

GETTING TO GRIPS WITH DIGITISING LOGISTICS

Reiner Bachthaler, Axians Industrial Applications & Services GmbH, describes a pragmatic approach to making the digital transformation of logistics in the cement industry tangible.

Almost everyone in the cement industry will have heard statements like these: 'Digitalisation is on everyone's lips'; 'You need Industry 4.0'; 'You need IoT solutions'.

At first sight, this sounds promising albeit very challenging, perhaps even frightening, but what does it really mean for the logistics tasks in the cement industry and what is the best-fit digitalisation solution? This article will take a closer look at these questions and show some pragmatic solutions.

Digitalisation – how to start?

The correct digital transformation of a logistics workflow involves not immediately selecting or prescribing a solution as a reflex. The first step should be a profound analysis of the status quo and the identification of challenges and pain points: 'which parts of the logistics workflow in the cement plant and beyond, can or should be made faster and more effective with reduced costs – precisely for my individual situation?'

This also refers to the desired strategy to identify and reduce existing bottlenecks: is the focus to establish automated order and transport planning, or is it more



important to achieve a higher degree of automation in the plant entry and loading process?

Ideally, the targeted improvements can also be defined in tangible terms, such as saving 15% of the logistics costs, making certain processes 10% faster or reducing manual interventions by half.

Solution providers, who really provide 'solutions' and do more than sell software, will guide and assist their customers in this evaluation phase by executing a workflow analysis and setting up a blueprint, before any implementation starts. This makes it tangible for the customers and ensures that the digitalisation will be streamlined according to the specific demands.

Think disruptive: know where you are – and dare to change

Logistics processes in a cement plant have often been established over many years. Experts like the weigher or the dispatcher know their tasks very well and have developed their own methods to handle them properly. The downside of this is that it causes high levels of dependency on individual employees and increases the risk of establishing standalone solutions and processes. These may fit for a dedicated area, but their interaction with other areas is often poor.

This is where digitalisation with the use of software-based, highly integrated processes comes into the game. Manual, error-prone actions as well as efforts and dependency on single persons can be reduced. New employees will learn how to handle their tasks much faster and with greater ease. Using standardised



Fully-automated loading station.

interfaces between different software solutions (e.g. between logistics software and an ERP) overcomes error-prone data entry and ensures full transparency in all areas.

When talking about disruption, it is not only about finding the right tools. If poor manual logistic processes are turned into poor software-supported processes, then digitalisation has failed!

How can the processes be optimised or changed? This is the first question to be answered before implementing any software solution.

Make it tangible: improving the driver check-in process at the plant

A good example to illustrate the start-up procedure for digitalisation is the check-in process for a truck driver entering the cement plant. To understand the process and the challenges involved, the following questions must be resolved:

- ▶ How and with whom does the truck driver communicate, what is the task (load or unload, material, amount, etc.)?
- ▶ What documents does the driver have (if any)?
- ▶ How are the weighing processes carried out?
- ▶ Is there a pre-planning process and how does the driver have to register?
- ▶ How does the driver find out which silo to drive to?
- ▶ Are the inbound processes also streamlined?

Answering these questions in a workflow analysis (of course only an excerpt from the diverse framework conditions of a logistic workflow) will show, that even this single use case 'check-in at the plant' offers much potential for optimisation.

Once this potential has been clarified, another extremely important question arises: how far do operators really want to go? Should an optimisation project create the ideal state or is a reasonable start – the minimum valuable solution, so to speak – the right approach?

There is no right or wrong approach to this decision, but experience shows that many building material manufacturers shy away from automating their logistics workflow, if they feel this will require a huge project with high initial investment and a long project duration.

This is where workflow automation providers are called upon to offer modular and scalable solutions, enabling a quick start with manageable costs and efforts, but open for variable expansion steps in subsequent phases.

A smart start-up solution for the check-in process at the plant

What would a reasonable start-up solution that already offers significant added value look like?

