

SUCCESS STORY

STEEL BAR GRINDING SOLUTION

INFORMATION

Industry

Machine Tool

Application

Grinding Machines

Product

Yaskawa U1000 MATRIX VFD



A Yaskawa U1000 Matrix VFD at work saving energy and increasing production.

COMPANY HIGHLIGHTS

Based in the Midwest, the customer stands as a leading industrial distributor, system integrator, and Yaskawa authorized service provider. This firm, reputed for customized, cost-effective drive solutions, adeptly applied a **Yaskawa U1000 Industrial Matrix** drive to resolve a steel bar grinding issue experienced by a local machine builder.

APPLICATION CHALLENGES

The machine builder required a method to enhance and optimize the performance of its centerless grinding machines that cater to the steel bar market. The existing machines incorporated standard variable frequency drives (VFDs) coupled with dynamic brake resistors. These systems functioned satisfactorily with light stock removal (ranging from .008/in. to .012/in.) and shorter steel bar stock lengths. However, the customer had issues when they loaded longer steel bar stock lengths that had a higher stock removal requirement. In these situations, there was excessive heat accumulation in the dynamic brake resistor. With breaking resistors having operational limits, the drive would detect an overvoltage (ov) fault and immediately stop the motor. As the weight, length, and cut of the steel bar increased, so would the frequency of ov faults causing considerable downtime while waiting for the resistor to cool down.

The machine builder needed a way to improve productivity by allowing operators to feed steel bar stock without restrictions on weight, length, or grinder cut.

THE YASKAWA SOLUTION

The customer introduced the **U1000 Matrix VFD** to the machine builder not needed to accomplish the primary goal of reducing production downtime. In addition, the solution would reduce components and system size and complexity by eliminating the dynamic brake controller and resistor.

One of the key features of the **U1000** is the ability to operate in regenerative mode instead of wasting energy by dissipating it as heat through a resistor. The centerless grinding machine is operating with a 10 HP, 460 V **U1000 Matrix VFD** and a 5 HP induction gear motor (10:1 ratio). By implementing the **U1000**, the machine can increase throughput due to the drive's ability to immediately redirect energy back onto the power. This allows continuous drive operation during periods of excessive demand.

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The full regeneration capability now allows the machine to handle longer bar stock lengths, heavier steel bar weights, and deeper cuts (> .024/in) while returning the regenerative energy to the utility company to save energy rather than being discarded as heat.

The machine builder has successfully provided its customers with machines that are performing optimally and has allowed its customers to increase production, save energy, and eliminate costly components.

KEY U1000 FEATURES

The Yaskawa U1000 Matrix VFD brings a set of notable advantages:

- Adheres to the 5% input Total Harmonic Distortion (iTHD) standard as per IEEE 519 guidelines for harmonic mitigation at the input stage
- Adjustable torque limit and overtorque settings for optimized acceleration and machine protection
- Equipped with a Safe Torque Off (STO) safety feature, meeting the requirements of IEC62061 (SIL3) and EN/ISO 13849-1 (PLe)
- Does not rely on bus capacitors that degrade over time, contributing to a long product lifespan
- Built-in fusing
- Access to Yaskawa's award-winning 24-hour technical support is free of charge

Contact Yaskawa today to learn more about how you can use Yaskawa AC drives to perfect your material handling industry applications!