



ALUMINUM PROFILE CUTTING

Manufacturing - Product Handling
Accurately Control Cutting Aluminum with a Rapid Throughput

CHALLENGE:

AUTOMATION FOR HIGH-VOLUME ALUMINUM PROFILE CUTTING

Producing high quantities of aluminum profile cut to length requires an automated stop that would need to be accurately positioned at speed in order to ensure conformity of profile length. In this application the machine builder needed to control the profile lengths to within an accuracy of +/- 0.2mm on lengths up to 3m.

Considering the rapid throughput operation and the variety of stop positions to be achieved for each cut, a system capable of speeds up to 2.5 m/s was needed to support the overhanging stop mechanism.

CRITICAL FACTORS:

PRECISION IN A DEBRIS-FILLED ENVIRONMENT

The system required a speed of 2.5 m/s and an accuracy of +/- 0.2mm over the 3m length. Combined with the fact that the stop will be offset from the guided system, this means the system must be sufficiently rigid to handle the moment loads and accuracy of the operation.

Furthermore, the metal dust and debris that result from the cutting operation cannot cause running issues in the automated system.



SBD (Sealed Belt-Driven) Actuator



Motor Attachment Kit



Multi-Axis SBD System

THE BISHOP-WISECARVER ADVANTAGE

DEBRIS-RESISTANT ACTUATOR TECHNOLOGY.

The SBD Belt-Driven actuator provides a higher level of performance in terms of load capacity and life than other comparable-sized linear actuators. At the heart of this actuator is HepcoMotion high capacity re-circulating ball guides, providing improved moment load capacity and longer life in high duty linear applications.

- Re-circulating guide technology for higher direct load applications
- Stainless steel band prevents dirt ingress in dirty environments
- Easy fitting of gearboxes / motors
- Structural beam elements for long length and end-supported applications
- Integrated beam option provides rigidity and simplifies mounting
- Speeds up to 4 m/s
- Driving forces to 3300 N

SOLUTION:

DELIVER ACCURATE ACTUATION WITH A RIGID STRUCTURAL ELEMENT.

The equipment manufacturer specified an SBD belt-driven actuator to control the cut length of the aluminum profile, with the stop arm mounted to and offset from the moving carriage. To adequately support the arm and ensure it remained rigid, the carriage was fitted with two size 30 recirculating profile rail blocks. The profile rails can be easily lubricated through lubrication ports located at one end of the beam.

The SBD stroke in excess of 3m accommodates the desired cut lengths. In addition to the actuator, a motor fixing kit was provided for the customer's servo motor.

RESULTS:

PROBLEM SOLVED.

The SBD actuator proved to be an effective and low-maintenance solution for the automated stop system. Its profile rail design met the needs for high rigidity, while its speed kept up with the high-throughput process.

The stainless steel sealing band meant the presence of aluminum particles as a result of cutting would not cause running issues during operation.

Additionally, the inherent strength of the mounting beam meant that it only required support on each end, simplifying the design and the installation process.

CONTACT US TO DISCUSS YOUR SPECIFIC GUIDED MOTION NEEDS

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