

Control Modernization for Legacy LCI Static Starter Systems TMdrive-LCI-DFE (Digital Front End)

metals

cranes

mining

testing

oil & gas

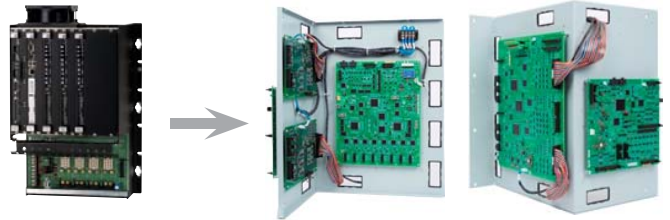
renewable
energy

power
generation

cement

The LCI-DFE Control Upgrade Provides Significant Top Line Benefits

Product Life Extension



Innovation

Legacy Control

TMEIC Control



SCR Power Converter



Legacy LCI drives have provided reliable service for almost 25 years. To keep that record intact, TMEIC has developed a control upgrade for Legacy Gas Turbine Static Starter Systems, while preserving the existing power conversion hardware.

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

Legacy LCI Control

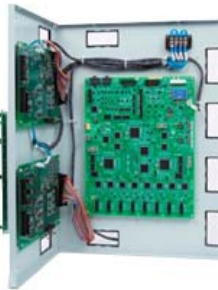


Older printed circuit backplane:

- Obsolete circuit boards
- Limited I/O capability



TMEIC LCI Control Upgrade



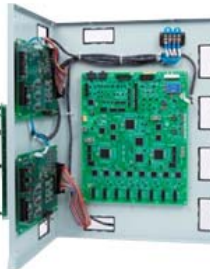
TMEIC Control Cards

- New-Hinge-Mounted Control Circuit Board Assembly to replace Innovation Series circuit board rack
- New I/O Modules, Gating/Feedback boards
- Interface boards to original SCR gating system
- New power supplies



Hardware dependent control:

- Limited sequencer
- Fixed block diagram regulator
- Terminal emulator
- Repeated voltage feedback offset nulling



Control Software Library

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

Limited control and data interface:

- Local keypad control
- Meters



Knowledge Management

- Local touch screen interface panel
- EGD Communications with turbine control
- Drivers for LAN-type communication
- Commissioning and maintenance for quick turnaround and trouble shooting



Service options:

- Limited Field Engineers
- Local, limited diagnostic tools



Technical Support Options

- Current generation technology and connectivity for remote diagnostics means lower Mean Time To Repair (MTTR)
- TMEIC trained engineers that have decades of experience designing, testing, installing and commissioning.

At Bottom Line Cost Savings Through Value-Added System Services

Benefits of a TMEIC LCI Controller Upgrade

- Reduced number of circuit boards
- Color touch-screen Operator panel in control compartment door
- Extensive diagnostics and self-test capability
- External control interface through TMEIC TMdrive-Navigator Software
- Voltage Feedback offset nulling is eliminated

New Control at a Fraction of the Cost of a New Static Starter

Prior to the introduction of the TMEIC LCI Static Starter control upgrade, the only way to realize the benefits of current generation technology was through the purchase of a new starter 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 static starter.

