> Although the project was decided at short notice and so there were only about five weeks between placing the order and commissioning, everything went smoothly. Installation and commissioning were carried out on schedule and in high quality by a team with extensive technical expertise. Since the upgrade there has not been a single malfunction in hardware or software – despite the fact that actuators are a new product range being tested in the field for the first time. We are impressed by this innovative Voith solution.

Henning Dippel, CM6 Production Manager, Weig Karton

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Voith Paper Automation
GmbH & Co. KG
St. Poeltener Strasse 43
89522 Heidenheim, Germany
Tel. +49 7321 37 3000
Fax +49 7321 37 7733

service.paperautomation@voith.com
www.voith.com

VOITH
Engineered Reliability

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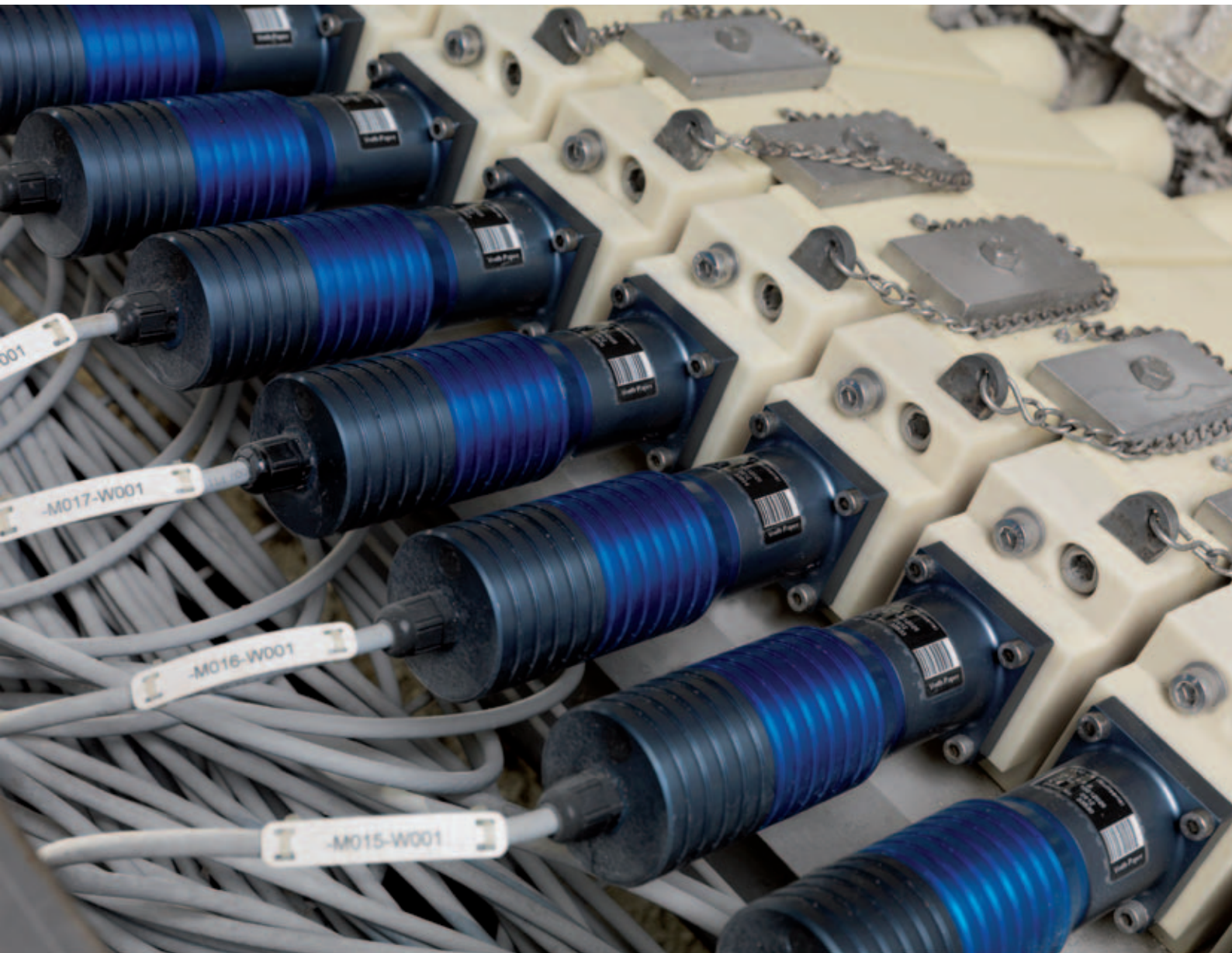
Headbox Upgrade
New OnQ ModuleJet for
Weig Karton Mayen CM6



Effective investment that ensures availability

Weig Karton needed a customized automation solution for the outdated CD profile controller on its headbox. Due to the harsh operating environment the actuators were no longer working reliably, resulting not only in downtimes but also in undesirable deviations in basis weight profiles. In collaboration with Weig Karton, Voith Paper developed a cost-effective modernization solution that used the new OnQ ModuleJet actuators for the first time. This innovative spirit brought results: fast project realization and an increase in overall system efficiency.

Moritz J. Weig GmbH & CO. KG in Mayen was founded in 1931 as a family business and has developed into one of the largest recycled carton board manufacturers in Europe. The company produces recycled carton board for the plasterboard industry and testliner for the corrugated board industry on its CM6 machine. With an effective width of around 5.300 mm and a capacity of approximately 340,000 t per annum the CM6 is currently the largest plasterboard liner machine in the world. With a view to ensure performance and economic success the company is constantly investing in modern technologies and processes, doubling its capacity for carton board production in the last ten years.

