



Control Modernization for Legacy LCI Drive Systems

metals

cranes

mining

testing

oil & gas

renewable
energy

power
generation

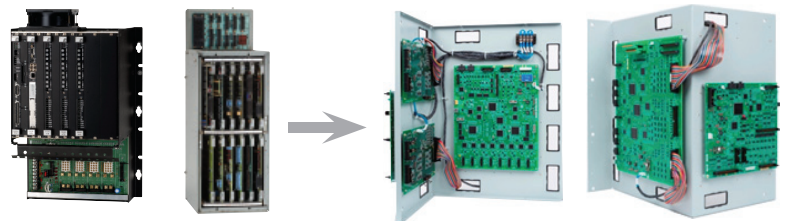
cement

The LCI DFE Control Upgrade Provides Significant Top Line Benefits

Legacy LCI drives have provided reliable service for almost 20 years. To keep that record intact, TMEIC has developed a control upgrade for Legacy drives, while preserving the existing power bridge.

In addition to extending the product life, this modernization program provides significant functional enhancements plus a system condition and capability assessment of your drive system.

Product Life Extension



Innovation or DOM+

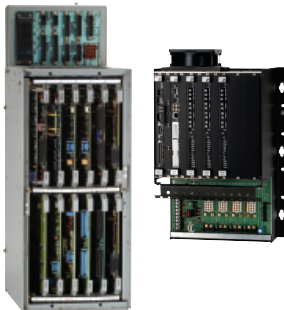
Legacy Control

TMEIC Control

SCR Power Converter

1980 1990 2000 2010 2015

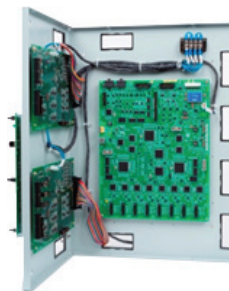
Legacy LCI Control



Older wire-wrapped backplane system or newer printed circuit backplane:

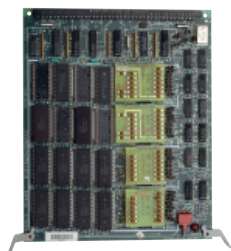
- Obsolete circuit boards
- Limited I/O capability

TMEIC LCI Control Upgrade



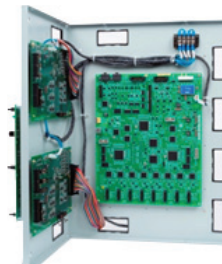
TMEIC Standard Control Cards

- New-Hinge-Mounted Control Circuit Board Assembly to replace COM+ and Innovation Series circuit board rack



Hardware dependent control:

- Limited sequencer
- Fixed block diagram regulator
- Terminal emulator



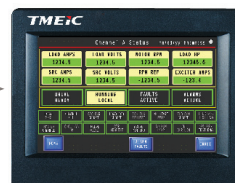
Control Software Library

- Flexible sequencing logic
- Windows® based TMdrive®-Navigator
- Animated graphic displays
- Integrated trending window
- Common tool across all TMEIC drives



Limited control and data interface:

- Local control push buttons
- Printer
- Meters
- One serial interface



Knowledge Management

- Local touch screen interface panel
- Multiple RS-232™ and Ethernet™ ports
- Drivers for LAN-type communication
- Optional custom HMI Screens and remote location



Service options:

- DIRECTO-MATIC trained Field Engineers
- Local, limited diagnostic tools



Technical Support Options

- Current generation technology and connectivity for remote diagnostics means lower Elapsed Time To Repair (MTTR)

At Bottom Line Cost Savings Through Value-Added System Services

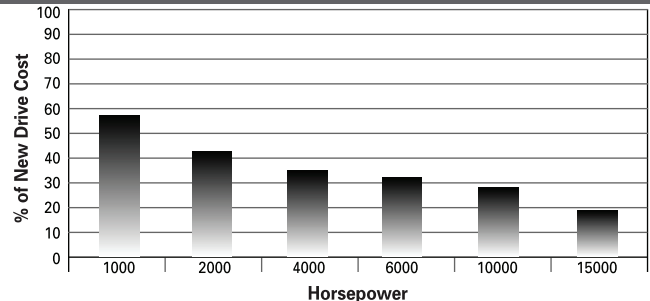
Benefits of a TMEIC LCI Drive Controller Upgrade

