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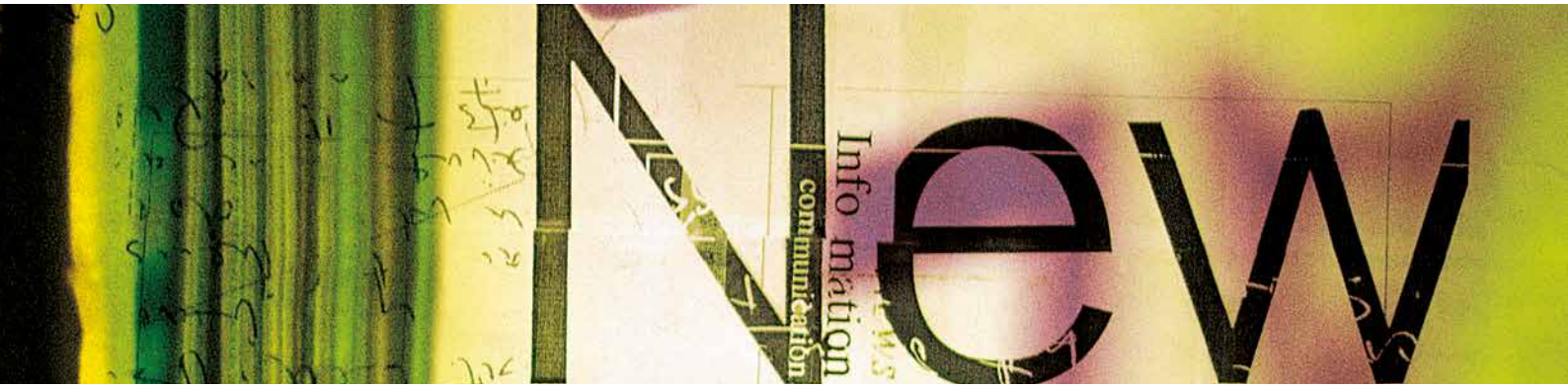


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# A new generation of automation

Nino Stölzel, Schenck Process, Germany, reveals a logistics solution for the bulk materials and cargo industry.

**Problem-free and efficient production processes are key to a well-organized flow of goods. The material needed must be available at the right time, at the right place and in just the right quantity. LOGiQ® from Schenck Process Europe GmbH is a logistics solution for the bulk materials and cargo industry, automating all procedures from ordering through to shipment.**

**Self-dispatch terminal – entrance**


**Contactless identification (RFID)**

### Upgrade to smart factory

One of the world's biggest cement manufacturers launched a project to automate cement dispatching and shipping up to a level of full 24/7 self-service.
Previously the plant had handled around 80 – 100 trucks of cement a day, a figure which has now increased to 150 – 300 trucks of cement and incoming raw material. The customer tasked Schenck Process with turning this project into reality.

### Site conditions

In terms of plant layout, the following stations had to be automated:

- Plant access with entrance and exit gates. The new installation had to include appropriate automated plant access. The exit gates are opened when the sensors detect an approaching vehicle.
- The two weighbridges had to be equipped with self-service terminals to provide 24/7 operation, without the need for support from a plant operator. The customer wanted registration to be possible without an ID card or similar document; hence the installation had to be able to issue the media required where necessary.
- The weighbridge office had operator workstations that also had to be upgraded to the latest PC technology and LOGiQ® Web DispatchManager for order maintenance.
- The former loading stations were also to be fully automated using new terminals with touch screen technology or with the embedded Disomat controller.
- The customer also had unloading stations for materials such as flyash, REA gypsum, fluff, photo water, raw meal, animal meal and lump coal that needed to be included in automated loading and unloading procedures.
- Video surveillance was required, including surveillance of the entrance and exit truck weighbridges.
- The installation had to be completed by a server system comprising two equal rack servers for backup.

### LOGiQ® from Schenck Process

LOGiQ® perfectly satisfies the requirements of the customer. The multi-layer architecture and the use of LEGIC ID cards opens up a wide range of options for the customer, while also leaving scope for future quantitative and functional extensions.
High workloads do not limit individual terminals because the installed stations only handle dedicated tasks. Every station provides information on the present status via network communication. The central data collector is the database. Since the transmitted data is only a few bytes in size, the system is also suitable for a large-scale extension in the future. The local terminals are designed to operate autonomously.

