VIDEOJET

Thermal Transfer Overprinting
Zeppelin Systems Case Study

Zeppelin Systems and Videojet: innovative solutions for world-class blending results

Zeppelin Systems is among the leaders in manufacturing and equipment for storing, conveying, blending and dispensing of premium bulk solids.

As a global enterprise with locations in all key business centers, the company strives to deliver the latest, highly innovative and reliable process technology to its clients, to help maximize economic success.

For companies in the rubber and tire industry, reliable and highly accurate feeding and dispensing to produce the exact blend of raw materials is a critical factor for operational success. The quality of the blend is crucial – this is a task that requires highly specialized technology, expertise, and above all, experience.

As a technological leader, Zeppelin Systems offers the rubber and tire industry over 20 years of experience, as well as the expert skills and knowledge gained through implementing more than 500 specialty manufacturing systems. Zeppelin Systems delivers end-to-end systems for its customers including raw material intake, storage and conveying; weighing and dosing of chemicals (including black carbon, silica, oils, additives and other minor components) as well as delivery of turnkey blending rooms.

“Videojet is rightly in a market-leading position with this device.”

Stefan Hertel
Senior Project Manager,
Plastic Processing & Rubber Plants
Zeppelin Systems

The direct successor of Count von Zeppelin, whose legendary airships turned the human dream of flying into reality over 100 years ago, Zeppelin Systems today is used to thinking outside the box. Its continual innovation, drive for perfection and aim to build-in the maximum level of functionality into all of its products have combined over the decades to make Zeppelin Systems what it is today: a technology leader in the handling of premium bulk solids.

Zeppelin Systems’ real expertise is best seen in the details – for example, as plant engineers and developers in the bulk solids industry, they have successfully solved a major problem in the production of tires. Their industrial customers had been weighing minor chemicals for the rubber production by hand, and it was important for them to be able to weigh and bag them semi-automatically. With technology experts from Videojet, a solution for this design specification was developed: A Thermal Transfer Overprinter (TTO) was selected by Zeppelin to accurately mark the bag with a bar code and the date and time, as well as with the formulation used.

Stefan Hertel, Senior Project Manager, Plastic Processing & Rubber Plants at Zeppelin Systems explained, “Our successful approach makes use of a ‘bag dispenser’ acting as a Human-Machine-Interface (HMI) for the minor chemical components. The construction contains a Videojet DataFlex® system and a printer. In addition to marking the bags, the special design we developed also allows us to create self-adhesive labels or to fill out delivery notes, which can then also be packaged in the container. “

Zeppelin Systems uses PE, PP and EVA bags that are formed from pre-fabricated, perforated tubular film, with the bottom seam of each bag being pre-sealed. After printing, the operator takes the bags and places them in a transport container, where they are kept open. This cycle takes around 30 to 40 seconds. Using roller and chain conveyors, the bag is taken to the individual dosing stations that hold between 20 and 30 individual chemicals within one plant. This allows the individual formulations to be created, which usually consist of one to six products. In a subsequent step, Zeppelin’s unique system doses the individual components directly into the bag.

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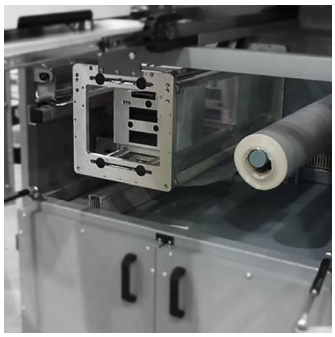

This method of mixing takes away the use of interim containers and therefore, allows for maximum precision. Only a few manufacturers around the world are utilizing this method and benefiting from its accuracy. Instead of having unwanted formulation variations and residue with of each progressive step of the process, formulations are kept precise. This is especially beneficial for materials that can easily cake, or substances that are oily or waxy and can become difficult to handle.

The application may seem unusual compared to other packaging lines, because it is not designed for speed and throughput. The crucial manual intervention means that the level of automation is relatively low. However, the printing process is dynamic and highly sophisticated, because each print differs from the previous one. The shift code is variable, as is the marking for each batch. Between 20 and 150 formulations (batches) are stored in a database, providing the contents of the code for printing. The details for the time stamp are provided automatically in real-time via the integrated Videojet CLARiSOFT® interface with the printing system.

The straightforward connection to the database and the variable codes are among the "internal" benefits of the system. From an "external" point of view, the Videojet DataFlex 6420 has some impressive features that make it the right choice in the challenging and dusty environment. "That was one of the reasons why we decided on Videojet – because we need totally reliable printing including a very reliable printer with an extremely low failure rate," noted Hertel. Because if the printer failed, there would be virtually no backup options. "You could write on the bag with a pen, but that would be far from practical," Hertel explained.

Because reliability is not optional, consistent and dependable performance of the equipment plays a crucial role in the success of Zeppelin Systems' customers. And thanks to its robust construction, the DataFlex also scores when operated in continuous shift systems. "We very rarely hear of maintenance being necessary at all," explained Hertel. He also knows that for reasons of efficiency, many systems run 24/7 and are operated at the limit due to production and cost pressures. He cannot recall there being a stoppage in the last decade due to an unplanned printer outage. "It works out to practically 99.9 percent availability," said Hertel.

Aside from reliability, direct printing is required for the subsequent processing of the bags of chemical substances. "Applying a label at this stage is not a viable option, so TTO is our technology of choice," said Hertel, describing the subsequent process in tire manufacturing. This is because the bags melt at about 160°F and are completely incorporated into the final product. "Labels are much more resistant to heat – so you could possibly find residue in the finished tire. That would be completely unthinkable," said Hertel.

Another benefit for Zeppelin Systems is their ability to use standard ribbons. And one ribbon is enough to print around 10,000 bags.

Videojet's industry-leading global service network also played a part in influencing Zeppelin Systems to select Videojet as a reliable partner with an excellent delivery record. The major players in tire manufacturing are global enterprises and therefore can benefit from a supplier with a global presence. "We recently built a system in South Korea," said Hertel, "and no matter where our customers are, we need to offer excellent customer service and be sure the consumables can be supplied." This works smoothly with Videojet and its representatives in over 170 countries.

Though only a small component of the overall cost of a Zeppelin Systems solution, there are always options for process and cost optimization with a Videojet printing system (via flexible framework agreements, for example). It is also not surprising that in the last eight years, according to Stefan Hertel, customers of Zeppelin Systems unilaterally prefer to use Videojet printing solutions. "The relationship is extremely cooperative and Videojet has been very open to individual agreements." Furthermore, at Zeppelin Systems, the choice is clear: "Videojet will always be our first choice and they can already count on our next order," said Hertel.

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