When the truck driver enters the plant, they drive onto the entrance weighing station, leave the truck to operate a self-service terminal at the gatehouse. The driver keys in the license plate and order number

(if available) and can select the material type and amount from a list, preconfigured for the customer. A document can be printed that also shows the tare weight and silo to load. At the loading station the driver gives this document to the weigher, who manually starts the loading process. When loading and weighing is finished, a delivery note is printed out and handed to the driver.

This is just one example; a wide variety of modifications are possible, depending on the specific needs of the project.

Scalability is the key: start small – migrate big

A valuable start-up solution for processes at the plant has been described. But how far can the automation be taken, what could be the ideal situation?

The following outlines an ideal situation by maximising the use of software-based process automation.

All information for the order has been recorded in pre-planning and the order has been scheduled. The driver has the full information available in a driver app. His vehicle is automatically recognised by a camera-supported number plate recognition system, and the entry into the factory is timed using an electronic queue management system. Check-in to the plant can be carried out via one QR code scan with the driver app. No additional input is needed from the truck driver in a fully 24-hour self-service system. The driver will then be guided to the correct silo via their driver app. At the loading point, they simply scan the QR code from the app at a self-service terminal and the loading process starts automatically. Entry and exit weights can be directly taken from the automatic loading sequence and the bottlenecks on entry queues are eliminated completely. At the end of the loading process, an electronic delivery note is created and uploaded both to the app and a central order management system. The driver can leave the plant without further input.

Unrealistic? No, this level of automation is already possible today, for example with the Axians solutions

VAS (the yard management system) and IAS Suite (a central, cloud-based order-to-cash workflow). Of course, this ideal situation depends on suitable infrastructure at the plant and has to fit with the capabilities and demands of the customer. There is no black or white, scalability is the key!

For example, extensions like built-in terminals for wheel loaders or forklifts could be a reasonable extension of the start-up package, thereby increasing the flexibility and reducing manual error-prone inputs.

Once again, the approach described above, where a project is always begun with a thorough analysis of the actual situation and requirements still applies, even when combined with highly scalable and adaptable software solutions.

Beyond the yard: setting up a logistics ecosystem

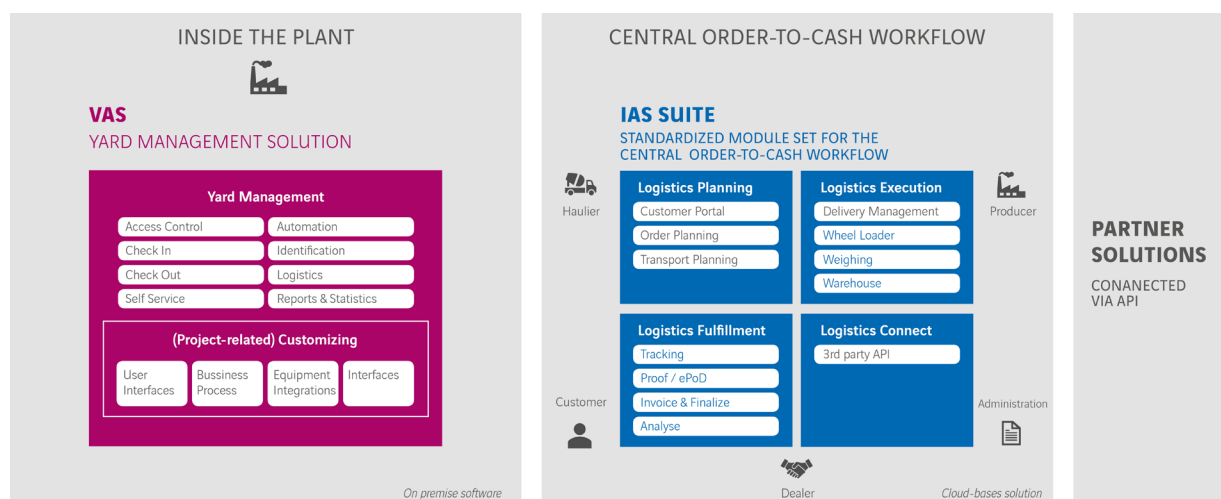
The first part of this article has focused on the logistic workflow in the yard, inside the plant, the typical starting point of most bulk goods suppliers for logistics automation.