Challenges in Mayen

From 2008 onwards production was disrupted repeatedly due to malfunctions at the headbox. Installed in 2001, the CD profiling system for the MasterJet FB headbox was now outdated, so that the actuator motors and the distributor boxes did not always cope with the characteristically harsh operating environment of a carton board machine. The hostile environment caused severe corrosion on the connecting elements of the distributor boxes. CM6 operators had to acknowledge that even the most rugged system will start to fail in this area after ten years in service. Moreover, because this section, located at a height of around 7 meters in the top area of the headbox, was not readily accessible, it was difficult to replace the actuators. Weig Karton turned to Voith Paper to seek a solution to improve this situation.

Thanks to their long-standing cooperation the relevant parties from both companies quickly found a suitable approach and were able to agree on a fast implementation strategy.

The Solution

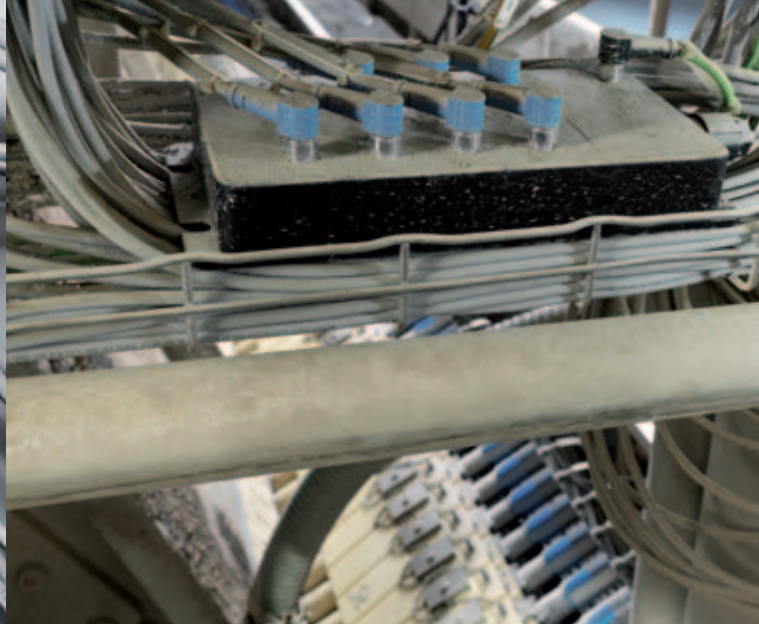
To equip the existing system to with stand the harsh environment the 79 actuator motors would have had to be overhauled. Due to the length of shutdown that would have been necessary and the resulting high investment cost, this approach was not pursued. However, Voith Paper had another suggestion which proved to be technically ideal to satisfy Weig Karton‘s requirements: the newly developed OnQ ModuleJet actuator. With its compact design and high protection class (IP67), and the resulting enhanced reliability and ease of servicing, this proved to be the most cost-effective solution.

Within a four-week project period Voith Paper had put together an automation package to enhance the efficiency of the CM6. In a two-day shutdown personnel from Voith Paper and Weig Karton replaced the 79 actuators and completed the wiring in the field. The computer network and data connections were also reviewed and modernized by upgrading the OnQ Profilmatic hardware and software and the connection to the customer‘s PHD data acquisition system via an OPC link. The actuator network was Ethernet-based with a fiber optic connection between the controller cabinet and the motor control unit.

Thomas Ganster, Project Manager OnQ ModuleJet Upgrade:

„A completely successful upgrade – without any profile problems or downtimes!“

In addition, a comprehensive spare parts package was prepared and a maintenance contract with on-call service signed. This service ensures that any problems are dealt with as soon as possible.



The Product

The OnQ ModuleJet actuator range is used for CD profiling on headboxes with dilution technology. The combination of OnQ Profilmatic control software and the OnQ ModuleJet actuator system guarantees good, uniform basis weight cross profiles.

To withstand the harsh environment and guarantee high availability OnQ ModuleJet offers some key benefits:

1. Electronics are separate from the motor unit and can be installed to give protection from white water.
2. One electronics unit controls up to eight actuators and communicates with the OnQ Profilmatic controller.
3. Depending on valve design the actuators can even be replaced while the machine is running (max. 10 minutes) without the need to reset parameters.
4. The actuator satisfi es IP 67 – protected up to 70°C ambient temperature and against water jets.
5. A fast, reliable Ethernet-based fi eldbus (100 Mbit) enables comprehensive diagnosis including the motor unit.

Economic performance

Although the OnQ ModuleJet control system on the CM6 was converted to meet Weig Karton's specific requirements it can be used on many other headboxes, because the compact design of the actuator allows for simple retrofitting. The new actuator system also requires virtually no maintenance or servicing. Since the CM6 upgrade Weig Karton has achieved higher overall availability and thus a signifi cant improvement in efficiency. The machine has been running without any problems since it was commissioned.

Stepper motor LVM-6

Nip force	Nominally 300 N @v = 200
Hz	
Travel	30 mm
Resolution	2.5 µm/step
Speed	Max. 200 steps/s
Power supply	24V, 1A
Protection class	IP67 at max. 70°C

Actuator control box ACB-6

Number of axes	8
Operating mode	Full step
Power supply	20….30 VDC/max. 5A
Data interface	Ethernet TCP/IP
Protection class	IP67 at max. 70°C