- Reduced number of circuit boards
- Boards shared with other TMEIC AC drives
- Color touch-screen Operator panel in control compartment door
- Extensive diagnostics and self-test capability
- External control interface through TMEIC TMdrive-Navigator Software

New Control at a Fraction of the Cost of a New Drive

Prior to the introduction of the TMEIC LCI control upgrade, the only way to realize the benefits of current generation technology was through the purchase of a new drive system.

For installations where the power conversion and bridge interface hardware is not causing unplanned outages, even more value can be realized through a retrofit program. A TMEIC LCI control upgrade project can cost as little as 20% of a similarly rated replacement drive.



Total Project Cost Considerations Increase Savings

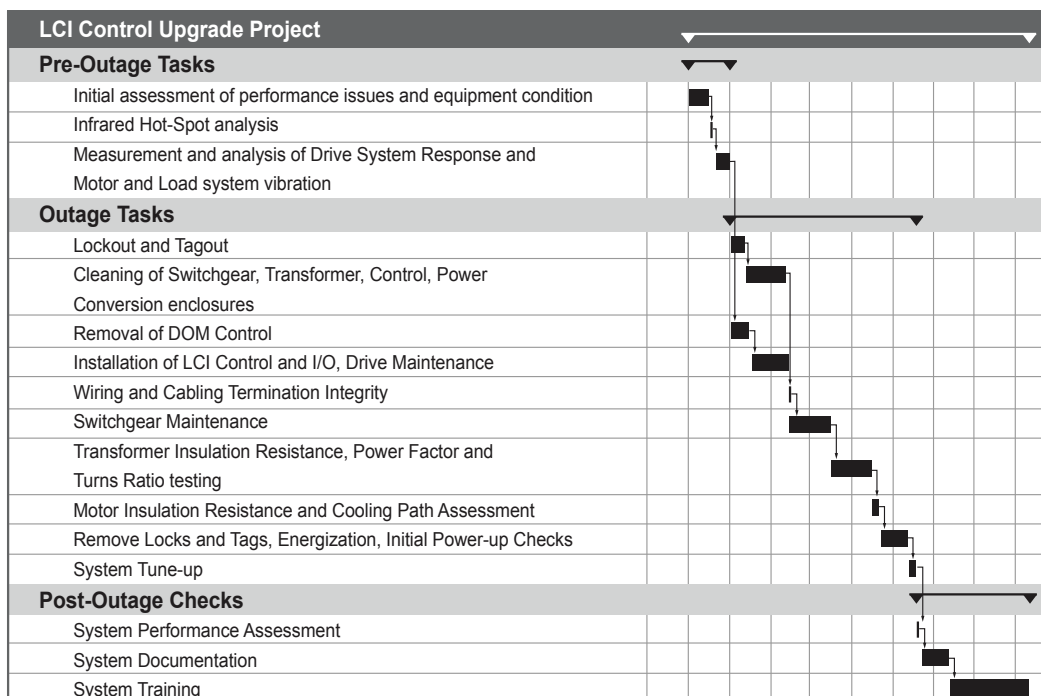
In addition to the purchase of new drive equipment, replacing a drive system involves:

- Demolition and Rigging
- Installation and Cabling
- Reconstruction and Commissioning

With these factors, plus the cost of downtime considered, the realized savings of an upgrade over a new installation are even greater.

Optional Engineering Assessment Provides Complete System Peace of Mind

The TMEIC LCI Assessment and Modernization Program provides drive system investment protection through well documented engineering procedures for assessment and preventive maintenance of switchgear, magnetics, controls, power converters, and motors. Complete project management equals peace of mind.



