



CAT[®] Enhanced User Experience



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Section I. Overview

Advanced GUI / HMI System

1.01 Typical Hardware and Features

The HMI system operates on an industrial computer with 19.5", 22" or 27" wide screen operator interface touch screen panels. The HMI access PLCs' setpoints, engine sequencing, display system status and alarms, and to enable certain control functions.

- **System Online Screen:** The System Online screen will display the generator power in kW and the operating status (running / stopped / not available / faulted), the status for each circuit breaker in the system (open / closed / tripped / arm, etc.), the status of bus (energized / de-energized), and the status of the automatic transfer switches (ATS). System and Login status is displayed in the Banner.

- **Metering Screens:** Devices will be polled for their respective data points. (IF AVAILABLE)

- a) Caterpillar Engines
- b) Circuit Breakers
- c) Power Metering

- **Menu Screen:** The menu screen will index all the screens used on the GUI / HMI system.

- **PLC Communication Status** is in the top right portion of the Banner: The PLC Comm Statuses will be monitored on every screen as a quick reference if a PLC is faulted. Or which PLC is in Lead.
- **System Control Screen:** The System Control Screen will typically have the Master Mode Switch. System controls such as a No-load Test can be activated through this screen. For testing purposes, the Utility Fail Test Switch is located here as well, if applicable.
- **Generator Demand Setpoints Screen:** The generator demand setpoints screen will display the generator demand parameters. The operator may select which mode of operation they wish to operate in and adjust these setpoints from this screen as well as enable/disable generator demand operation, and initiate a generator increase sequence, and change the sequence of the engines. Runtime and the status of the engines are also available.
- **Login Screen:** The security login screen allows an operator to log into the system in order to make system parameter and operational changes.

