

A Case Study by Yves De Groot

In the factory plant of soap producer Christeyns each raw materials silo has its own complete weighing system for dosing.

For the production of industrial washing powders Christeyns weighs different raw material types separately in its factory in Gent, Belgium. *“The production process is as fast, flexible and efficient as possible,”* says Technical Director Johan Hofman. Ultimately the aim is to strive for a continuous production process. Each of the 18 weighing systems, supplied by PENKO Engineering B.V., is individually equipped with a controller guaranteeing optimal dosing accuracy and product quality.

Since its foundation in 1946, chemical company Christeyns developed into an international player in wash detergents and hygienic products. The core business includes industrial textile cleaning but also professional, food and medical hygiene products for markets in Europe and North America and expansion into growth markets such as Brazil and the Middle East. For Belgium and the Netherlands, the enterprise is considered market leader in the industrial laundry sector.

According to Technical Director Johan Hofman, a number of mergers and acquisitions, at home and abroad, including the industrial laundry activities of Johnson Diversely, contributed to the success of the company. *“Turnover increased by 17% per annum on average. In 2013 the family owned business counted eight production facilities in the home market with over 700 employees and a total of 230 million Euros.”* Headquarters are situated in the harbour area of Gent, in Belgium, close to the city centre, allowing for a great view of the city from the building roof-top.

Not only is the largest production facility located at this premises which is currently expanded by $xxxxm^2$ of warehouse, it also contains the production of washing detergents for the entire group. The factory output counts a total of 62 thousand tons of product, of which 20 thousand tons are washing powder, 16 thousand tons of liquid ingredients/detergents, 11 thousand tons of per acetic acid and 15 thousand tons of oleo chemical products. The total number of employees is currently at 120 and this includes headquarters and R&D employees.

Washing-powder Production

“Density and flow-ability of materials is very important in our manufacturing processes,” says the Technical Director. Generally households easily use 40 grams of washing powder for a few kilograms of washing, whereas our customers only need 4 grams of powder for a few kilograms of washing. The entire recipe controlled production is extremely flexible and runs in relatively small batches. About seventy different raw materials, used for this process, are stored in silos, big bags or for smaller quantities in smaller sacks.

The company aspires to have a rapid turn-around time keeping stock levels at a minimum. This requires a highly reliable automated process installation. Where necessary, the installation is upgraded and the number of silo's and dosing systems is continuously expanded. The last upgrade was done 2012 – 2013. *“We have 150 recipes. Combine this with the different types of packages and the variety in volumes, the product range holds more than 500 articles in fluid alone,”* says the Technical Director, who goes on to explain the solids production process.

During the solids processing raw materials are dumped from silos or big-bags via holding bunkers, each with its own weighing/dosing system, onto a central conveyor belt. Some of the smaller quantities of raw materials, for example those from smaller sacks, are discharged into an installation designed for this. Subsequently a bucket elevator dumps the raw material into one of the two holding silos, each of which is connected to a huge mixing

drum installation. Both mixing installations are connected to two storage silos which in turn are connected to a packaging line allowing two batches to be packed at the same time.

Johan Hofman explains, *“Our goal is to achieve a practically non-stop production process in which various installations can be in different stages of the production process. For this, production automation is a fundamental requirement. So for example, while the mixer is still active with packaging a batch, a new batch can be prepared in the holding silo. Ideally, whilst one batch is being packed, another is mixed and a third batch is transported to the holding silo – all happening at the same time. In this way we can manage various recipes simultaneously during the production process.”* He emphasizes the advantage of having separate weighing systems for this type of production process since the amounts of different raw materials used varies per batch.

For the holding bunkers, which are much smaller in comparison to the big silos, it is important to attain the highest possible weight accuracy, especially for components used in relatively small quantities. *“This is particularly important because of the high concentrated products we make,”* explains Hofman and goes on to pointing out that these are expensive components such as optical whiteners which are added to certain washing powders.

Controller

The production process currently includes a total number of 18 PENKO controllers, each with its own load cell. The decision to install individual controllers for each weighing system, as opposed to a PLC-controller, was made to guarantee weighing accuracy and thus ensure consistent quality standards of the end products. The controller reaction time is 0,6 milliseconds or, a factor of 8-50 higher accuracy compared to any PLC-controller. Operating the weighing systems, of which the batch- and sequence control system plays an important part, is done by the latest user-friendly supervisory BCS management information software from PENKO Engineering B.V.

In the production control room each weigher has its own intuitive touch screen operator panel of type FLEX. For non-dosing processes the systems are connected to a Siemens PCS7 product automation system. Once the operator has selected a recipe, the production process is started by a press of a button. At any given time the system shows which production batch is in process, which product is in which holding bunker and which possible routing is available.

By the end of 2015 Johan Hofman hopes to connect the production controller to a Microsoft Navision ERP-system. *“Christeyns wants more control over its production and logistics processes. Recipes will be uploaded from the ERP-system to the PENKO controller and once the process is completed, this will be relayed back to the ERP system. This requirement will be discussed with PENKO and the ERP-software supplier.”*

Bottleneck shifted

Due to the development of the automated production system over the past few years; the bottleneck has shifted from batch production to the packaging lines, Johan Homan concludes. *“Furthermore, due to the ever increasing optimisation of the production process we are now able to run two shifts. We are investigating other ways to even further increase efficiencies.”*

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Service Provider

Over recent years Christeyns increasingly evolved to a supplier of a complete range of products and services. This includes product dosing accessories right up to water control and energy control systems to ensure durable production for its clients. *“Water consumption per kilogram of linen is about 2 litres for in industrial Laundromats while this number can be up to ten times higher in households,”* Technical Director Johan Homan adds, *“to*



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maintain high knowledge standards in-house as well as keeping our customers up to standards, the Christeyns Academy was established to ensure optimal results and increased efficiencies while building long term partnerships.”