence seal, the certification of the VDMA sustainability initiative, since 2011. Material and energy-saving concepts thus guarantee resource-saving logistics processes worldwide.

Oliver Wolschinski Member of the Board Vice President Intralogistics Systems

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Hans-Jörg Vollert

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FROM DESIGN TO A FULLY FUNCTIONING INTRALOGISTICS SYSTEM

When it comes to intelligently connected material flow, storage and packaging systems for heavy loads and large parts, many global market leaders rely on our plant and machine technology as being way beyond the standard. In this respect, we know and understand the special processes that need to be taken into account.





HIGHLY AUTOMATED INTRALOGISTICS CONCEPTS

How do you transport the right materials to the right place at the right time whilst the need to increase efficiency is becoming ever more important and parts and components more diverse and more sensitive to damage? Above all, what is needed is an intelligent, highly automated intralogistics philosophy that optimally coordinates and integrates all processes from order management, through warehouse management, to production control and dispatch processing.

Achieving a connected and automated supply chain in the sense of intralogistics 4.0 requires a high level of know-how and expertise. Data must flow together in real time and material flows and resource deployment must be coordinated efficiently. This is essential in order to be competitive today.





- **1** High-bay warehouse for anodes at TRIMET in Hamburg
- 2 Stacking of aluminium plates at AMAG
- **3** A coil crane takes over the material for further processing, annealing, and surface treatment at Hydro Aluminium
- 4 Transfer cars in Brazil for moving railway wagons

INTRALOGISTICS SYSTEMS FOR ALUMINIUM ROLLING PLANTS

MANUFACTURE OF HIGH QUALITY ALUMINIUM PRODUCTS

In the cost-effective production of high-quality aluminium products such as foils, strips or sheets, it is crucial to optimize cross-connection of the different storage systems as well as the processing steps at the rolling mill. This requires fully automated intralogistics solutions that both save resources and ensure efficient processes. From automatic cranes for transporting aluminium ingots, through AGVs, charging machines and crane systems for feeding furnace and rolling mills to transport concepts, high-bay-storage and flat storage systems for aluminium coils weighing up to 35 t and being several hundred degrees hot.

We integrate all the necessary material flows into a comprehensive automation concept encompassing a control system, warehouse management computer, control level and connection to ERP systems.











- 1 An automatic crane is the core of the intralogistics concept at Aleris in Belgium
- 2 Up to seven aluminium coils can be stacked in the high-bay warehouse
- **3** A Coil Transfer Car (CTC) is used for intermediate transport at Xiashun in China
- 4 CTCs are also used at Aleris for transport to the place where rolling processes are undertaken
- **5** *Tilting table for processing ingots at Zhongwang in China*

REFERENCE PROJECT ZHONGWANG GROUP, CHINA

Whether they are hot, sensitive, uneven or extremely heavy, in the mega rolling plants of the Zhongwang Group in Tianjin, 16 heavy-duty cranes and various transport systems, such as shuttles, AGVs and automatic stacker cranes, move ingots and aluminium coils fully automatically, safely and around four times as fast as usual. One central mega high-bay warehouse in both plant 1 and plant 2 has a length of more than half a kilometer, in which up to 1,500 aluminium coils are temporarily held in 150 rows on five levels. As a production buffer, it is integrated into a comprehensive material flow system involving several additional flat storage facilities – from slab casting to end products.





- 1 At Zhongwang, 16 automatic cranes, with runways up to 500 m, serve several interim storage facilities connecting the downstream processing areas
- **2** Crane for coil transportation in the flat storage area
- **3** A ingot crane delivers the raw material to another interim storage facility







Highly automated system technology in live action: https://youtu.be/eUCDsZQt6lw

INTRALOGISTICS SYSTEMS FOR ALUMINIUM EXTRUSION PLANTS

EXTRUDED PROFILES FOR A WIDE RANGE OF APPLICATIONS

Whether for window frames, vehicle trim strips or football goal posts, we frequently come across aluminium profiles in everyday life. What they have in common is the way they are made. They are pressed from aluminium billets as extruded profiles up to 50 m long, cut to transportable lengths and automatically stacked in special skips for transport. Depending on the intended use, the profiles can be heat-treated in aging furnaces before further refinement, such as anodic oxidation or powder-coating. We design and implement the complete automation of the material flow from the delivery of billets to the dispatch of the aluminium profiles. Our conveyor and automatic crane systems ensure the efficient transport of material between the saw of the press discharge system, the aging furnaces and the further processing and packaging stations. Transport and manufacturing control systems as well as host systems with connection to the ERP ensure perfect connectivity of all processes for the production of extrusion profiles.