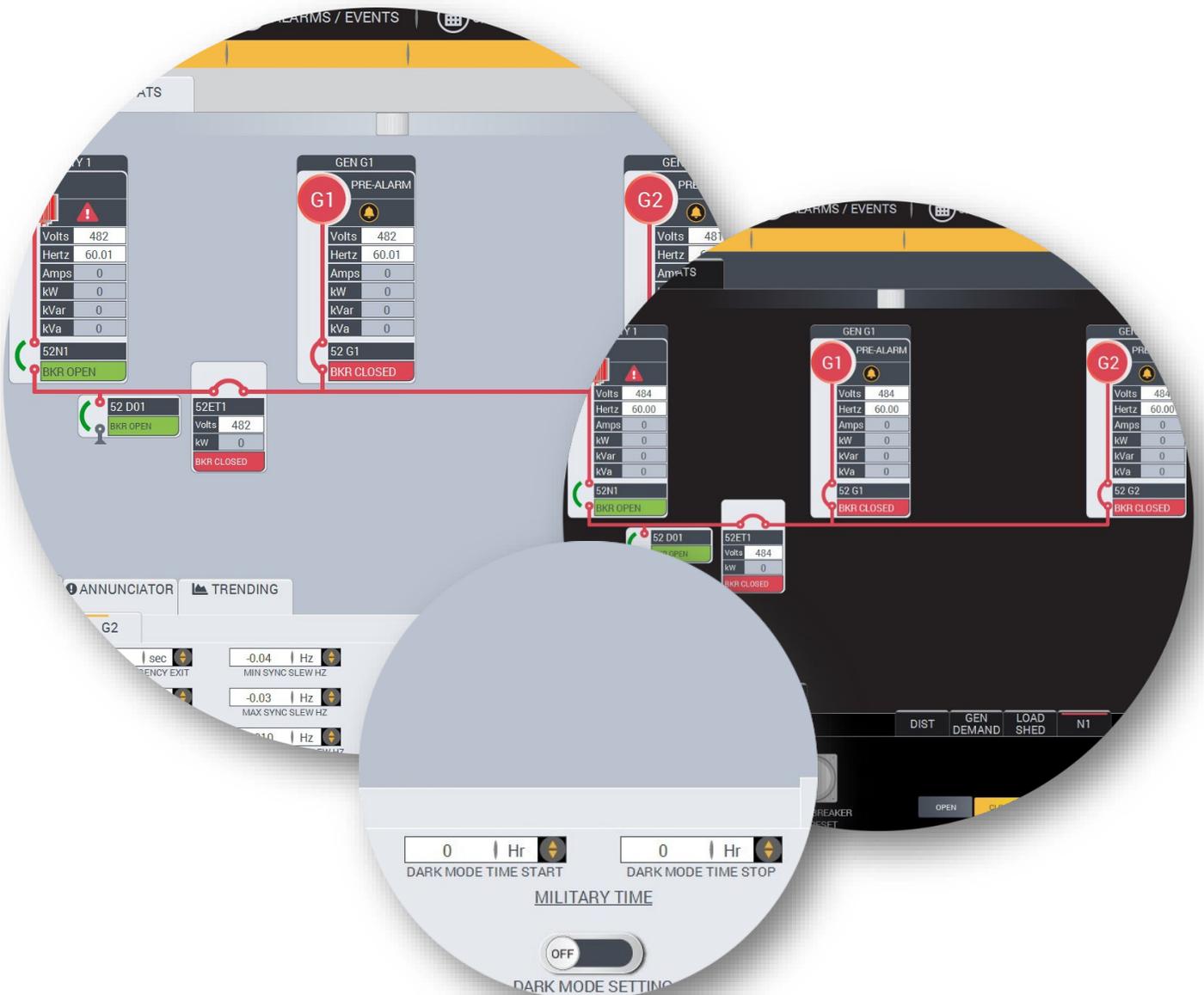
- **Realtime Trending:** Trending screens that will compare power parameters of selective devices in Realtime.
- **Historical Trending:** Trending screens that will compare power parameters of selective devices historically stored.
- **Load Control Setpoints Screen:** The load control setpoints screen will display the overload %kW setpoint, overload timer setpoint, auto/bypass load control, current load step and load shed activated.
- **Report Screen:** Total System Plant Report, Generator Tuning and Settings Reports are available in our basic systems. More complex solutions may include Joint Commission Report, ATS Report, Emissions Report, Generator Fault Analysis Report and any other custom reports.
- **Network Diagram:** Systems with Managed Switches brings an additional layer of security to your Cat® Switchgear Network. The managed switches are displayed via the switch lineup and show the status of each port and include alarms.
- **Alarm/Event History Screen:** The alarm/event history screen will display the last 1024 alarms and events and allow an operator access to logged alarm/event history files, which can be stored indefinitely (default setting one year).
- **Help Screen:** The help screen can be accessed from anywhere within the system. With the new quick Help Button on the banner and tooltips throughout the screens, it's even easier to operate the Cat Switchgear HMI System.
- **Transfer Switch Detail Screen:**
The Cat (ATS) Screen is configured to display information for numerous Automatic Transfer Switches over a RS-485 serial Modbus or Modbus TCP/IP network.
- **Tech-Link - optional:** Service & Support You Can Rely On. Tech-Link is an intelligent remote access system that serves as an endpoint for secure remote connections. The system is a service tool that allows code-level support from certified factory engineers. Devices connected to Tech-Link are securely accessed over the Internet and most LAN and WAN networks through an encrypted VPN connection. Tech-Link is NAT and firewall friendly.
Tech-Link is especially designed for industrial environments and its robust housing offers better installation possibilities e.g. on DIN rails.
- **Alerts and Notifications:** Cat Switchgear HMI provides users with real-time alerts and changes in power equipment and conditions through Alarm Screens that are viewable on all the Switchgear displays. When customer specified alarms occur, the Cat Switchgear HMI can send email and text alerts.
- **Tablet Access - optional:** Having Tablet Access is important in this industry because it provides flexibility to operate the System at a distance from the Switchgear. For Users who desire the added convenience and safety of operating their system with a tablet, we offer this feature. The experience will be the same as if you're in front of the switchgear HMI. At Caterpillar our focus is SAFETY and that doesn't just apply to our employees, that also extends to our customers. This is optional

Section II. User Experience.

The new HMI introduces a bold new look, with major updates to the screens, new ways to help you protect your system, and improvements across the entire system. The HMI is faster and more intuitive to use. We've designed the HMI based on Soft Ergonomics methodology. Soft Ergonomics finds a compromise between user expectations, system workflow and aesthetics.

