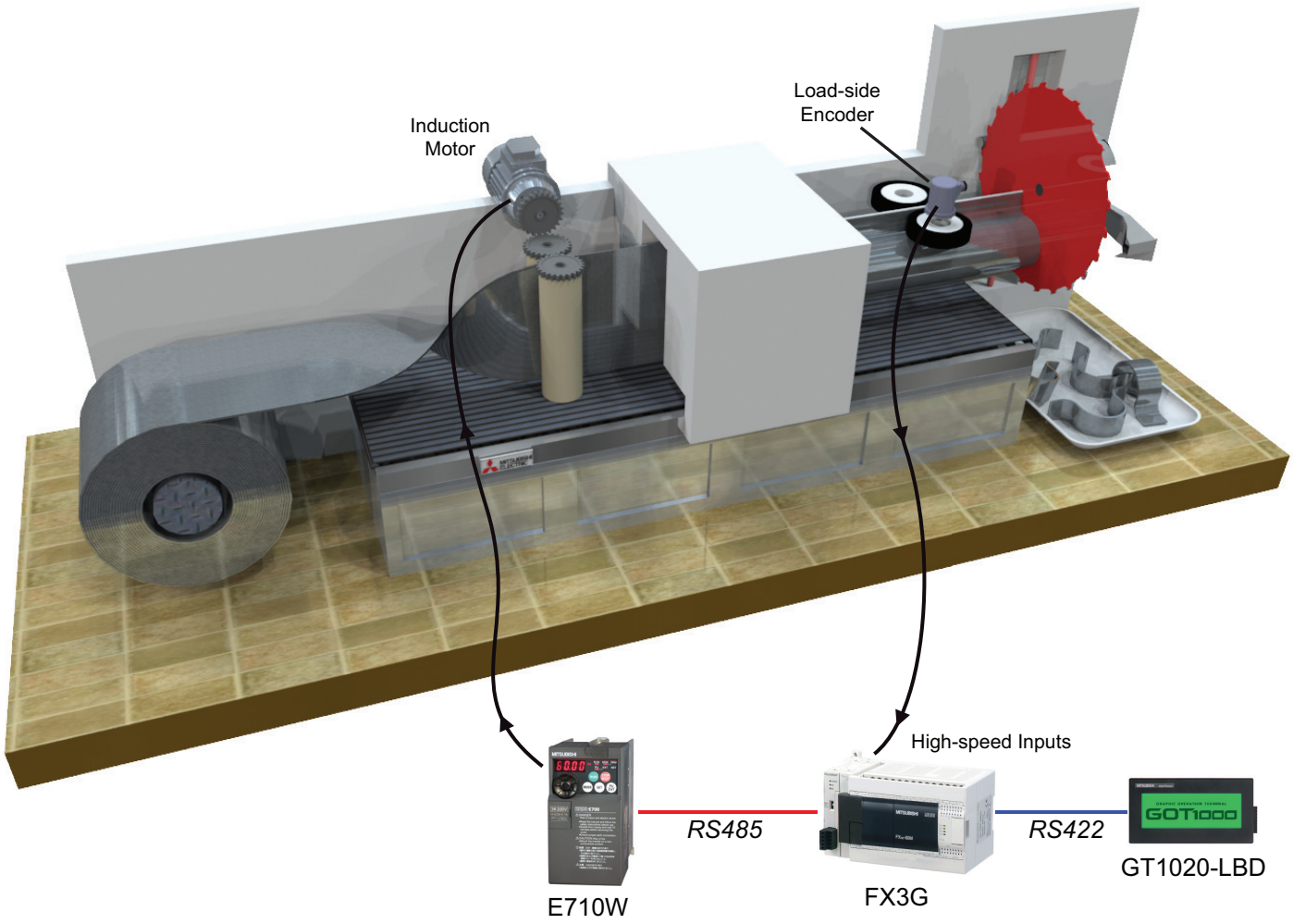
Mitsubishi Solutions

Cut-to-Length – Low Cost

Mitsubishi Solution
PLC: **FX3G Micro CPU** VFD Drive: **E700 Series** Graphic Operation Terminal: **GT1020**
Serial Communication Board or Adapter: **FX3G-485-BD** (or FX3U-485ADP-MB)



Example Applications

Cut-to-length machines exist in a variety of industries to support applications including:

- ♦ Bar feeders
- ♦ Wood cutting
- ♦ Sheet metal cutting
- ♦ Wire cutting
- ♦ PVC cutting

Overview

Low cost cut-to-length applications cut raw material and are typically specified with variable frequency drives (VFDs) to drive an induction motor. The induction motor intermittently indexes the material at fixed length distances before each cut. The challenging part involves monitoring feedback from an external load-side encoder using semi-robust fully-closed loop control to stop the motor accurately so that each part can be cut with the same length. An alternative, much less accurate solution uses a photoelectric sensor to detect the material's edge so that the motor can decelerate for a coast to stop.

MITSUBISHI ELECTRIC

Features	Advantages and Benefits
Low cost VFD and PLC solution: Small sized components for machines with a small budget	• 25% cheaper than high-end servo systems • Less setup time for wiring and installation
Accurate stopping with Encoder Feedback to PLC: • High-speed counter inputs • Option to use 4-edge counting	• Excellent stopping accuracy within +/- 1/16th of an inch ◦ Less waste material
Advanced Magnetic Flux Vector Mode: • High starting torque to begin moving material quickly • Smooth motor operation at low speed to ensure accurate stopping	• Improved machine throughput ◦ Higher profitability • Improved Overall Equipment Effectiveness (OEE)
Built-in PLC instructions to control the VFD: FREQROL Series instruction set to read/write VFD parameters	• Simplified machine operation for operator • Less hassles during machine setup
Compliant with global standards: RoHS, UL, cUL, and CE (LVD)	• Easy to sell to a wider customer base through international shipping ◦ Increased profitability ◦ Higher visibility
VFD self-diagnostics: • Monitoring of internal components prevents unnecessary downtime • System protection and overload functions	• Reduced Total Cost of Ownership ◦ Longer lifespan due to less wear and tear on internal components
Open networking: • Connectivity to third party devices within the application as desired • Improved data management	• Increased profitability for connecting to a larger system
5 year drive warranty: • Reliable performance • Robust design	• Reduced engineering costs ◦ No need to change or replace equipment • Reduced maintenance costs

Note: The values listed above are based on a real world application.

MITSUBISHI ELECTRIC
500 Corporate Woods Parkway
Vernon Hills, IL 60061
(847) 478-2100 • www.MEAU.com

R72-106-SLSMKTG-001-* • Effective June, 2010
Specifications subject to change without notice.
© 2010, Mitsubishi Electric Automation, Inc.