

Automatic Lye Application Machine with easyRelay and easyHMI



The ComJet 2005 lye application machine from Riehle Maschinenbau, Aalen, ensures economic operation in large bakeries thanks to the automatic feeding of dough pieces. ComJet 2005 reduces the operating personnel required and optimises the hourly output. Riehle chose Moeller components easy820 and MFD-Titan for the lye application machine.



THE COMPANY

Riehle Maschinenbau GmbH & Co.KG, Aalen, is a medium-sized machine building company. It has been producing machines for the baking sector for over 40 years and concentrates primarily on three product areas: deep frying, lye application and tray cleaning. Innovative products, developed, designed and produced in-house have made Riehle well-known worldwide. Today the range provides solutions for any size of company, from the simple table device for small bakers up to integrated and fully automated lines for mass production. (www.riehle.de)

Riehle Maschinenbau focused its development of the ComJet 2005 lye application machine on two requirements – minimum use of personnel and maximum production volume. No more personnel are thus required for feeding the machine, since the cart is simply docked to the automatic feeding system so that the remaining operations can be completed automatically. The dough pieces, such as pretzels are automatically transferred by the feeding station and fed into the lye application machine. The lye shower with two additional lye curtains ensures intensive lye application and thus higher speeds. If required, the lye application machine can be provided with different additives, such as an application device for salt or poppy seeds. The fully automated lye application process with over 200 baking trays per hour now only requires one employee.



Fully automated lye application

The process in detail: The roller cart with the dough pieces is moved to the feeding station. Initiators detect the cart after which it is clamped by means of pneumatic cylinders. A light barrier checks the position of the proofing trays. If there are no faults, the lifting table of the feeding station is automatically moved to the height of the top level of the roller cart. The automatic transfer of the dough pieces to the feeding station is started. For this a pneumatic cylinder moves out the lifting table, the conveyor belt starts running and takes the dough pieces. After all the dough pieces are transferred, the pneumatic cylinder moves back in. The lifting table then moves to the transfer position for the lye application machine. The dough pieces are then transferred to the lye application machine, the process is continued, the next level of the roller cart is then approached.

When the first level of the feeding station is transferred to the lye application machine, the operator presses a button to initiate the start signal and thus give the "all clear". The remaining steps are completed automatically. When the dough pieces are received by the lye application machine, they go through the lye shower and are then placed carefully on the baking tray. After all the levels of the roller cart are cleared, the cart is released and a new cart can be docked.

Communication via easyNet

The easy820-DC-RC control relay controls the conveyor belt and the salt application. An MFD-Titan is used to control operation, the fault display and the lifting table belt control. Another easy820-DC-RC controls the feeding station, measures or calculates the height and moves to the required level. A frequency

inverter is also used for the conveyor belt, the lifting table belt and the height motor.

The modular design of easy and MFD-Titan were critical factors for Riehle. The intelligent modules make it possible to create made-to-measure solution concepts. Riehle also liked the following special highlight: only one connection cable is now required between the lye application machine and the feeding station. The easyNet connection to the feeding station is implemented with a CE plug, i.e. only one plug has to be disconnected for cleaning.

Riehle also required a rugged operator unit with a high degree of protection, a wide range of evaluation options for the electronic controller, controllable belt speed for particular production changes and a continuously changing laying point for dough pieces on the cloth rollers. The easy components – easy820, MFD-Titan (front IP65) networked via easyNet – fully meet these requirements. All the easy family components used on the ComJet 2005 are maintenance-free, designed as "plug & work" devices and make a perfectly matched system.

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CONCLUSION

As Alexander Hummel, designer at Riehle, said, "Thanks to the simple networking and modular design of MFD-Titan and the easy800 series we have been able to implement the control of the lye application machine in-house and in the shortest possible time. The Moeller components stand out for their relatively simple programming and the good price/performance ratio. For us, a high level of user-friendliness, i.e. intuitive operation and the simple reading of error messages were very important. MFD-Titan and its wide range of visualisation options enable us to achieve this in full. Compared to a previous version of our lye application machine, we are also able to keep complex wiring to a minimum. For us a successful solution in every aspect."



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