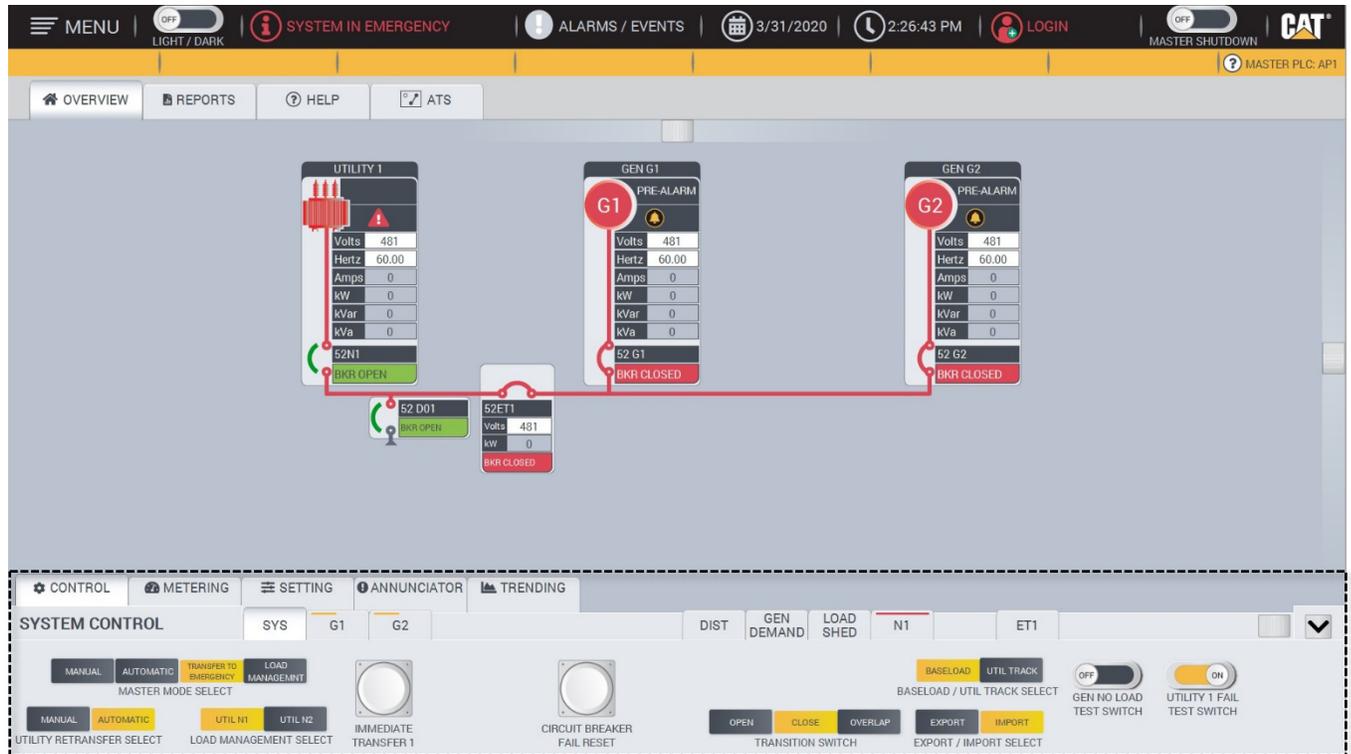
2.01 Light Mode / Dark Mode

Light / Dark Mode introduces a dramatic new look for Cat Switchgear HMI. It's thoughtfully designed to make every element on the screen easier on your eyes with seamless integration throughout the system. And it's simple to select from the Banner or automatically switch on at night from the System Settings Screen. This feature was implemented for personal preference or environmental challenges. Whether the Switchgear is indoors in a dark room or outdoors in the bright sun, the Light / Dark mode can accommodate to ensure that the graphics are not washed out.



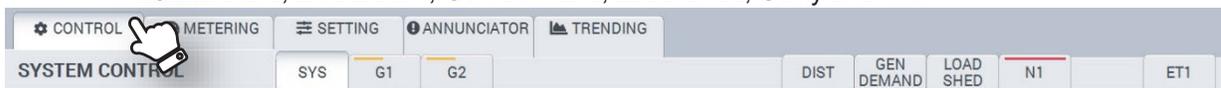
2.02 New Control Center

The most impressive feature about the **Control Center** methodology is that you can navigate to more than 90% of the screens while maintaining view of the Overview Online. This is a gamechanger in the Electric Power industry because the power lineup is the most important screen when operating the plant. Imagine a navigation system so intuitive that you wouldn't need a main menu screen to navigate to the desired screen. This reduces training time and improves operator comfort and confidence levels.

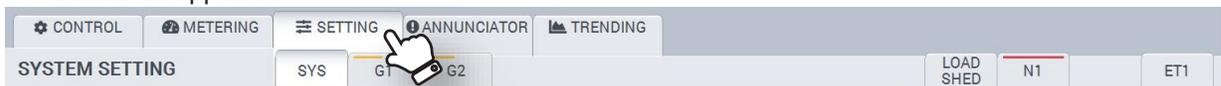


Here are some extraordinary features included with the **Control Center**

- The top navigation features screens that are not directly associated with operating the System, Generator, Utility, Ties or Distribution.
 - The operator is one step away from the Reports Screen, Help Screen or ATS Screen
- The **Control Center** at the bottom of the screen features screens that are directly associated with operating the gear, such as the System, Generator, Utility, Ties and Distribution.
- When clicking on a primary tab it automatically gives you access to the associated screens via the subtabs.
 - For example, when clicking on the primary tab Control the subtabs associated are System, Generators, Distribution, Gen Demand, Load Shed, Utility and Tie.



- The Control Center is so intuitive that when you click on Setting, the Distribution and Generator Demand subtab disappears.