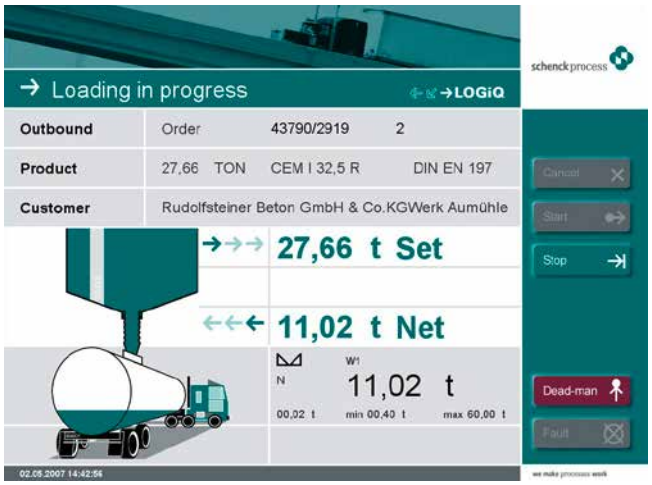
### RFID card system

One of the key components of this installation is the RFID system that is widely used in LOGiQ®. Using these ID cards eliminates all avoidable paperwork, optimizes the registration and identification process and thus makes the whole procedure more secure and reliable. ID cards allow truck drivers to operate the system on a self-service basis, 24 hours a day, 7 days a week.

### Forms of business

The plant has two types of customers:

- Customers who collect their own materials. These customers have their own trucks or authorize transport companies to pick up their material.




**Weighing-loading application**

**Self-dispatch terminal**

- Customers who have material delivered to the required destination. In this case transport also forms part of the sales order. The truck fleet from the plant or an authorized transport company usually handles this.

Installation also covers suppliers for commodities, based on purchase orders.

### Business workflows

At the plant entrance, the drivers have various options for registering with the system on the self-service terminals. If a driver arrives without an ID card, he may identify himself in several ways:

- TAN (transaction number). This is only valid if the plant operator uses these numbers. This TAN clearly identifies one transport order.
- Contract number.
- Carrier name.

Alternatively, the driver has a permanent ID card. This card can be linked in LOGiQ® to a direct transport order, contract or transport company.
The link to a contract is mainly used for customers collecting their own material who are registered with a single contract. However, this contract may contain different materials that will be available and released for pick-up.
Certain transport companies may be registered for multiple end customers. Additional steps of identification are therefore required to properly identify a transaction. Internally this transport company is linked with customers, ship-to locations and materials.

### Loading stations

All loading stations are equipped with touch screen technology and new weighing electronics.

Communication was established with the existing PLC systems through parallel I/O contacts or Profibus for the actual truck weight. These terminals also had to be incorporated into the plant Ethernet network for communication.
The user interface on the loading stations is designed in the same way as the self-service registration terminals at the entrance to achieve optimal recognition.

### Security features

With the introduction of LOGiQ®, the plant operators and the drivers had to learn one important key message: ‘Big brother is watching you’.
LOGiQ® maintains logging information for every transaction throughout the plant. This includes registration, loading and of course interfaces to the host and truck dispatching systems.
Over the years, drivers have learnt that they cannot cheat LOGiQ®. LOGiQ® provides information about each time a user presses a key and provides evidence of system malfunctions as well as misuse. The installation has therefore also helped to greatly reduce complaints about anomalies, more than 90% of which were caused by users and not the technology itself. In fact, the remaining incidents were caused by ‘human error’.
In the rare cases of technical issues, these logging features were a great help in identifying problems quickly and reduced the repair time. Most of these issues could be rectified without having to fully shut down the system.

### Video surveillance

The web cameras at the legal-for-trade entrance and exit scales had to take snapshots of the trucks automatically and store these on the file server with reference to the transport order. This has to be done because the cement plant tended

to remove the driver's signature in favor of the photos of the truck and driver. The pictures are stored in a secure area accessed only by authorized administrators.

**Interface to ERP system**

The customer retained the existing ERP. The interface is a directly coupled link to SAP via web services.
Usually, these kinds of interfaces are designed to be asynchronous and decoupled. In this case, Schenck Process installed a fully linked system, based on direct external database access.

**Flexible automation**

The system automates processes and flows of goods at all points between ordering and dispatch. At the same time, the software controls information flowing to and from production processes and commercial systems and interactions with the people and machines involved. If the customer's requirements change, the system can be flexibly reconfigured.

**Conclusion**

The customer is satisfied with the installation and appreciates the flexibility of LOGiQ®. The customer very quickly came to understand the huge potential of LOGiQ® to control the flow of goods to and from production processes. The fully automated data exchange between the process and commercial system not only fulfilled expectations but opened up additional optimization possibilities for the customer.

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