

# Medium Voltage Services and Solutions



expanding human possibility™



PUBLIC

# Agenda

**1** Overview

**2** Classic to ForGe Control

**3** SMC™ Control Upgrade

**4** UPS Addition

**5** PanelView™ 550 to PanelView™ Plus

**6** PowerFlex® 7000 HMI Modernization

**7** Preventive Maintenance

# Customer Challenges



Aging Infrastructure



Operational Efficiency



Skills Gap

We help by providing **already designed conversion packages** that can be used to **quickly and efficiently modernize** your plant.

# Customer Outcomes

## What makes **modernization a success?**

Faster lead time

Minimal downtime

Fixed cost and scope

PowerFlex® 7000 Control Upgrade

MV SMC™ Control Upgrade

PowerFlex® 7000 UPS Addition

PowerFlex® 7000 HMI Upgrade

MV Preventive Maintenance

# Classic to ForGe control

## Project Overview



- Customer problem

- Discontinued control platform in existing Medium Voltage VFD
- Obsolete HMI (PanelView™ 550)
- Traditional methods require rip and replace of entire VFD line up
- Troubleshooting and diagnostic
- An alternative to removing the gear and replacing with a new piece of gear



- Solution

- Solution impacts components within the drive while using the existing footprint. The result is an upgraded cabinet, with an active control platform, complete with installation, commissioning and startup all in one standard catalog number and price.



# Classic to ForGe control

## Packaged Product Definition



### Standard Package

- Power supplies
- Voltage sensing board
- Voltage sensing cables
- Control boards
- HMI platform
- Ethernet communication
- Four days of on-site conversion with Rockwell Automation Field Service Professional
- One-year warranty on conversion hardware

### Qualifications

- This solution applies to all Medium Voltage Drive PowerFlex® 7000 configurations

### Terms

- General terms & conditions of sale (Pub 6500)
- Rockwell Automation commitment for sales through distribution applies where applicable
- Assumptions, Clarifications, Exceptions from 125-20100-TPL-PROP-LITE-EN
- Requires customer to disclose all material facts whereas a failure to do so may result in a withdrawal or modification of the quotation, or cancellation of the contract
- Does not allow for any violation of any laws or Rockwell Automation or customer policies



# Benefits of ForGe Control

- Improved functionality & performance of hardware with 56% reliability increase
- Enhanced diagnostic capabilities
  - Control data recorder (“black box Data”)
  - Internal trending
  - Remote communication
- Includes PanelView™ 550 to PanelView™ 1000 conversion
  - Replacement of obsolete PanelView™ 550 HMI
- Reduction of control boards
  - The principal five discrete control boards in Classic control are now consolidated into two control boards
- Better compatibility and integration
  - Compatible with new touch screen HMI
  - Compatible with remote monitoring tools
- Existing footprint/cabinet space
  - Conversion utilizes existing footprint and structure

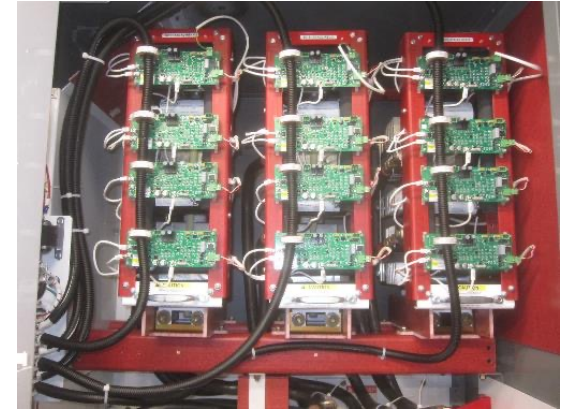


# MV SMC™ Control Upgrade

## Project Overview



- Customer problem
  - Discontinued/obsolete components in existing MCC cabinets
  - Traditional methods require rip and replace of entire MCC line up
- Solution
  - Replace just the impacted components within the bucket while using the existing enclosure, incoming power cables, motor feeder cables, and control cables. The result is an upgraded cabinet, with an SMC™ Flex/50, complete with installation, commissioning and startup all in one standard catalog number and price.





