

Multivac Relies on Kollmorgen for Pneumatic to Electric Transition

Quieter, more efficient, and improved controllability: MULTIVAC uses Kollmorgen's servo competency



From meat stock to finished packaging - all processed electrically. Compared to traditional, mostly pneumatic-driven lifting units, the new lines of R2XX to R5XX machines utilize a motor-gearbox combination to deep draw and seal the foils.

An increasing number of companies in the packaging machine industry have chosen electrical servo technology - mainly to replace motion axes previously powered by pneumatic systems. “Servo technology increases controllability and reduces noise emission. These systems also help us to increase the number of production cycles“, Guido Spix, CTO Multivac, recently emphasized during a packaging show. The packaging machine company uses motion control solutions from [Kollmorgen](#) to reduce energy consumption, increase the overall machine effectiveness and improve safety of packaging processes.

Secure packaging: Besides machine and operator safety, for Multivac, this also includes safe packaging processes. The excellent traceability and controllability of Kollmorgen's servo technology for example, helped Multivac to design a more efficient sealing process for deep drawn packages with the additional benefit of improved food safety. This solution is currently used on the high performance deep draw machines, designed for mid-size to large loads.



A motor-gearbox combination achieves a bonding pressure of 20 tons in the high performance R535 packaging machine. Being a strategic motion control partner for Multivac, Kollmorgen implemented a compact unit of their AKM servo motor series and a cycloidal gear drive for the lifting axis. The high power density of this unit allows for compact dimensions.

Optimized motor- gear box combination

Compared to traditional mostly pneumatic-driven lifting units, the new lines of R2XX to R5XX machines utilize a [motor-gearbox](#) combination to deep draw and seal the foil. These units utilize a knee lever mechanism to lift the molding tools - some weighing several hundred kilograms. They withstand the high bonding pressure of up to 20 tons, ensuring the two foils seal securely. Being a strategic motion control partner for Multivac, Kollmorgen implemented a compact unit consisting of an AKM® servo motor and a cycloidal gear drive for the lifting axis. Kollmorgen calculated and selected the optimal motor size and gear drive type in close cooperation with Multivac's engineering development teams. Two important aspects for the drive train selection were the overall unit length and overload capacity. The model HKS03 six-point lift unit features a servo gear motor with brake having a total length of 307mm and an acceleration torque of 1400 Nm. These results are possible thanks to the high power density of the [AKM servo motors](#), the ideal overall length of the cycloidal gear drive and the fact that the unit comes without end bells and clutches. Piston rods convert the rotary to linear lifting motion. This solution has three significant advantages. Firstly, the energy efficien-

cy of the machine increases because the pneumatic system was replaced as the power source to create the required pressure for the deep draw and sealing operation. Secondly, the geometry of the piston rods creates an extreme closing force at the end of travel which improves food safety. Finally, the high sealing force results in a more secure and thus, reliable sealing process.



The AKMH™ stainless steel motors provide a scalable solutions portfolio for motion applications in the packaging, food processing and pharmaceutical industries.

“Perfectly Clean” inside and out

The two-component epoxy coat used for the hygienic design conforms with FDA 21 CFR 175.300 and is resistant against acids, bases and established cleaning agents with a pH range of 2 to 12. In a long term test performed by the company EcoLab, this coat withstood exposure to an equivalent of more than 2000 washdown cycles including disinfecting treatments. Kollmorgen’s [washdown gear motor](#) comes

standard with a white coating, significantly improving the machine operators’ ability to detect dirt and biofilms on the surface during clean-

ing operations. A stainless steel-like coating is offered as an option. The surface of both coats is water repellent (hydrophobic) and aqueous liquids will run off more easily, which leads to decreased formation of residue on the surface. Hence, Kollmorgen’s standard of a “perfectly clean” gear motor can seamlessly be incorporated in the MULTIVAC Hygienic Design™ concept that is rigorously applied to all deep draw packaging machines.

From Co-Engineering to Production

Multivac has a global distribution network with about 60 subsidiaries and offers a variety of different machine models with different features. Managing this variety with extensive standardization requires strategic partners that are able to cover a large range of machine applications with their technologies. The Kollmorgen washdown gear motor solution is a perfect example for how a project based custom-designed and custom-built product becomes a standardized, ready-to-install module. The concept of the current motion and automation technology used on the deep draw machine follows the requirements of the new Multivac

solution: more flexibility by being able to combine several axes interchangeably and at the same time, smaller control units, plus an increase in dynamic performance for better productivity. In summary, thanks to Multivac's and Kollmorgen's close cooperation in this project, the entire pneumatic system was replaced by a highly efficient electrical solution. After the first successful practice runs, Multivac determined a reduction in energy consumption for the R 095 e-concept of at least 20 percent compared to similar models.



Kollmorgen was able to cover most of the transportation and rotary applications in meat processing and subsequent packaging processes with two standardized solutions: The AKM servo motors with washdown and food grade option – available also with the innovative single-cable technology.



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About Kollmorgen

Kollmorgen is a leading provider of integrated automation and drive systems along with corresponding components for machine builders all over the world. With more than 70 years of Motion Control Design and application experience and profound knowledge of constructing standard and special solutions, Kollmorgen supplies solutions time and again that stand out in terms of performance, quality, reliability, and ease of use. As a result customers can achieve a market advantage which is beyond question.

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