- 2 Automatic crane at Hydro Aluminium
- **3** At apt Hiller, the automatic crane has a special traverse with swiveling gripping arms

REFERENCE PROJECT

In 2018, Hammerer Aluminium Industries (HAI) invested in a new high-end production line for the production of aluminium profiles to concentrate the future field of e-mobility at its site in Ranshofen, Austria. Using an automatic crane with a trolley that has a span of 15 m and a fully automated buffer store, Vollert ensures damagefree material flow between the existing and extended production lines. The automatic crane picks up the skips from the chain conveyor and piles up to three of each type on top of one another in an 80 m long and 15 m wide area, which can accommodate a maximum of 400 skips. This buffer facility has a capacity up to 800 t. The skips are automatically checked before storage to prevent damage caused by incorrect positioning.





- 1 The automatic crane takes the skips from the chain conveyor and stacks up to 3 skips one on top of the other, sorted by type
- **2** The capacity of the buffer area is up to 800 t of material
- **3** The 80 m long and 15 m wide area can hold 400 skips







You can find more information about this project here: vollert.de

INTRALOGISTICS SYSTEMS FOR SEMI-FINISHED METAL PRODUCTION

LOGISTICS CONCEPTS FOR SHEETS, COILS AND MORE

Sheets, coils, pipes and wire made of steel or copper are basic materials for numerous industries, ranging from automobile production to construction and medical technology. Before the final product is processed, multiple processing steps are necessary.

For several decades our core competencies have included material flow and storage systems for many well-known manufacturers in the steel and metal industry, such as ThyssenKrupp or MKM. From the world's most powerful automatic cranes in steel tube production at V & M to fully automatic high-bay storage systems such as those at Saarstahl, our technology ensures optimum intralogistics processes. Various, sometimes very sensitive, materials weighing up to 400 t are transported and stored, rotated, lifted and turned. This makes every intralogistics concept unique.

We provide optimal and integrated logistics processes for high plant productivity and economic processes.











- 1 The steel manufacturer SSAB in Oxelösund, Sweden produces steel plates every minute
- 2 ThyssenKrupp Tailored Blanks produces metal sheets of different thicknesses, surface or steel properties for the automotive industry
- 3 Copper wire handling at MKM

REFERENCE PROJECT

SAARSTAHL AG, GERMANY

Vollert installed a new fully automatic high-bay warehouse for up to 665 steel wire coils at Saarstahl AG's plant in Neunkirchen. This replaced a former open-air storage area. It is 58 m long, 28 m high and can accommodate wire coils with a total weight of about 3,000 t on 12 levels. Depending on the dimensions, the coils can vary in diameter up to a maximum of 1.5 m. In addition to the high cycle time of only 190 s per double cycle, Vollert's engineers also provided the solution for delivery of the coils, which weigh up to 4.5 t, directly from the stacker crane to the forklifts for truck loading. This interface between automatic and manual transport is demanding as inaccuracies during manual handling must be taken into account. This safety problem was solved by a combination of mechanical barriers with optical sensors and signal transmitters.





You can find more information about this project here: vollert.de





- 1 Saarstahl AG manufactures wire rod in various material qualities, including as-rolled, thermo-mechanically rolled, annealed and tempered
- **2** The required materials are provided for shipment from the high-bay warehouse on request
- **3** Delivery takes place directly from the automatic stacker crane to the forklifts at a common transfer position for loading trucks



INTRALOGISTICS SYSTEMS FOR METAL FINISHING PROCESSES

FROM CARS, PLANES TO KITCHEN EQUIPMENT

In order to press body parts for automobiles or aircrafts or to economically produce washing machines, kitchen appliances and sanitary fittings, the material flows and storage times in the production of components must be precisely engineered.

All transport routes and warehouse management must be integrated, and at the same time the very sensitive materials must make their way from A to B without any damage. Downtime or damaged intermediate products are expensive. At the same time, it is important that all essential parameters are available 24/7 and every businesscritical factor such as industry 4.0 and Al is integrated into the intralogistics concept.