Total Project Cost Considerations Increase Savings

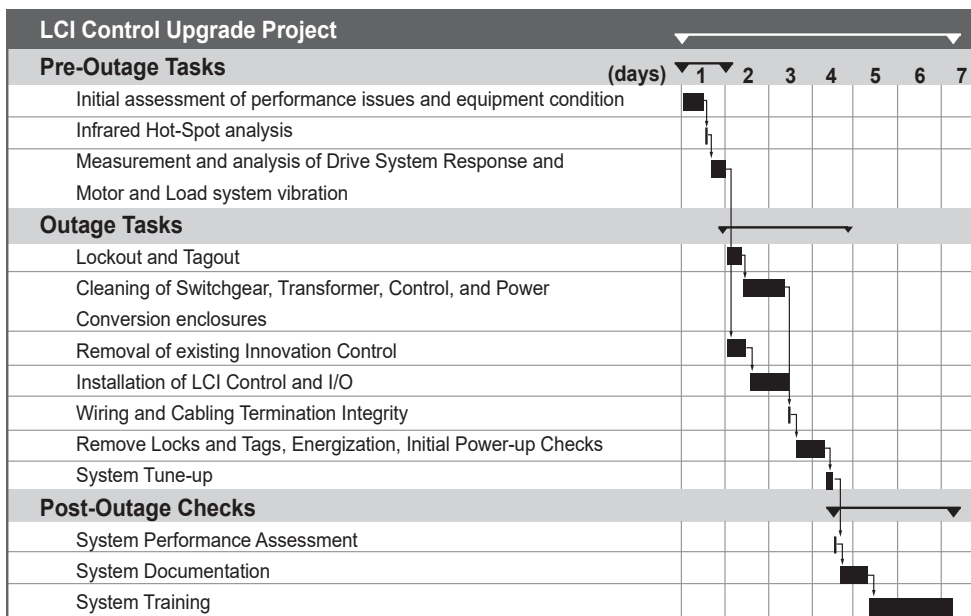
In addition to the purchase of new a starter, replacing a system involves:

- 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, and power converters. Complete project management equals peace of mind.



Results:

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

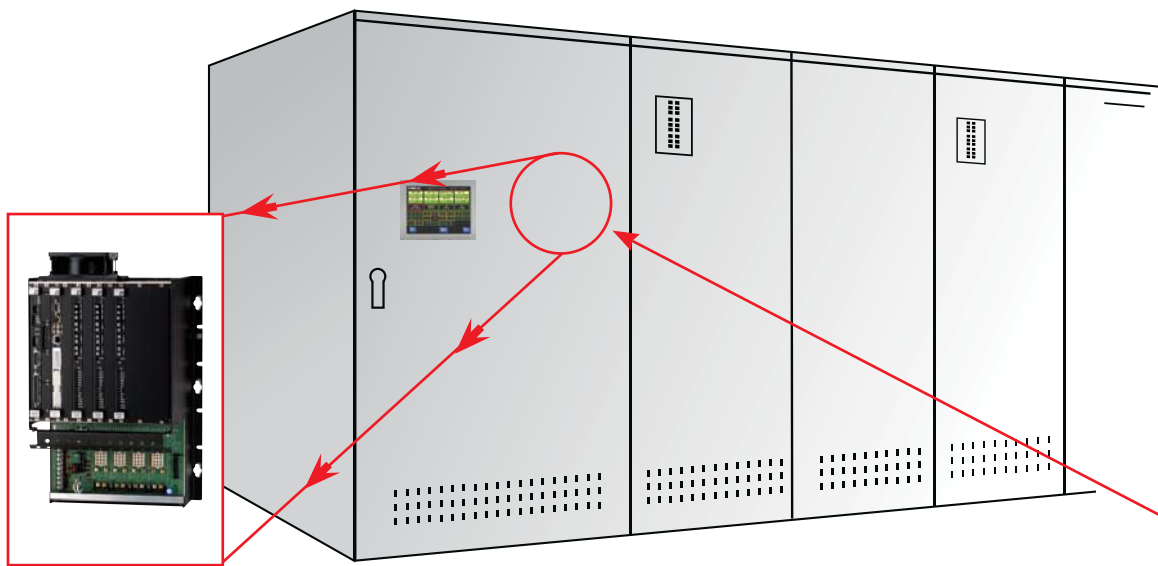
All within your regular outage schedule, with minimal risk, and low comparative cost.