Results:

- Extended Hardware Life
- Improved System Information
- Enhanced System Performance
- Increased Service Options
- System Condition Assessment

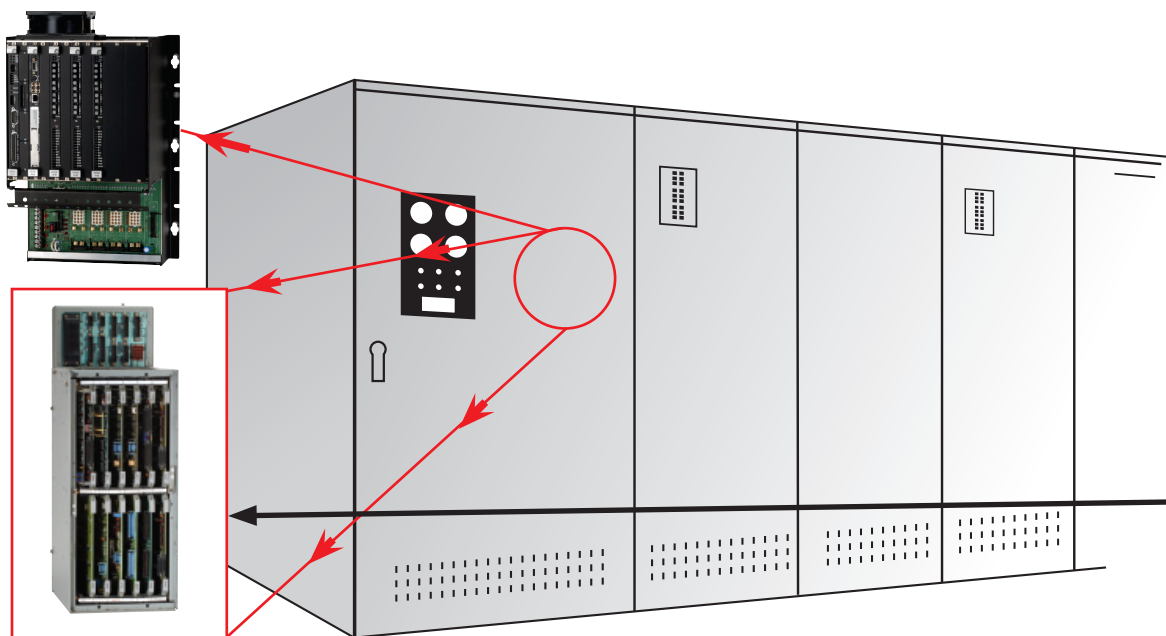
All within your regular outage schedule, with minimal risk, and low comparative cost.

The LCI Control Is Designed to Exceed All Specifications of the Legacy LCI Drive Systems

