

SUCCESS STORY

VFD CRUSHES EXCESS KINETIC ENERGY IN STAMPING PRESS

INFORMATION

Industry

Machine Tools

Application

Stamping Press

Product

Yaskawa GA500 Series VFD



Yaskawa GA500 Series VFDs using the overvoltage suppression feature to manage high inertia flywheels.

THE VFD APPLICATION

Stamping press machines are commonly used to apply force to re-form metal sheets. The major components of press machines are the bed, ram, clutch, flywheel, and crankshaft. An electric motor is belt connected to the flywheel which stores kinetic energy to reduce the load on the electric motor during the stamping portion of the press stroke. The clutch is engaged after the flywheel is up to operating speed in order to move the crankshaft and ram in a downward manner. An upper die that is attached to the ram makes contact with the metal sheet, forcing it to deform to the contour of the upper and lower dies under the high force.

APPLICATION CHALLENGES

For this application, the customer required a solution that met the following criteria:

- Eliminate regenerative energy without use of a braking resistor
- Reduce stress on the supply transformer and eliminate belt squeal
- Detect abnormal operating conditions
- Eliminate long wait times during coast-down of flywheel and motor

THE YASKAWA SOLUTION

A Yaskawa **GA500 Series Variable Frequency Drive (VFD)** is the choice to meet the needs of this application, as it provides these useful features:

- The **GA500 Series VFD** has an Overvoltage Suppression feature that eliminates the need for a dynamic braking resistor for many applications
- Torque Limit and Stall Prevention to eliminate excessive motor current thereby reducing current demand on the main power supply. Torque Limit also helps prevent belt squeal and overall machine stress
- Overtorque and undertorque features allow for the detection of abnormal operating conditions, including belt break and excessive load
- Motors can be soft started and synchronized with rotating motors via Speed Search

The successful installation of the Yaskawa **GA500 Series VFD** is maximizing overall machine efficiency and equipment lifespan for this customer today.

YASKAWA

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KEY GA500 FEATURES

The **GA500 Series VFD** is specifically suited for industrial applications that require unparalleled performance and extensive utilization of drive I/O capability. This particular model is the preferred choice because of its ability to overcome kinetic flywheel energy without external braking circuitry. Some of the many features include:

- The Overvoltage Suppression feature eliminates typical VFD faults related to the excess energy of overhauling loads
- Normal Duty and Heavy Duty ratings for use in variable torque and constant torque applications
- Stall Prevention & Torque Limit features to manage motor current and machine stress to acceptable levels
- Capable of controlling various motor types, including induction, permanent magnet (both SPM & IPM), and synchronous reluctance motors
- Alternate acceleration and deceleration times along with s-curves to tailor speed changes and reduce shock loading during acceleration
- Standard control inputs include one digital, two analog, two safe torque off, and one pulse input
- Standard monitor outputs include three digital, one analog, one pulse, and a 24 Vdc supply
- The **GA500 Series VFD** allows programming without connecting main power by use of the DriveWizard Mobile application. Simply plug into one of your PC's USB ports or any USB on-the-go device and start programming
- All major communication networks are supported via a variety of option boards (RS-485 Modbus RTU is built-in as standard)
- Free programming support tools are included, such as DriveWizard and DriveWizard Mobile, Programming Simulator, DriveWorksEZ, Energy Savings Predictor & Harmonic Estimator
- Yaskawa's award-winning 24-hour technical support department is free of charge

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