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

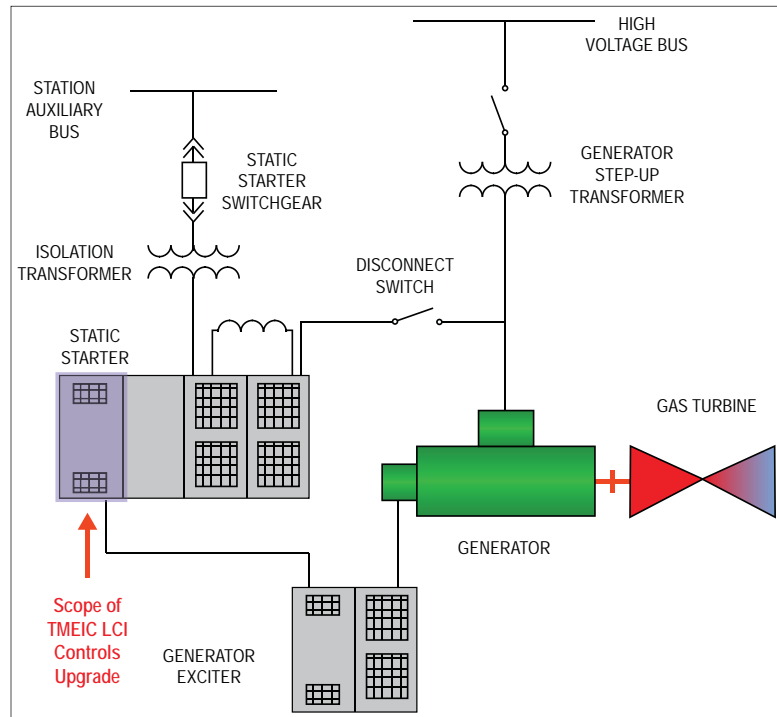
TMEIC has taken several steps to minimize risk to installed equipment:

- 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 Voltage Feedback offset nulling

Existing Innovation Series LCI Static Starter controller is removed.



Obsolete control is removed.

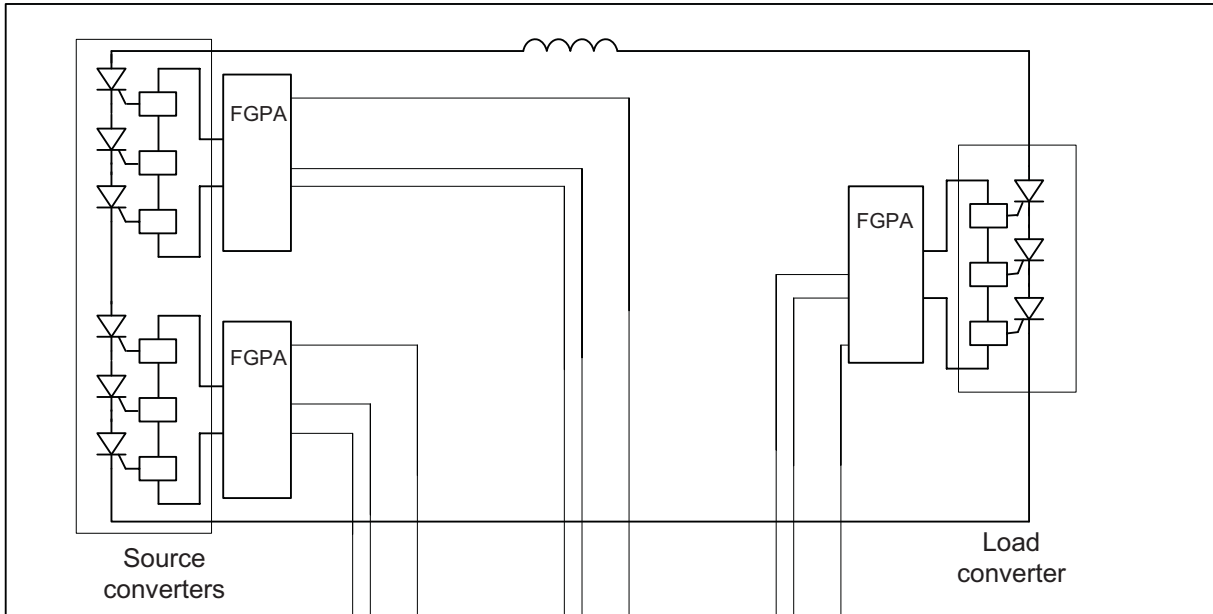


Replaced with new TMEIC controls.