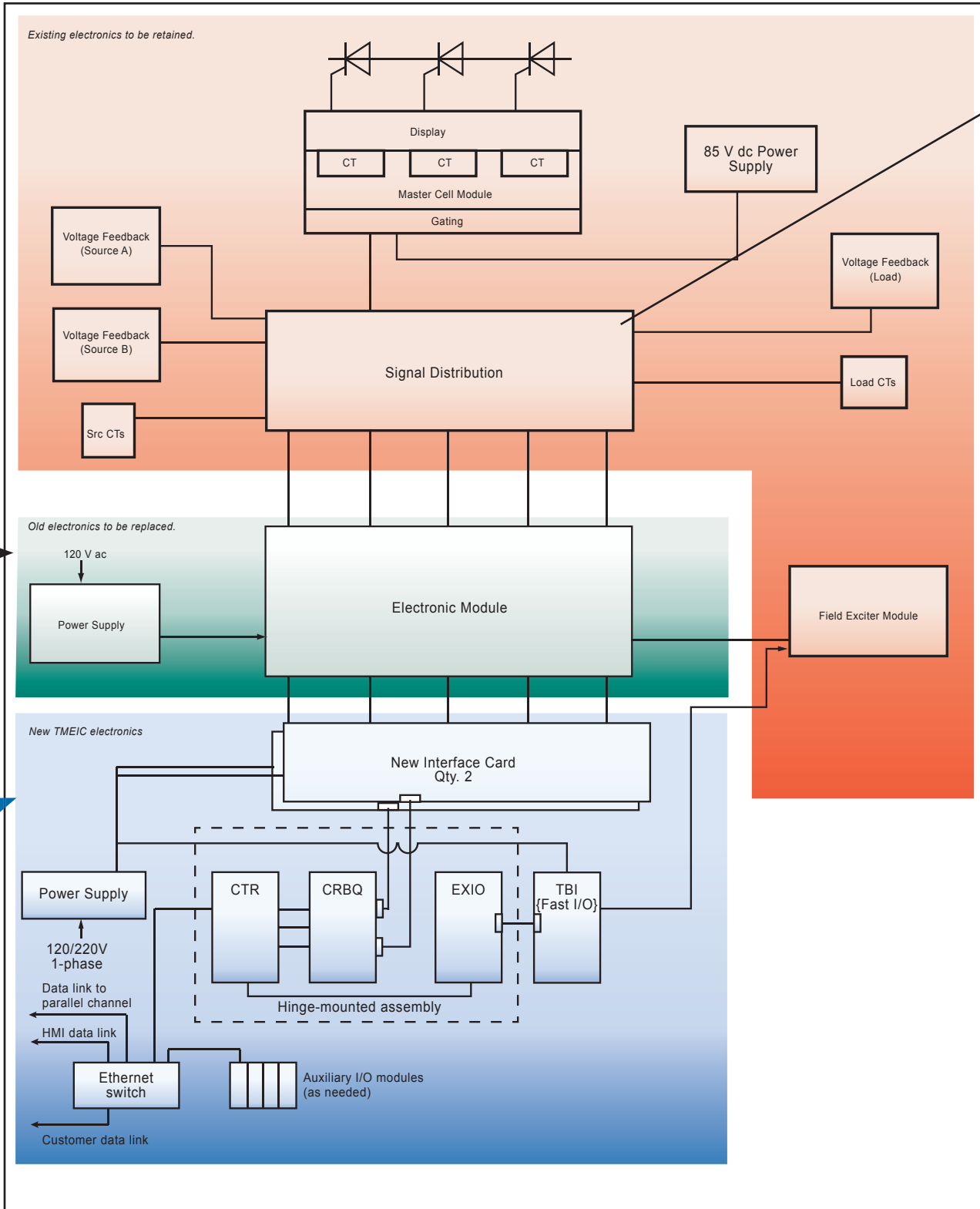
TMEIC has taken several steps to minimize risk to installed equipment:

- Additional Panel Real Estate is Minimized
- Utilizing a Proven Hardware / Software Combination to Lower Overall Project Risk
- Minimized Wiring Changes
- Distributed I/O Flexibility
- No Requirement for Rotor Position Sensor

Existing DIRECTO-MATIC or Innovation Series LCI controller is removed.