The operator is literally no more than two clicks away from navigating to any screen, and in most cases one click away.

2.03 Seamless Help features and tooltips

With the new quick Help Button on the banner and tooltips throughout the screens, it's even easier to operate the Cat Switchgear HMI System.

When the tooltip icon appears, simply touch it to reveal a detailed message of the problem. Clicking on the Help Button allows access to valuable help documents / information.



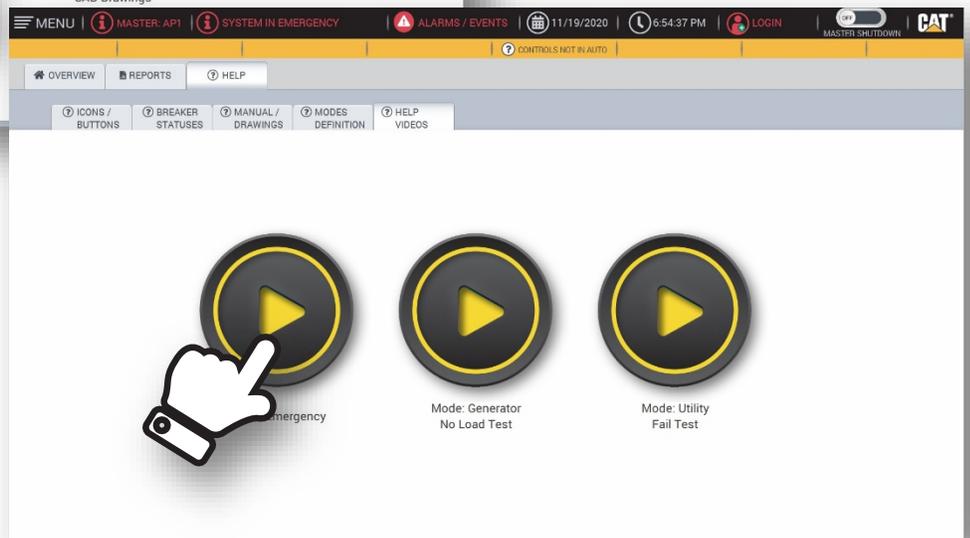
The first tab explains the icons and buttons functionality.

The second tab explains the Generator Symbols, Utility Symbols and breaker statuses.

The third tab gives the operator access to the system Operator Manual and Drawings.

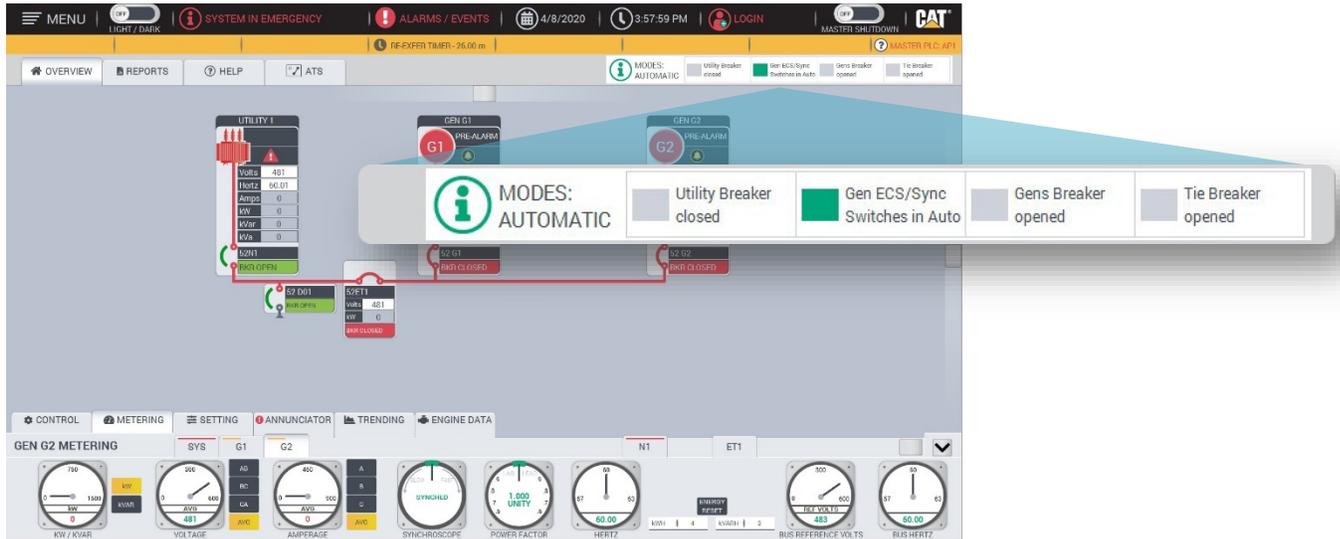
The fourth tab explains the System Modes within the project.