- 1 A special crane with both a bridge and trolley as well as turning and lifting device operates in the 248 storage and 14 infeed and outfeed positions at BSH Neff
- 2 At Giga Coating, large parts for trucks weighing up to 9 t and more than 15 m in length are coated without touching the floor

REFERENCE PROJECT MERCEDES-BENZ, GERMANY

To increase production capacity, Mercedes-Benz built an additional press shop in Bremen. As the general contractor, Vollert supplied and installed the necessary conveying equipment either side of the presses. This includes the fully automated storage of sheets as well as the infeed and outfeed at the presses with sheet metal carriers, weighing several tons and racks for the pressed parts. Lifting units, transfer cars and an automated guided vehicle (AGV) ensure efficient material flow – from feeding the presses to the reception of the finished components at the end of the press line. For *Vollert's intralogistics specialists, this is already* the fourth large project in the press shop in Bremen. In 1990, the first high-bay storage system was delivered.





You can find more information about this project here: vollert.de





- **1** Fully automated storage and infeed/outfeed of sheet blanks and racks
- **2** The intralogistics system provides empty carriers on a cut-to-length line for stacking the blanks
- **3** As an intermediate buffer, the high bay warehouse has 270 storage places and a total capacity of 2,700 t



INTRALOGISTICS SYSTEMS FOR OTHER HEAVY DUTY APPLICATIONS



- 1 State-of-the-art stacker crane for battery changing of container AGVs at the Port of Hamburg
- 2 BMW World in Munich
- **3** Special crane for loading/unloading beverages on pallets





LARGE AND HEAVY IS STANDARD FOR US

Modern intralogistics concepts for heavy loads and materials with special needs require more than just efficient material flow and storage concepts. They also require a lot of know-how and a creative approach to be able to meet the particular demands associated with them.

In addition to the aluminium and metal industry, we also have satisfied long-term customers in business fields such as the automotive industry, the materials industry, the food industry and in port facilities. Wherever heavy loads or particularly large work pieces have to be moved economically, Vollert is the right partner and offers reliable solutions in every respect. This ranges from an innovative battery changing station for container transporters at the Port of Hamburg, and a special truck-loader for loading/ unloading beverages on pallets for a leading South Korean food manufacturer, to special stacker cranes for the customer center of a well known car manufacturer.

REFERENCE PROJECT

James Hardie, a pioneer in fiber cement, is breaking new ground in the US with a new fully automated production line for facade cladding. Vollert's integrated concept includes in-house transport, transfer cars, crane systems and automatically timed batches to the autoclave. Within minutes, these are loaded and unloaded with the facade panels weighing hundreds of tonnes. The centre piece of the plant at James Hardie is a 13 m high and 100 m long high-bay warehouse at the end of pre-production. It is also the buffer and pre-drying chamber between the wet area (green sheet) and the autoclave side in which the fiber cement boards are given their final strength under pressure and heat.





- 1 An autoclave train conveys multiple 3.5 m long packages. With each cycle, the crane picks up and delivers a stack of panels
- **2** Roller conveyors transport the boards to the stacker crane for storage in the high-bay warehouse
- **3** Fiber cement is durable. It is a high-quality building material, which is used both for exterior facades and as an indoor support material







You can find more information about this project here: vollert.de



SPECIAL CRANE SYSTEMS FOR HEAVY LOADS

CUSTOMIZED CRANE SYSTEMS

With special crane systems up to 100 t, Vollert provides customized solutions for customers worldwide. For more than 50 years, we have integrated this "third dimension" into the transport and storage of heavy loads and large parts, using fully automatic cranes, thereby extending logistics processes upwards.

Today, modern crane and lifting technologies are connecting internal material flow using high travel speeds with high precision, making use of modern positioning and collision control systems. Even challenging environmental conditions, such as in paint shops, explosion-proofed areas or those where aluminium is produced, our plant technology is unchallenged. Even the transport of 1,300 °C hot steel parts or oversized components for construction machines is now possible. We provide crane and lifting technology which transports heavy workpieces and large parts from A to B with absolute precision and at high speeds, or alternatively stores them in flat storages or even high-bay warehouses.

Our crane systems efficiently integrate and connect all material flows and production processes up to packaging and loading processes.