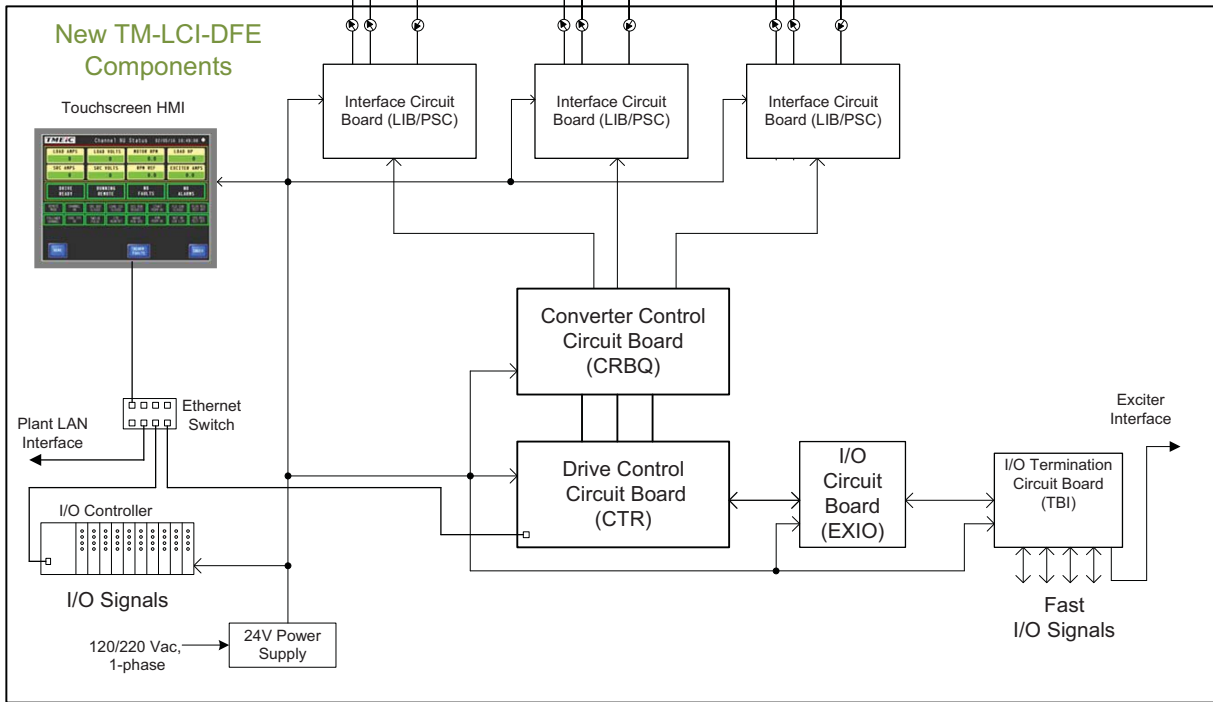
One-line diagram

Retained Components

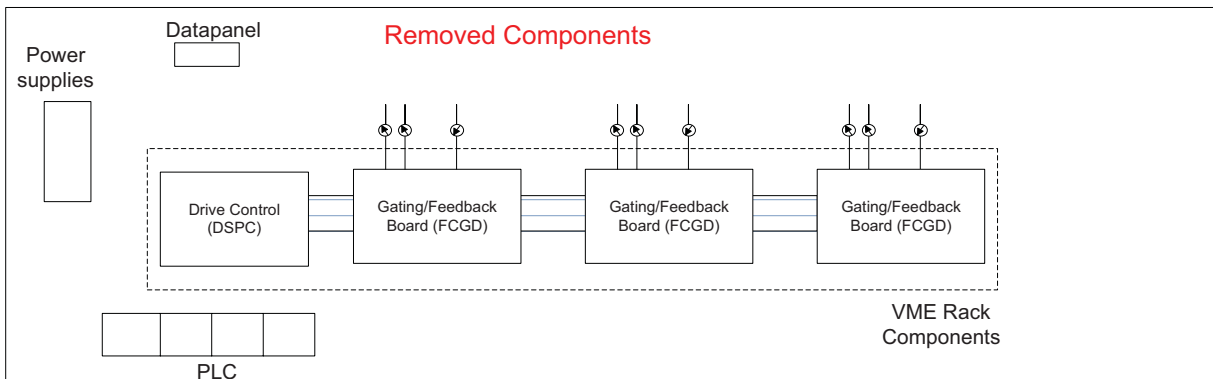