The fifth tab has instructional videos for troubleshooting and Modes of Operation

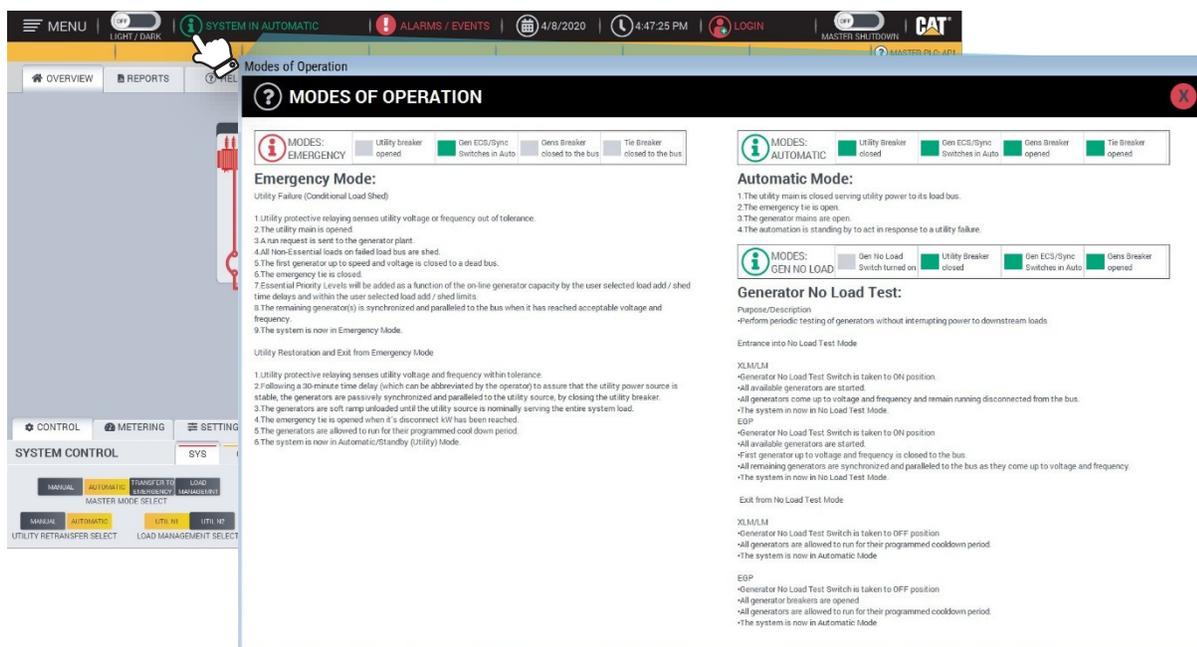


2.04 Push Notifications Integration

The push notifications detect when the system is transitioning from one mode to the next and automatically pops up in the top right corner of the banner. The notification will display a series of events that have to happen before entering that mode. The series of lights, depending upon the sequence, may not progress from left to right.



In the example above, the system is transitioning from Emergency Mode to Automatic Mode. In order to transition to Automatic Mode the Utility Breaker must close, the Generator ECS and Sync Switches should be in Automatic, the Generator Breakers must be open, and the Tie Breaker must be open. If, at any point the light does not illuminate, the operator can simply go to the Alarms and Events Summary or click on the Tooltip Icon for more information. Once the system completes the transition the popup disappears. To see the mode definitions simply click on the information icon in the Banner or click the Help Button.



2.05 All Controls Screen

The All Controls Screen allows the operator to see and operate the main control switches from one centralized location. This is another troubleshooting screen to make sure that your main controls are in the Automatic position. Making sure that your controls are in the Automatic position ensures that the system will respond properly if a power outage occurs.

The screenshot displays the 'All Controls' interface, which is organized into several functional areas:

- Header:** 'All Controls' with a help icon and a close button.
- Generators Section:**
 - GEN G1 CONTROLS:** Includes buttons for OFF/RESET, AUTOMATIC (highlighted), MANUAL, COOL DOWN, and G1 ENGINE CONTROL SELECT.
 - GEN G2 CONTROLS:** Includes buttons for OFF/RESET, AUTOMATIC (highlighted), MANUAL, COOL DOWN, and G2 ENGINE CONTROL SELECT.
- Utilities and Ties Section:**
 - UTILITY 1 CONTROLS:** Includes buttons for OFF, AUTOMATIC (highlighted), MANUAL, and CHECK.
 - TIE ET1 CONTROLS:** Includes buttons for OFF, AUTOMATIC (highlighted), MANUAL, and CHECK.
- System Section:**
 - Buttons for MANUAL, AUTOMATIC (highlighted), TRANSFER TO EMERGENCY, and LOAD MANAGEMENT.
 - Buttons for OPEN, CLOSE, and OVERLAP.
 - Buttons for UTIL N1 and UTIL N2.
 - Buttons for MANUAL and AUTOMATIC (highlighted).
 - Buttons for BASELOAD and UTIL TRACK.
 - Buttons for EXPORT and IMPORT.
 - Toggle switches for GEN NO LOAD TEST SWITCH (OFF) and UTILITY 1 FAIL TEST SWITCH (ON).
- Navigation Panel (Left):**
 - GENERATOR:** Adjust settings, control, or view trends.
 - SYSTEM:** Configure Load Shed schemes and prioritize Gen Demand.
 - UTILITY:** Adjust settings, control, or view trends.
 - EMERG. TIE:** Adjust settings, control, or view metering.
 - DISTRIBUTION:** Adjust settings, control, or view metering.
 - MISC.:** View reports, adjust Load Shed Settings, and view miscellaneous information.
- Bottom Navigation Bar:**
 - CONTROL (gear icon)
 - SETTINGS (sliders icon)
 - ANNUN (exclamation mark icon)
 - METER (gauge icon)
 - TREND (line graph icon)
 - GEN DEMAND (empty space)
 - CONTROL (empty space)
 - ALL CONTROLS (gear icon, highlighted with a hand cursor)
 - LOAD SHED SETTINGS (sliders icon)
 - REPORT (document icon)
 - ENG EXERCISE (engine icon)
 - ATS (gauge icon)
 - NETWORK (network diagram icon)
 - LIGHT / DARK (moon icon)



2.06 Network Diagram - Optional

Systems with Managed Switches adds an extra layer of security to your Cat Switchgear Network. With managed switches we can display the switch lineup and show the status of each port. Knowing the status of your network switches ensures reliability and a means of rapid troubleshooting. We offer various network configurations, including Redundant networks.

? NETWORK DIAGNOSTICS X

MILL POWERHOUSE SSCP
IP ADDRESS: 10.102.134.123 - Remote Run
REDUNDANCY CHASSIS A: PRIMARY
REDUNDANCY CHASSIS B: SYNCHRONIZED SECONDARY
DUB RING STATUS: NORMAL
RING SUPERVISOR: ACTING AS ACTIVE SUPERVISOR
NETWORK TOPOLOGY: RING NETWORK TOPOLOGY EN

REID BROOK PORTAL E-HOUSE
IP ADDRESS: 10.102.134.155 - Remote Run
DUB RING STATUS: NORMAL
RING SUPERVISOR: ACTING AS ACTIVE SUPERVISOR
NETWORK TOPOLOGY: RING NETWORK TOPOLOGY EN

REID BROOK POWERHOUSE
IP ADDRESS: 10.102.134.148 - Remote Run
REDUNDANCY CHASSIS A: SYNCHRONIZED SECONDARY
REDUNDANCY CHASSIS B: PRIMARY
DUB RING STATUS: NORMAL
RING SUPERVISOR: ACTING AS ACTIVE SUPERVISOR
NETWORK TOPOLOGY: RING NETWORK TOPOLOGY EN

GENERATOR 10.102.134.155

? NETWORK DIAGNOSTICS X

MISC.
This section is where you can navigate to view reports, adjust Load Shed Settings and any other miscellaneous information.

ALL CONTROLS

LOAD SHED SETTINGS

REPORT

ENG EXERCISE

ATS

NETWORK

LIGHT / DARK



2.07 Tablet Access - Optional

Having Tablet Access is important in this industry because it provides flexibility to operate the System at a distance from the Switchgear. For Users who desire the added convenience and safety of operating their system with a tablet, we offer this feature. The experience will be the same as if you're in front of the switchgear HMI. At Caterpillar our focus is SAFETY and that doesn't just apply to our employees, that also extends to our customers.