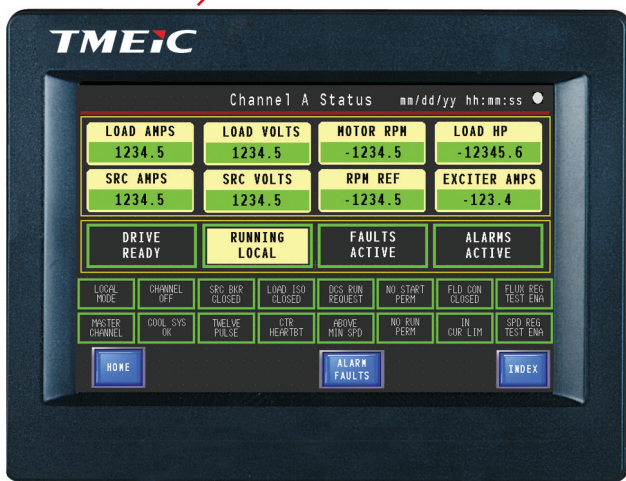
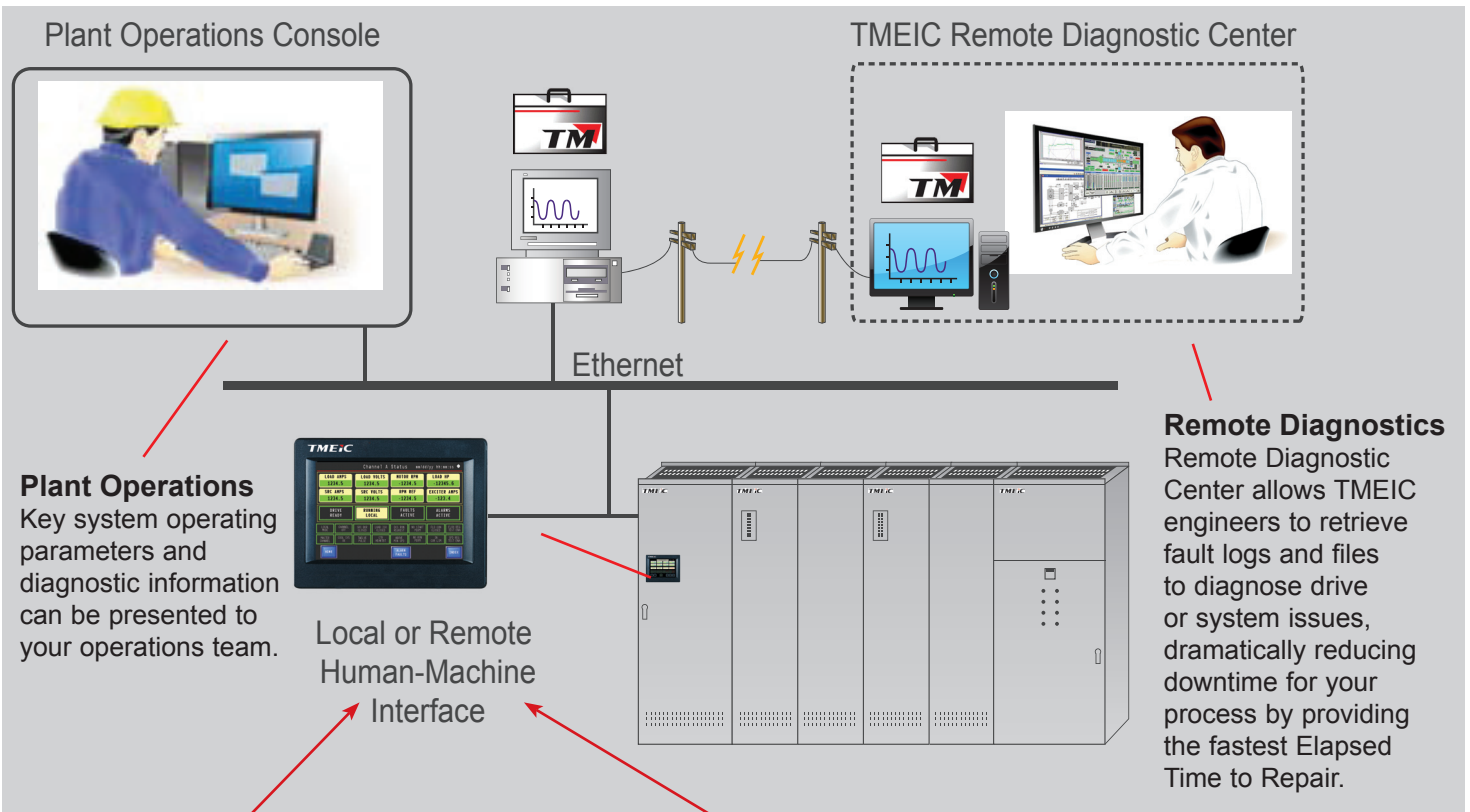
New TMEIC control card assembly is fitted in the place of old control rack



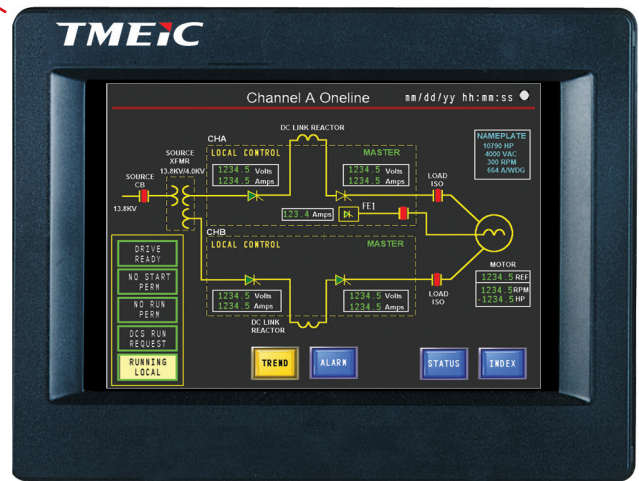
Bridge Gating Hardware is inspected, cleaned, and reused