LCI Power Converter



New TM-LCI-DFE Components

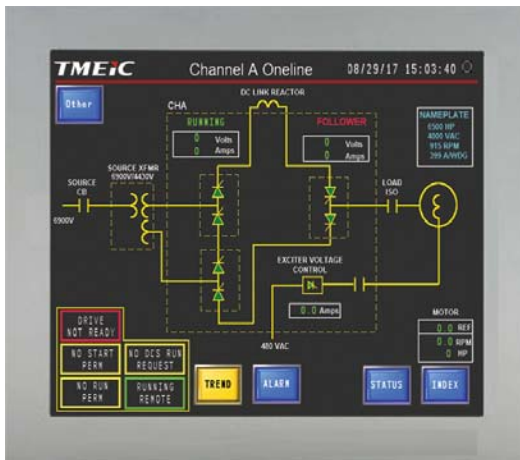
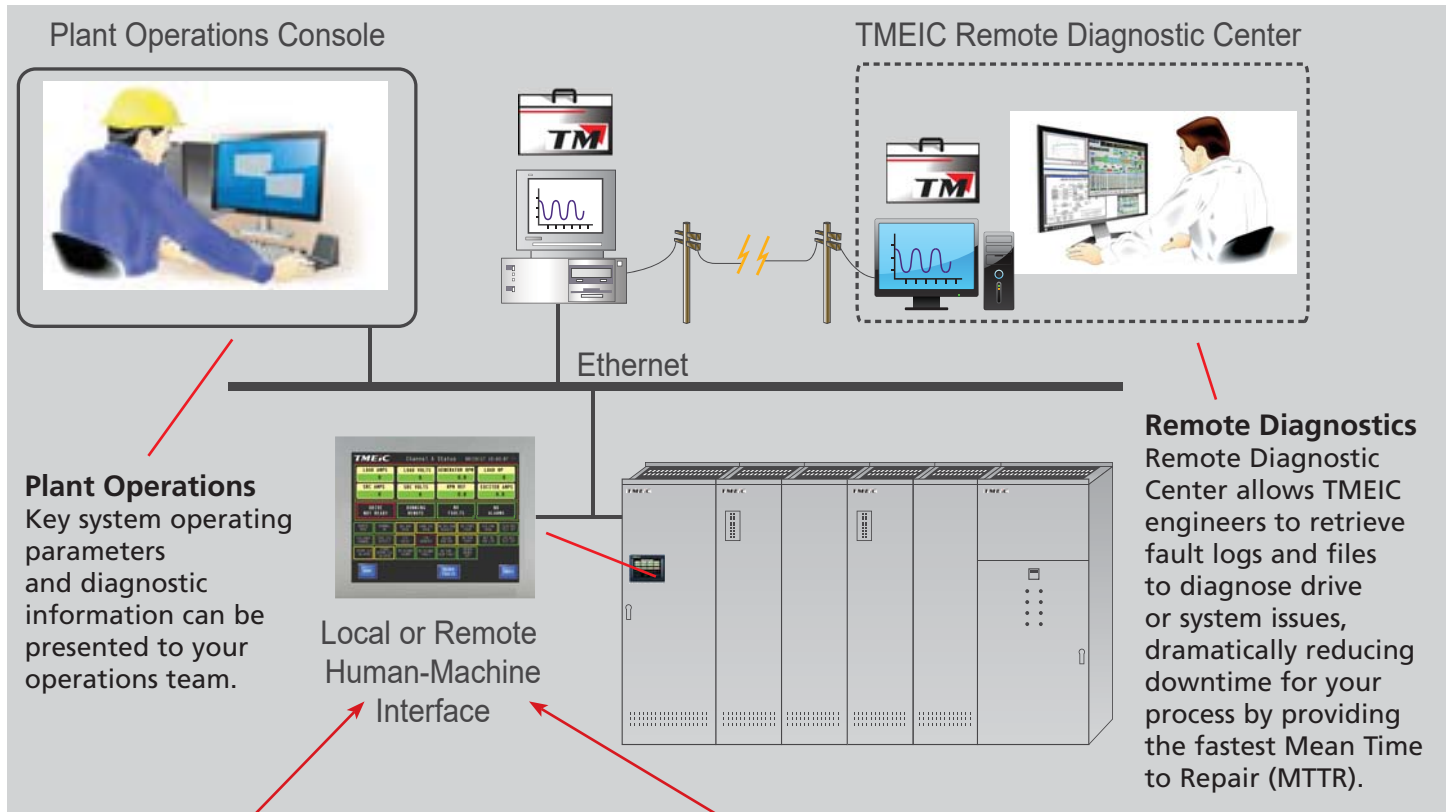