JOINT COMMISSION GENERATOR REPORT: G01

Generated on 2020/2/18 at 14:15:43

| | 14:11:31 | 14:11:36 | 14:11:41 | 14:12:41 | 14:13:41 | 14:14:41 |
|---------------------------|-------------|-----------|---------------|----------|----------|----------|
| | Run Request | CB Closed | Start of Test | Stage 1 | Stage 2 | Stage 3 |
| (V) Voltage A - B | 0 | 0 | 0 | 0 | 0 | 0 |
| (V) Voltage B - C | 0 | 0 | 0 | 0 | 0 | 0 |
| (V) Voltage C - A | 0 | 0 | 0 | 0 | 0 | 0 |
| (A) Amps A | 0 | 0 | 0 | 0 | 0 | 0 |
| (A) Amps B | 0 | 0 | 0 | 0 | 0 | 0 |
| (A) Amps C | 0 | 0 | 0 | 0 | 0 | 0 |
| (Hz) Frequency | 0 | 0 | 0 | 0 | 0 | 0 |
| (kW) Kilowatts | 0 | 0 | 0 | 0 | 0 | 0 |
| (Deg F) Coolant Temp | 0 | 0 | 0 | 0 | 0 | 0 |
| (Deg F) Exhaust Temp 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| (Deg F) Exhaust Temp 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| (psi) Oil Pressure | 0 | 0 | 0 | 0 | 0 | 0 |
| (psi) Filtered Oil Press. | 0 | 0 | 0 | 0 | 0 | 0 |
| (psi) Fuel Pressure | 0 | 0 | 0 | 0 | 0 | 0 |
| (rpm) Engine Speed | 0 | 0 | 0 | 0 | 0 | 0 |
| (hrs) Engine Hours | 0 | 0 | 0 | 0 | 0 | 0 |
| (%) Engine Load | 0 | 0 | 0 | 0 | 0 | 0 |

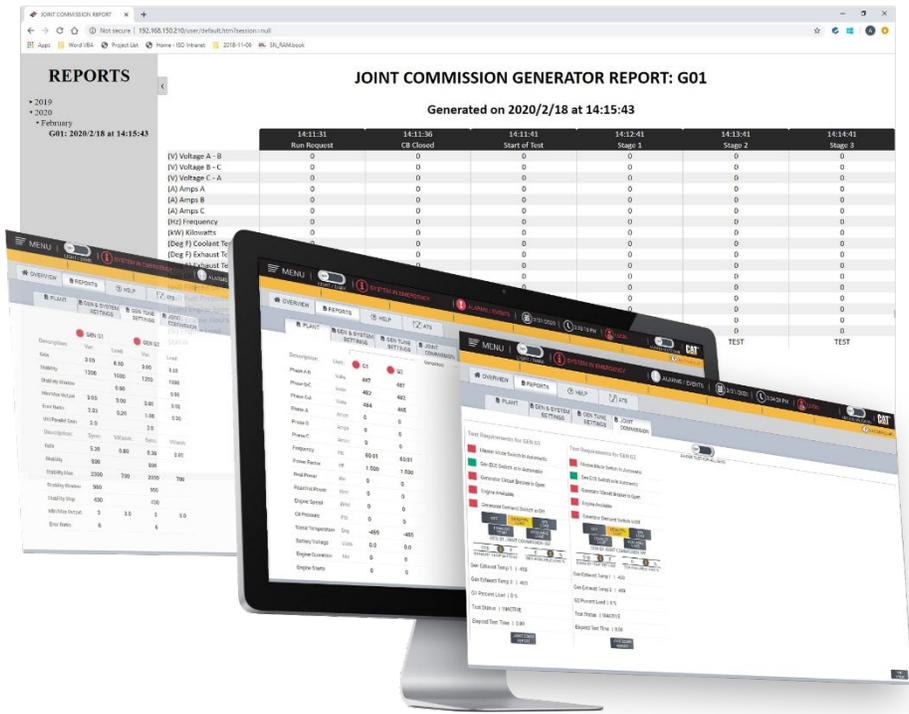


Section III. Advanced GUI / HMI Capabilities

3.01 Advanced Analytics – Reports

In the United States, the Centers for Medicare & Medicaid Services, reporting through to the Secretary of the Department of Health and Human Services (DHHS), have the responsibility to certify if a hospital or healthcare provider is approved to receive Medicare and/or Medicaid funding. That report is the Joint Commission Report and NFPA 110 provides guidance for emergency power system testing. Cat Switchgear HMI automatically compiles and evaluates operating data and prepares corresponding reports. The Joint Commission states that over 82% of all hospitals in the US are accredited. For those hospitals that have received, and plan to keep, Joint Commission accreditation, the elements of performance outlined in the Environment of Care Chapter must be met. We automate the report to reduce opportunity for human error and simplify / streamline the process?

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Total System Plant Report, Generator Tuning and Settings Reports are also available in our basic systems. More complex systems include ATS Report, Emissions Report, Generator Fault Analysis Report and any other custom solutions.