Knowledge Management Options Bring Productivity to Your Operation

Remote Connectivity Capability



Status Screen



Performance Screen

Process Optimization

Processes cannot be optimized without key information on how the process is currently performing.

With the TMEIC LCI control upgrade and optional Human-Machine Interface, key operating drive parameters as well as system performance information are continuously available to plant operations for process optimization.

TMEIC Drive Navigator – A Tool for All of Your System Drive Products

Drive Commissioning with an Integrated Trend Window

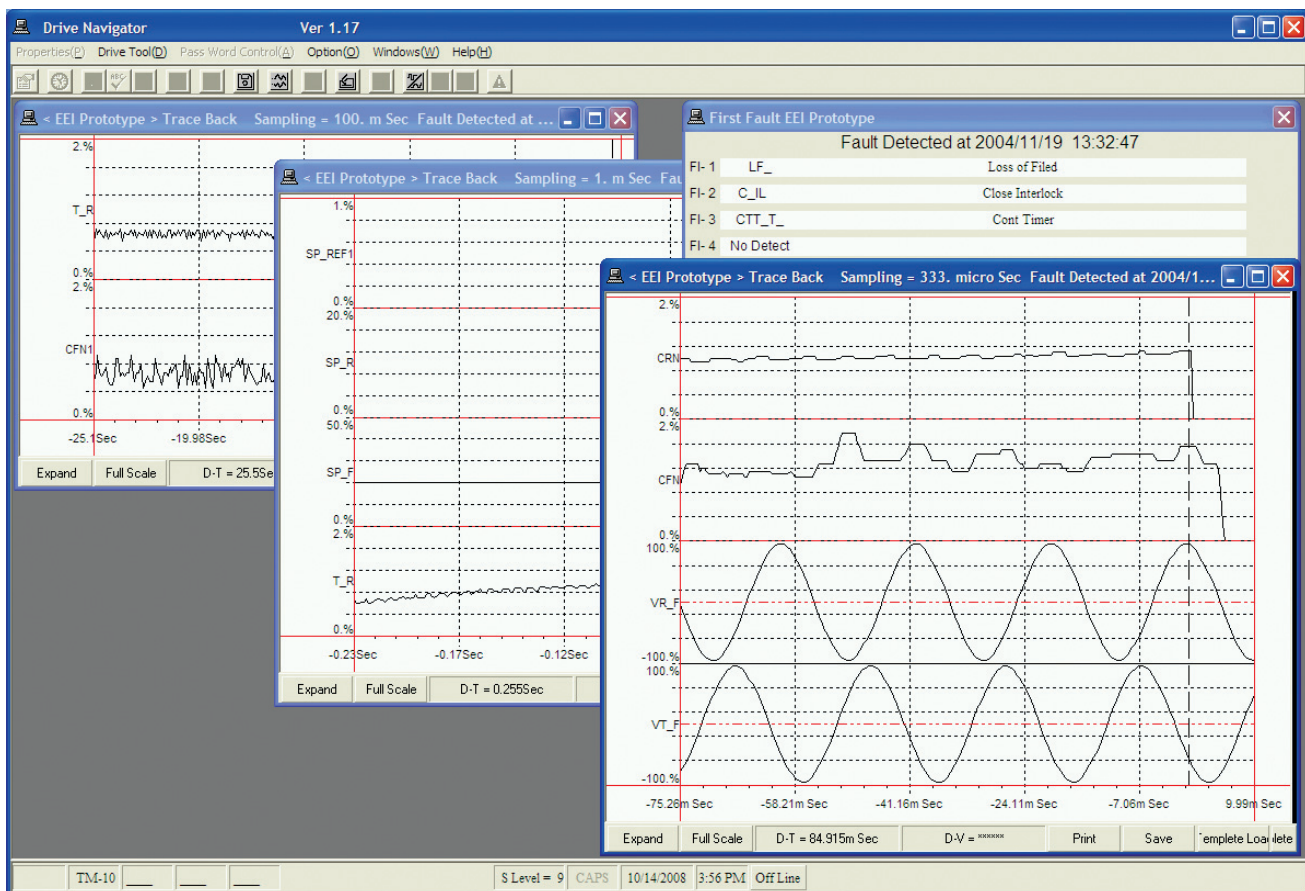
For knowledge management inside the LCI, the TMdrive-Navigator (TMdN) provides animated graphic displays of control logic as well as an integrated window for the trending of drive and related process variables. This tool features ease of configuration and data analysis.