# MV SMC™ Control Upgrade

## Packaged Product Definition



### Standard Package

- Power Stacks
  - Voltage Sensing Board
  - Voltage sensing cables
  - Self-powered gate driver board
  - Current loop gate driver board
  - A copy of updated electrical drawings
  - 3 days of on-site assistance with Rockwell Automation service engineers
  - One-year warranty
  - Additional Options
  - Control and Communication modules upgrade
    - Most commonly: Ethernet and DeviceNet
  - Motor protection relays upgrade (custom)
  - Change out contactor
- SMC™ Flex/50 control module
  - Terminal Assemblies/hardware
  - Current loop wire assembly
  - Fiber-optic cables
  - Upper MV door

### Qualifications

- Customer must provide equipment access each day during the duration of startup

### Terms

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# Benefits of MV SMC™ Control Upgrade

- New components including power stack with solid-state field contactor, SMC™ controller, internal cabling, synchronizing
- Updated and accurate control schematics
- New doors
- Existing enclosure, incoming power cables, motor feeder cables and control cables can be reused
- New optional control module & communication module options
  - Pump Controls (reduces water hammer)
  - Standard communication options



**BEFORE**



**AFTER**

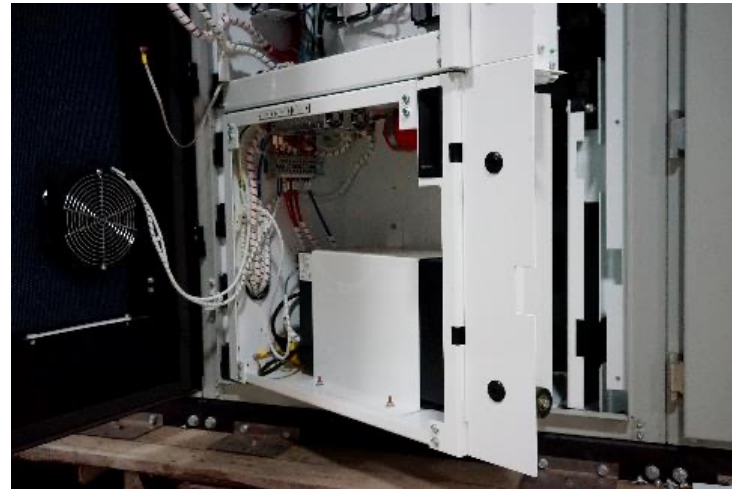


# MVD UPS Addition

## Project Overview



- Customer problem
  - Experience control power fluctuations and/or line loss causing a downtime event on a critical process.
  - Risk of operating critical process with obsolete UPS equipment
- Solution
  - Implementing latest UPS allows Medium Voltage PowerFlex® drives to ride-through a poor power quality event
  - Implementation of latest UPS to existing drives includes installation, commissioning, and startup all in one standard catalog number and price



# MVD UPS Addition

## Packaged Product Definition



### Standard Package

- Low voltage UPS panel
- Uninterruptible power supply (UPS)
- Cooling fans and circuit breakers
- AC/DC power supply
- UPS communication/diagnostic cable
- If UPS is a replacement, customer will retain the replaced equipment in inventory
- 2 days of on-site installation, testing, configuring and commissioning

### Additional Options

- Maintain power ride-through of drive control power only

### Qualifications

- Rockwell Automation supplied UPS only, customer supplied UPS not included
- PF7000 A-Frame drive with integrated Drive Input Contactor section not included
- Locally mounted UPS only

### Terms

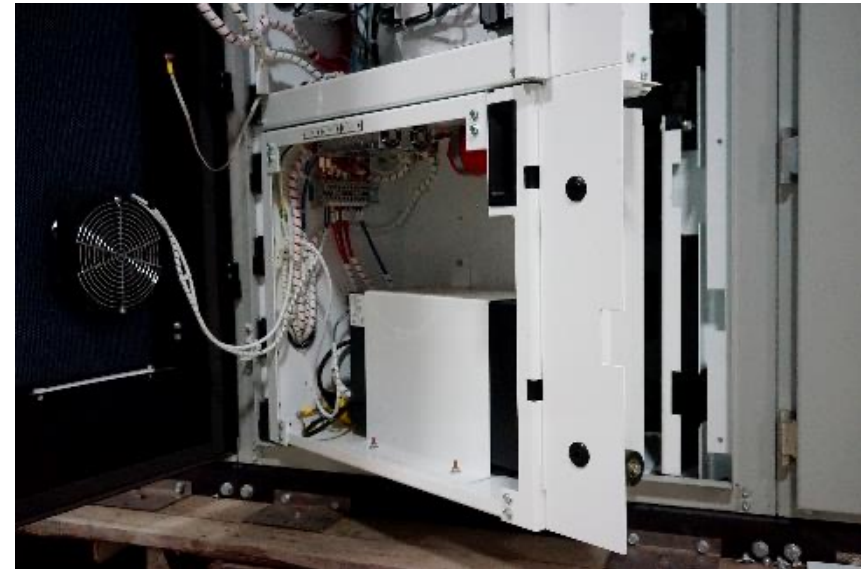
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# Benefits of MVD UPS Addition

