

## **The transport system montrac® links injection molding and printing machines at JACO**

- **In the production of tablet tubes for the pharmaceutical and food industries JACO counts on montrac®. The intelligent transport system links injection molding machines with printing machines, is mounted on the ceiling to save space and complies with strict hygiene requirements.**

For 60 years JACO has specialized in plastic packaging for the pharmaceutical and food industries. The family business produces the packaging, both printed and neutral, for different applications. The variety of products ranges from cream jars to tablet tubes for fizzy tablets. "Most of our customers are contract manufacturers who have very short lead times," says Verena Multhaupt, Managing Director of JACO. "Our strength is the high value added and the short reaction time associated therewith."

Already in 2009 the packaging specialist focused on an expansion of its production in Kehl-Leutesheim, Germany, to expand this competitive advantage. The company with currently 135 employees had grown organically; the production of tablet tubes should be accommodated in a new building and should be designed as efficient as possible. In search of a transport system for linking the injection molding machines with the printing machines JACO also trusted in the expertise of consultants. Finally both the pharmaceutical and the food industry make high demands on their suppliers in terms of delivery time, hygiene and quality.

### **Strict requirements in the field of medical and food industry**

Based on the huge product diversity the flexibility was an important criterion in the selection of the transport system. The assortment of JACO comprises more than 250 different tube sizes in diameters ranging from 14.5 mm to 61.6 mm and lengths from 27.0 mm to 198.6 mm. Moreover the order quantity varies; sometimes the order is for a few thousand tubes, sometimes several million. The injection molding machines can produce different tablet tubes at the same time and have different cycle times than the printing machines. The efficient utilization of all production system is complicated and thus makes high demands on the transport system. Above all parts must not be mixed (risk of complaints) or must not be fed to the wrong printing machine (standstill of production).

Verena Multhaupt knows from experience that in the pharmaceutical and food industry hygiene requirements are particularly high: "Our customers conduct incoming goods inspections and make microbiological laboratory tests. We, therefore, needed a system that generates very little wear, that does not stir up dust and that is easy to clean." In addition, larger particles can also contaminate the printing plates and so can affect the printing quality.

Of course as with any investment, the costs play a decisive role. First, for the purchase of new equipment - in this case, particularly the automation - and for the construction of the production hall. The space required for the automation and transport system thereby has a decisive influence on the construction cost. JACO also thoroughly examined the operating costs, since the ISO and

BRC-certified company produces five days a week in 3-shift operation. Expansion opportunities should also be taken into account.

### **The transport system montrac® meets all the criteria**

For the selection of the appropriate automation system, the montrac® system of SCHMID Group has been considered from the start. On the one side the production manager had read about the possible applications of the system, on the other hand the advisors recommended montrac®. With more than 1,500 installations in the most different industries since 1996 it is one of the most successful transport systems worldwide. It links the production with monorails on which self-propelled shuttles ensure an efficient material flow.

SCHMID quickly realized that montrac® would be ideal for use at JACO: "We can mount the entire system on the ceiling. This saves a lot of space and is absolutely beneficial also from a hygienic point of view." For installation SCHMID uses TracSet, its company-owned aluminum profile system. It is lightweight and can be used according to customer-specific requirements. The proven dovetail system can be easily connected with Allen keys.

The production in the new building of JACO has a linear arrangement: the injection molding machines are on one side, the printing machines on the other. The monorail made of aluminum runs in circles and disposes of bypasses at each injection molding machine. Each of these bypasses has space for three shuttles with transport boxes. With the help of ascending conveyors the tablet tubes are transported into the boxes. A sensor detects when the transport box is filled and causes the shuttle to leave. At standstill the two-axle shuttles consume 0.1 A; during acceleration 4.5 A and at the maximum speed of 30 m/min only 1.9 A. During operation the overall consumption of all 25 shuttles utilized is no more than 750 W. In addition to the low power consumption the entire system requires only minimum maintenance. The result: low operating costs.

The system control informs the two-axle shuttle about the printing machine to which it has to transport the plastic tubes. Once arrived at its destination a slide unlocks automatically. Over a ramp the tablet tubes are fed to the buffer of the printing machine. A mix-up is excluded. After unloading the shuttle returns to one of the injection molding machines and the process starts again. With the Material Flow Controller the transport movements are constantly monitored and checked for malfunctions. A short briefing is sufficient to operate the system.

No charging times are required since each shuttle has a brushless and thus maintenance-free DC motor which is fed by open busbars on the monorail. In addition, the transport system has no downtimes which would cause a shutdown of the injection molding machines: The monorail made of solid aluminum is completely free from wear. In case a shuttle should fail, it can be easily lifted from the monorail by hand in a single move.

Thanks to the design of the shuttles and the use of purely electrically driven components only very little abrasion is caused. Sensor-controlled safety technology with auto-stop function, the casing of the shuttle axis and the low voltage of 24 volts make expensive enclosures superfluous. The overall package convinced Verena Multhaupt: "We weighted our requirements and performed simulations. In the end the decision was more than clear that we would acquire the montrac® system."

### Alternative concepts at disadvantage

In the old production conveyor belts were used. Verena Multhaupt: "With this we have already experienced the most amazing things. The tubes hopped from the conveyor belt. So we had to install covers." In addition, the belts wear out and thus cause abrasion. Furthermore, the statics of the new building would have been much more expensive with the conveyor belts. As an alternative JACO also considered automated guided vehicle systems. These, however, require a lot of floor space, swirl up dust and are very expensive.

SCHMID installed the transport system montrac<sup>®</sup> at JACO in early 2013. "Both during the implementation of the project as well as afterwards we felt very well taken care of by the service team", Verena Multhaupt looks back. At the beginning there were a few problems yet on how to empty the transport boxes. But these could be quickly resolved. Since then the system has been running reliably. As a result the Managing Director concludes: "If we will expand, it will be with montrac<sup>®</sup> again."



At JACO the transport system montrac<sup>®</sup> links a production line consisting of injection molding machines and printing machines



The assortment of the packaging specialist comprises more than 250 tube formats for the pharmaceutical industry and food industry



The two-axle shuttles are guided to the injection molding machines via bypasses



A sensor detects when the transport box is filled and causes the shuttle to move on



The shuttles bring the tablet tubes automatically to the appropriate printing machine

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