Trend Configuration

- Define a trend with drag and drop of variables from function block diagrams or select variables from a pick list
- Conduct online real-time trending with the drive or upload the capture buffers in the drive for trending. For historical trending, define a link with an integrated historian database.

Display/Analysis

- Quickly define a display with the auto-scaling toolbar button
- Analyze a specific time frame with the zoom in/out toolbar buttons
- Create different views using variable hiding
- Analyze specific times with a crosshair
- Perform frequency-based analysis of the trend using the fast fourier transform (FFT) function



TMdrive-Navigator Screen

Global Supplier of Drives and Automation Systems



Metals Systems

The metals systems integration team supplies drive and automation systems for metal rolling and metal strip processing applications.



Material Handling Systems

The material handling integration team supplies automation systems for dock-side quay and rubber tire gantry (RTG) cranes.



Oil & Gas

The Oil and Gas systems integration team supplies drives, motors and controls for Oil & Gas applications.



Engineered Drives Systems

The engineered drives team supplies drive/motor systems to the mining industry and other general industry applications.

TMEiC

Global Office Locations:

TMEIC Corporation

Office: 1325 Electric Road, Suite 200;
Roanoke, VA, United States 24018
Mailing: 2060 Cook Drive, Salem, VA, United States 24153
Tel.: +1-540-283-2000
Email: GI@tmeic.com
Web: www.tmeic.com

TMEIC Corporation Houston Branch

2901 Wilcrest Dr. Suite 210
Houston, TX 77042
Tel.: +1-832-767-2680
Email: OilGas@tmeic.com
Web: www.tmeic.com

TOSHIBA MITSUBISHI-ELECTRIC INDUSTRIAL SYSTEMS CORPORATION

Tokyo Square Garden, 3-1-1 Kyobashi
Chuo-ku, Tokyo, 104-0031 Japan
Tel: +81-(0)3-3277-5511
Web: www.tmeic.co.jp

TMEIC Europe Limited

6-9 The Square, Stockley Park
Uxbridge, Middlesex, United Kingdom
UB11 1FW
Tel.: +44 870 950 7220; Fax: +44 870 950 7221
Email: info@tmeic.eu
Web: www.tmeic.com/europe

TMEIC – Sistemas Industriais da América do Sul Ltda.

Av.Paulista, 1439 cj72
Bela Vista, CEP:01311-200
São Paulo/SP, Brasil
Tel: +55-11-3266-6161; Fax: +55-11-3253-0697

TMEIC Industrial Systems India Private Limited

Hyderabad & Mumbai
Fax: +91-40-4434-0034
Email: inquiry_india@tmeic.in
Web: www.tmeic.in

TOSHIBA MITSUBISHI-ELECTRIC INDUSTRIAL SYSTEMS (Beijing) CORP.

21/F., Building B, In.do Mansion
48 Zhichunlu A, Haidian District,
Beijing 100098, PRC
Tel.: +86 10 5873-2277; Fax: +86 10 5873-2208
Email: sales@tmeic.com/china

TMEIC – Sistemas Industriais da América do Sul Ltda.

Av.Paulista, 1439 cj72, Bela Vista
CEP:01311-200, São Paulo/SP, Brasil
Tel:+55-11-3266-6161; Fax:+55-11-3253-0697

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