- Reduces downtime by enabling the VFD to ride-through a power loss
- Readily available spare parts
- Allows user to enable optional auto-restart feature with configurable time delay of up to 10 minutes
- Recommended for
  - Critical processes
  - Remote areas
  - Areas that experience severe weather
  - Areas with poor quality or unreliable power

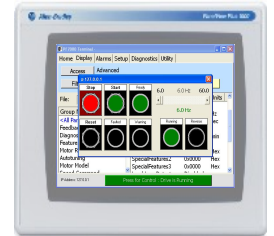
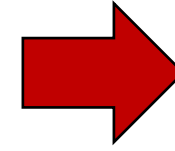


# MVD PanelView™ 550 to PanelView™ Plus

## Project Overview



- Customer problem
  - Have obsolete components in existing active MV Drives
  - Traditional methods require rip and replace of entire MV Drive™



- Solution
  - Replace just the impacted components within the drive while using the existing infrastructure. The result is an upgraded PanelView™ Plus within the control section of the drive, complete with installation, commissioning, and startup all in one standard catalog number and price.



# MVD PanelView™ 550 to PanelView™ Plus

## Packaged Product Definition



### Standard Package

- PanelView™ Plus CE
- Stratix® 2000 Ethernet Switch
- AC/DC 30 W Power Supply
- PowerFlex® Net Interface Ethernet communication module
- Customer will retain the replaced equipment in inventory
- One day of on-site installation, testing, configuring, and commissioning

### Qualifications

- Only available for PowerFlex® 7000 ForGe control topology
- Local installation only

### Terms

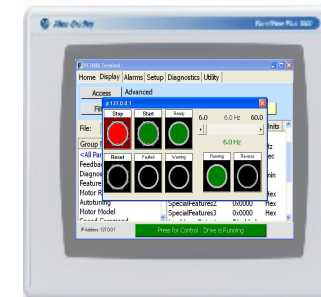
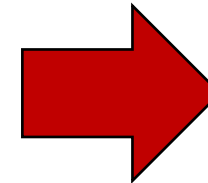
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# Benefits of MV PowerFlex<sup>®</sup> 7000 HMI Modernization

- Enables user to acquire all necessary executable tools, documentation and reports required to commission, troubleshoot and maintain the drive
- Consolidated control interface of project-specific applications and VFD HMI
- Real-time graphic of meters
- Flexible option of remote and local mount
- Readily available spare parts
- Reduce downtime
  - Standard modernization takes one day







# Medium Voltage Preventive Maintenance

- **Move from risk-based corrective maintenance service to planned preventive maintenance**
- **Scheduled maintenance inspections developed to include:**
  - Definitive steps for testing, measuring and servicing of the specific drive
  - Scheduled replacement of recommended components in the drive
  - Spare parts/critical spares inventory guidance,
  - Product notices, updates, patches are identified and resolved/implemented
- **Deliverables tailored to the drive system:**
  - Years in service/commissioning date identifies what maintenance is performed
  - Preventive maintenance that follows the recommended OEM service schedule for necessary parts replacements (filters, fans, power supplies)
  - Reporting of PM activities back to customer
    - Complete documentation of the maintenance and recommendations captured in the MV PM Logbook
  - With options to expand service offerings
    - PMA, TechConnect<sup>SM</sup>, Virtual Support Engineer, Extended Warranty, On Site time training, coaching etc.





# Why Preventive Maintenance?

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- Preventive maintenance is predetermined work performed to a schedule with the aim of helping prevent the wear and tear or sudden failure of equipment components
- Preventive maintenance helps to:
  - Protect and prolong the useful life of equipment
  - Improve system reliability - Prevent problems before they occur
  - Lower overall maintenance costs
  - Reduce unplanned downtime
  - Reduce injury from equipment failures





# Benefits of MV Preventive Maintenance

- **Planned and scheduled maintenance**
  - Includes testing, measurements, adjustments and is performed specifically to prevent faults from occurring
- **Planned replacements** of components based on:
  - Reliability of components (equipment failure is usually caused by its least reliable component)
  - Scheduling replacement of components at the end of their useful service life based on OEM recommendations
  - Accepted industry best practices
- **Acquiring and maintaining inventories of:**
  - Components that are least reliable
  - Components critical to the operation of the equipment
  - Components identified as preventive maintenance items scheduled for replacement at specific intervals
- **Service records and maintenance logs:**
  - Complete historical logs of all maintenance activities and parts replacements
  - Measurements and test data



# Thank you



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