

# The Best of Both Worlds – Shuttles and Power-And-Free Combined

In the surface treatment industry, power and free conveyor technology is a frequently used, robust means of transportation. For some time now, there has been a tendency to use shuttle systems more and more on the market. In a joint project, a supplier of overhead and floor conveyor systems and a system house have combined both systems, thereby realizing a system that is well adapted to the application requirements.

Frank Berg

Caldan Conveyor A/S has teamed up with E. Luterbach AG to combine shuttle systems and power-and-free conveyor technology in a hybrid solution as part of a project. The provider has had shuttle systems in its portfolio for some time. They were generally used for heavy parts. Some concepts have already been offered as a hybrid in conjunction with power-and-free technology. Then Schmid GmbH had the

opportunity to profitably combine the advantages of both systems.

The company, based in the Allgäu region of Germany, creates innovative interior solutions for showpiece properties in Frankfurt am Main, Munich (Germany) and Zurich (Switzerland). At the heart of these interior solutions are technically sophisticated ceiling systems that cool, heat and ventilate interior spaces particularly efficiently. Schmid specializes in custom-

ers and projects that place the highest demands on interior finishing. More than 50 years of experience in over 5,000 projects are the basis for this. To carry out demanding tasks reliably and on schedule, Schmid relies on a team that is strongly committed to the company and does a lot of itself – from product development, manufacturing and logistics to on-site installation.

In order to meet the increasing demands of customers, the construction of the new company location in Simmerberg began in 2022. Here, all production areas, administration and logistics will be combined under one roof to enable even closer and more efficient teamwork. Thanks to state-of-the-art technology, it will be possible to respond even more flexibly and quickly to customer requests.

As part of the new building, the manufacturer installed a state-of-the-art powder coating system in 2024 to make production even more environmentally friendly and efficient. The largely automated process with chrome-free pretreatment ensures consistent standards and promotes short throughput times. The latest conveyor technology, combined with additional buffer areas, ensures seamless transport and greater flexibility. The internal use of waste heat optimizes energy efficiency, and the enclosure of the entire coating area guarantees maximum freedom from dust and maximum cleanliness.



© Schmid GmbH

View of the shuttle area with the buffers on the right and left.



© Schmid GmbH

Takeover of the power and free through the shuttle.

It is also possible to change the sequence using turntables. A total of around 40 hangers can be buffered and processed in this area.

The standard inputs and outputs in the power and free area are controlled by stoppers. All the data required is provided to the hanger via the control system. The buffer areas for these parts are also located in front of the coating line and can be accessed by the shuttle as parking bays. This meant that a high level of buffer capacity could be achieved in a minimal space, while maintaining a high degree of flexibility.

The second shuttle picks parts to be coated from the parking bays (40 are available) as required by production and delivers them to the coating line. Four chain systems are installed in the coating line area, continuously transporting the parts through the pre-treatment process in accordance with the process specifications. After the water dryer, two powder coating booths can be approached in the expansion stage. The following powder oven is designed with its own chain for energy reasons, in order to minimize the heating energy. The layout includes a further special oven with a cooling zone, where low-temperature parts or parts with special firing times can be processed.

## Conclusion

The hybrid system concept allowed all of the customer's requirements regarding loading and unloading, product buffering and the coating process to be met, all on a single level and within the existing floor space. Caldan will continue to sell power-and-free systems and shuttle systems separately. Now, however, the materials handling specialist can also offer users a combination of both on the basis of the proven components. Caldan has implemented three shuttle systems in the last year and is currently planning further hybrid systems. //



© Schmid GmbH

View of the buffer area of the hand track before the subsequent machining.

## The idea of a hybrid system

The powder coating system was built by Luterbach as the general contractor. During the design planning, the logistics, the production process and the size of the parts were analyzed. While flat parts and high-volume parts could be handled well with a power-and-free concept, there were challenges for small parts and parts that required preparatory work. On the one hand, they wanted to process these in separate layers and load/unload them, but on the other hand, only a certain area at ground level was available for the system. Since the entire coating process was best solved with a power-and-free system, the loading and unloading and the buffers required the highest possible flexibility, and so the idea of the hybrid system consisting of a shuttle and power-and-free was born. The entire loading and unload-

ing area was divided into three parts: firstly, the standard/volume parts area in the Power and Free system; secondly, the small parts area with an intermediate buffer as a manual conveyor; and thirdly, the work area/buffer between the coating and production process as a manual conveyor.

## Structure of the plant

Depending on the tasks, it is possible to either store the standard and volume parts using a shuttle, change the sequence, or start the pre-treatment directly. For capacity reasons, this shuttle is equipped with a double rail. This is because a flash off buffer or work area between coating and the next production steps for special parts is also reached by the same shuttle. This area is loaded automatically but is designed manually in the handling area.

## Author

**Frank Berg**  
 CEO Caldan Germany  
 CALDAN Conveyor A/S, Bad Hersfeld (Germany)  
 Frank.Berg@caldan.dk  
 www.caldan.dk/de