

## Patented Kollmorgen Motors Prevent Ingress in Washdown Environments

# Food Processor Meets Hygienic Requirements with Innovative Motor Design



“The exterior of the AKMH is made entirely of stainless steel 316. In addition, it is completely polished and has a surface roughness better than 0.8  $\mu\text{m}$ . All seals and O-rings also meet the strictest hygienic requirements. Even the motor type plate is laser engraved on the housing. The stainless steel Kollmorgen motors are the cream of the crop in the food packaging production.”

– Slegers Technique

## Challenge

In the food processing industry, washdown procedures are one of the principal causes of motor failure. Even though they are needed to maintain strict hygienic requirements, the harsh environment and constant use mean that the motors must be frequently cleaned and maintained to stay at peak working condition. This poses a challenge for even the most experienced machine designers.

For a Dutch company that specializes in creating cutting, placing and packaging machines, making easy-to-clean machines that withstand rigorous washdowns is a way of life. However, for one of its recent projects—its largest ever with 118 motors and 190 drives—the company needed to create two fully customized production lines for a Canadian food processor while meeting strict hygienic requirements. With four tracks per machine line that cuts, bakes, chills and packs the food uniformly in weight and appearance, it took well over a year from design to delivery of the processing machines.

Compounding the challenge was the additional restrictive requirements from the food processor: no hollow pipes used for the connections, no sweating of material and using C-frame construction. However, the builder's standard machines used stainless-steel motors that were only rated to IP67 and had a shaft that stuck through the machine cabinet, allowing water ingress into the machine and motor. This simply would not work for the food processing environment. Luckily, the machine builder was able to find a partner that could supply the right motors it needed to get the job done.

## About Kollmorgen

Kollmorgen has more than 100 years of motion experience, proven in the industry's highest performing, most reliable motors, drives, linear actuators, gearheads, AGV control solutions and automation platforms. We deliver breakthrough solutions that are unmatched in performance, reliability and ease of use, giving machine builders an irrefutable marketplace advantage.

For more information  
[www.kollmorgen.com](http://www.kollmorgen.com)

## Solution

To address the hygienic issues and requirements, the partner chose Kollmorgen's AKMH servo motors for the machine design. With the ability to be cleaned in under 3 minutes and no need for a protective cover, Kollmorgen's AKMH motors are designed for the food and beverage industry.

During operations, a motor's internal operating temperature can exceed 100°C, which causes the internal pressure to rise and push gasses out past the seals. But following operation, temperatures return to ambient, sometimes as low as 0°C with internal pressure in the motor dropping by 5.5 psi. This change in pressure can pull in water and corrosive chemicals past the seals, which can quickly destroy precision motor bearings in the motor.

Kollmorgen created a unique patented design that prevents the ingress of water and chemicals during and after operation. The motor's vented design uses a breather port installed directly on the motor that allows for continuous pressure equalization. The port has a gore membrane that allows air to pass through but prevents ingress of contaminants. It's a simple design that allows for easier cleaning during washdowns but one that also protects the bearings in the motor during operation.

The motor is constructed from 316L stainless steel. The motor is completely polished with a 32 µm finish with no physical seams to prevent food or pathogens from entering the motor. Even the nameplate is laser engraved to minimize seams in the housing, which can withstand up to 100 bars of pressure.

## Getting Started

For the machine builder, the success of the project was contingent on creating one of the most hygienic production lines for its largest project ever. Thanks to the patented design and advanced construction of Kollmorgen's motors, the machine builder delivered a fully modular production line that met the food processor's strict requirements.

The design process was also simplified because of the ease of integration with the motor and drive pairing selected. Kollmorgen motors are uniquely designed to work within the voltage, current and induction ratings of any third-party drives. This ease of integration helps to maximize the performance of your motion system and minimize motor failure risks, which can lead to increased maintenance costs and lost production time.

Kollmorgen can help you realize any motion requirement. Whether you're looking to upgrade an existing machine or build something from scratch, Kollmorgen has the motors, drives, cables and controls to create the most ambitious designs. And we possess a wide range of expertise across the food and beverage industry, from creating highly sealed motors impervious to washdowns to motors that provide exact cutting and packaging motions hundreds of times a minute.

## Learn More

Learn more about how the AKMH servo motors combat temperature and pressure challenges in washdown environments. [Click Here](#)

And discover how to calculate the total value of AKMH motors. [Click Here](#)