You can find more information here: vollert.de





SURFACE COATING OF HEAVY LOADS AND LARGE PARTS

OPTIMAL SURFACE COATING

The size and weight of the workpieces to be coated is constantly growing and the variety of components is expanding; in parallel, surface quality is increasing and colourings becoming ever more individual. The solution to these challenges is stateof-the-art surface coating technology, resourcesaving production, and future-oriented material flow concepts.

Our technology ensures high productivity, efficient processes and optimum lead times for the surface coating of heavy workpieces and large components. This is proven by well-known reference projects, ranging from the automotive, commercial vehicle and transport engineering industry up to the world's largest manufacturer for drive systems. We are your most reliable partner, since we have experience of implementing more than 50 surface coating and heavy-duty transport systems for wet painting, powder and cathodic dip coating.

You can find more information here: vollert.de



DIGITISATION AND AUTOMATION LINKED UP WITH INTRALOGISTICS SYSTEMS

AUTOMATED MANAGEMENT OF INTRALOGISTICS PROCESSES

Today, the automation of all internal material flows is an essential aspect of lean production. At the same time, it is also necessary to intensify the important interaction between humans and machines. Data and relevant information is captured, processed and evaluated digitally in real time and the logistical processes connected according to route, power and time optimization.

From batch size 1 for large part coating shops to the series production of extruded aluminium profiles or sheet metal, we develop the optimum intralogistics concept in collaboration with our customers. Using state-of-the-art visualization and digital twins, we are able to simulate the subsequent intralogistics processes in advance and develop the best solution. Nowadays, virtual commissioning is feasible, too.

Sustainability and resource savings are important. As a member of the VDMA Blue Competence initiative, we actively implement this in our plant concepts.







2 Warehouse management in aluminium production







SMART INTEGRATION AT THE PRODUCTION LEVEL

DIGITAL OPTIMIZATION OF THE SUPPLY CHAIN

In order to achieve an efficient supply chain, it is necessary to appreciate the processes involved and to integrate all key production and logistic requirements. We know how to integrate our technology into existing higher-level software architecture, for example via an OPC UA interface.

It is important to connect Level 1 (e.g. PLC control systems) and Level 2 (e.g. Vollert ICS) with external Level 3 systems, such as existing ERP or MES systems. The decisive step towards an intelligent factory.

In order to guarantee that long-life logistics processes function smoothly, free of failures or downtimes, we also rely on a life-cycle planning concept and state-of-the-art predictive maintenance systems. We offer remote diagnosis, a Service Plus maintenance concept, and 24/7 hotlines to meet the needs of our customers.

1 Intralogistics processes must be intelligently integrated into the higher-level software architecture

IN-HOUSE ENGINEERING AND TECHNOLOGY

ENGINEERING AND A HIGH DEGREE OF VERTICAL INTEGRATION

From the very first technical meetings with our customers, we are a fair and reliable know-how partner as well as manufacturer and system supplier for your intralogistics concept. From design to automation, we are committed to the highest quality standards. This is also confirmed by our DIN EN ISO 9001 certification. Customers worldwide trust the technology standards we have established.

We focus on high-quality materials and proven components for our plant technology. From

the mechanical assembly, the design and integration of the hydraulic and pneumatic components, through to the powder coating of the components, all critical process steps are undertaken by us.

With our state-of-the-art machinery, we can manufacture even the largest crane girders or components for mega stacker cranes, in accordance with our own quality specifications.









Our customers trust our engineering and our know-how in design, automation and manufacturing





FACE-TO-FACE COMMUNICATION AND A ONE-STOP SHOP

PLUS SERVICES

ture-proofed for the next 5, 10, 20 years? Our and know what weak points and issues can occur in the overall life cycle. Whether stacker

AINTENANCE & INSPECTIONS

Is your material handling system or crane fu- our lifecycle planning concept unexpected downtimes or possible risks involving either engineers know your intralogistics processes workers or machines belong to the past. Modernization kits enable us to upgrade your logistics processes to state-of-the-art technology cranes, storage systems, or AGVs, thanks to while increasing overall productivity at the same time.

> Our experts will advise you as part of an ongoing dialogue to develop individual concepts. Training, spare parts and worldwide on-call services are a matter of course for us.

ALWAYS THERE FOR YOU – YOUR INTRALOGISTICS EXPERTS

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