But yard logistics is not an isolated island. The entire order-to-cash workflow for cement starts much earlier, before a truck driver even enters the cement plant, and involves many different roles and players besides the cement supplier.

Customers request various channels to flexibly create their orders. The order manager of the supplier often works across different plants. He has to accept orders in the traditional way via e-mail or telephone, but modern solutions also offer an ordering platform, where customers (or the planner on behalf of the customer) can easily define their orders online.

In addition, the planner has the task of interacting very closely with the hauliers to supply transport orders as automatically as possible.

All necessary information about the transport order should be available to both the truck driver and the weigher at the plant. The truck driver as well as the weigher at the plant should have all required information on the transport order. Delivery documents should be created and distributed in a



The logistics ecosystem from Axians IAS.

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highly automated way to the different parties involved. When the material has been delivered to the receiver, an electronic proof of delivery overcomes the need for manual paper-based confirmations and makes the updated delivery status available directly to haulier and supplier.

When considering the demands for a central order-to-cash workflow and the logistic processes inside the plant, it is obvious, that ideally these different workflow elements should be combined with an integrated logistic ecosystem and be strongly connected to an ERP system.

Such an ecosystem provides a solid basis for fulfilling the main demands of a smart logistics workflow:

Consistency

Proper data is available in all areas with the same source, which is one of the central issues in a manual logistics workflow with island solutions.

Transparency

All parties involved (customer, producer, haulier, and receiver) can always see the current status and all the relevant information for their tasks with just a click.

Efficiency

This eliminates the widespread data entry and related error rates and speeds up the logistics processes – reducing both the costs and effort required.

The following two examples illustrate the importance of an automated, central workflow across several plants:

- Order entry can be a nightmare when serving different manual input channels like phone calls or e-mails. It is limited to the working hours of order managers at the material supplier and often lacks consistent feedback to the purchaser. With an online ordering platform (customer portal), these

restrictions can be overcome and errors in the ordering process will be reduced. It does not limit the flexibility of the purchaser, as the order manager could still use manually-supplied order information to key into this online ordering platform.

- Delivery notes are very important documents, enabling many different workflow participants to execute their tasks (like proof of delivery) based on complete and consistent data. An intelligent workflow solution will distribute the (electronically created) delivery note automatically to all parties in need of that data – via an efficient and secure digital medium.

There are many more examples demonstrating the value of a central order-to-cash workflow, like the integrated transport planning between the order manager of material supplier and dispatcher of the haulier.

Conclusion

Digitalisation does not have to be a 'Pandora's Box', if it is based on a profound evaluation of the status quo and industry demands, that prepares a scalable and pragmatic implementation and leads customers to outperform their competitors.

Whether the focus is on optimising the plant or automating the entire order-to-cash workflow, it is up to the client to decide. A solution provider will support this decision process with an initial evaluation and as an outcome-dedicated and scalable solution. ■

About the author

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Axians Industrial Applications & Services GmbH, as part of VINCI Energies Germany, provides process-oriented logistics solutions for the raw materials industry worldwide.

The well-proven yard management solution, **VAS®**, enables fully automated yard management by automating plant entry, loading, weighing, delivery checks, quality assurance & exit processing. It serves inbound and outbound processes for truck, rail & ship with full IT to OT integration.

The modular and cloud-based SaaS solution **IAS Suite**, covers the entire logistics chain from customer order, transport planning to shipment and delivery. Dedicated portals & apps provide the best-fit user interface for each workflow role like end customers, carriers, truck drivers, factories and internal logistics administration.



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