Removed Components



Knowledge Management Options Bring Productivity to Your Operation

Remote Connectivity Capability



System one-line screen



Status screen



Crow bar test



Main menu



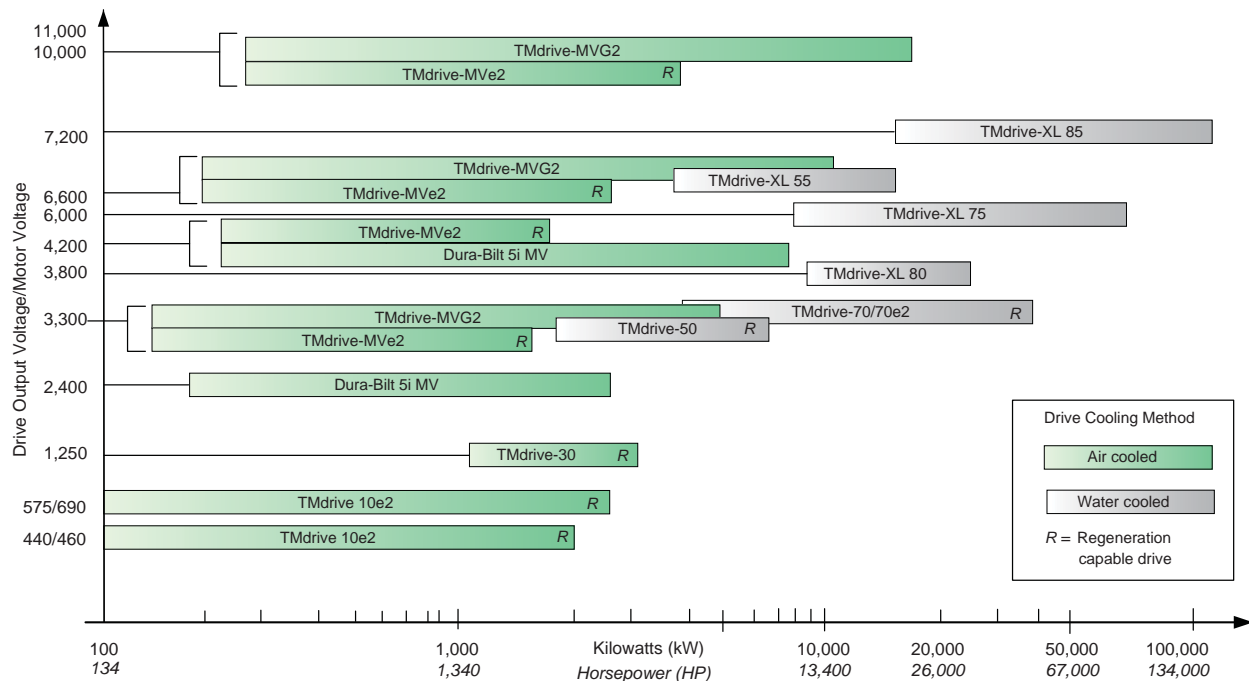
Cooling system

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 AC Drives Offer Complete Coverage



TMEiC

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