NFPA 110

NATIONAL FIRE PROTECTION ASSOCIATION

The leading information and knowledge resource on fire, electrical and related hazards

CODES & STANDARDS

ELECTRICAL SOLUTIONS

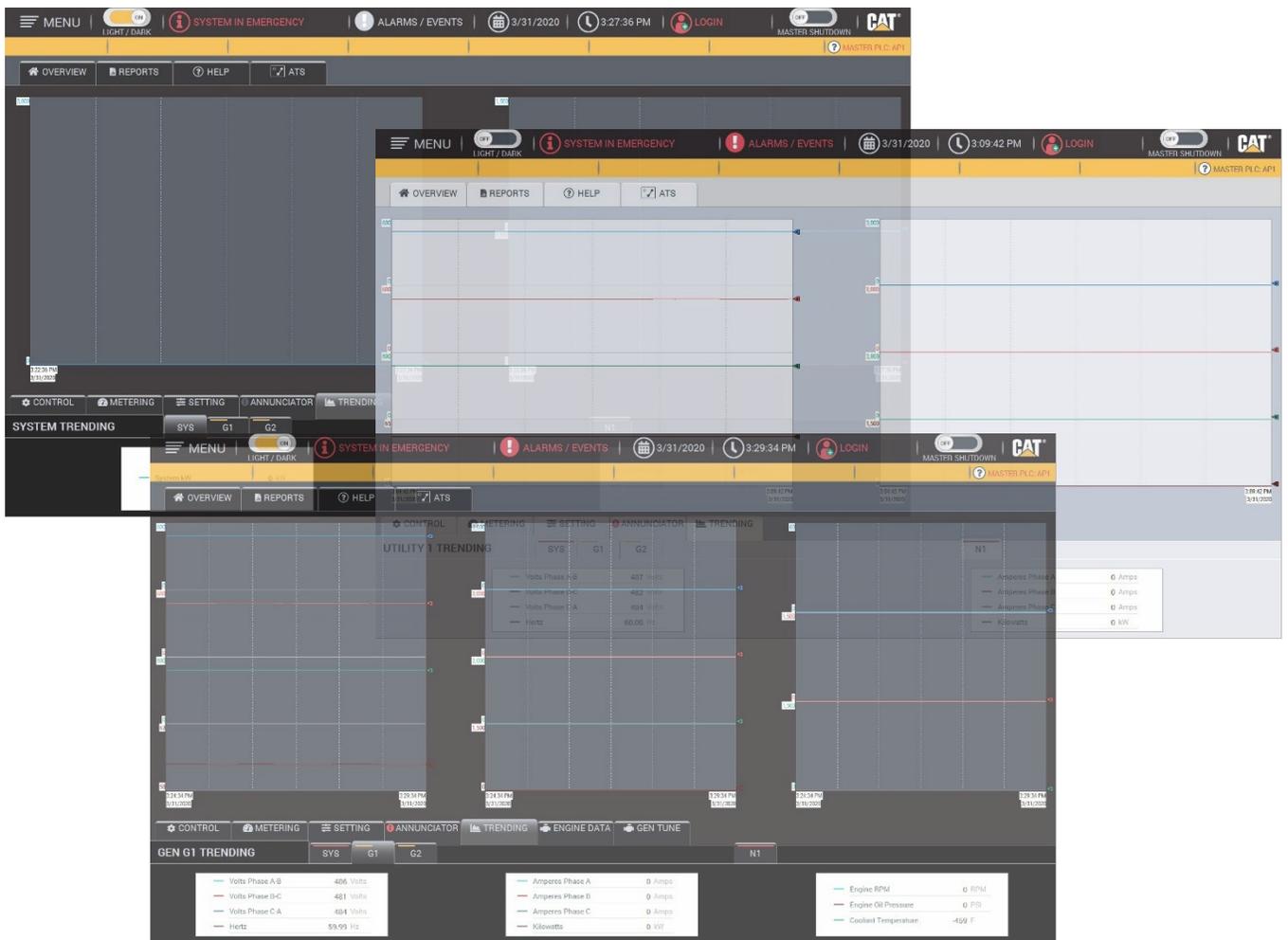
NEWS & RESEARCH

TRAINING & CER



3.02 Trending

The Cat Switchgear HMI offers several levels of trend analysis for assessing power equipment performance. Trending screens for essential power information, Utility information and System (total Generator) information. Historical Trending is available upon request. Typically, 6 months of historical data is saved via a DAT file and creates a new file each day that can be opened with Excel or other data analysis applications.





Custom Trending are available as well. Our customers have access to all the tags within the HMI and can create their own trends. You can choose between live tags or historical tags and create endless amounts of trends that compares historic information from one device or concurrent data from multiple units.

The screenshot displays the CAT HMI interface. At the top, there is a status bar with 'MENU', 'LIGHT/DARK', 'SYSTEM IN EMERGENCY', 'ALARMS / EVENTS', '4/16/2020', '2:15:50 PM', 'LOGIN', and 'CAT'. Below this is a navigation bar with 'OVERVIEW', 'REPORTS', 'HELP', and 'ATS'. The main area shows a 'Live Data' tree on the left with folders for 'ANIMATIONS', 'ANNUN', 'ATS', 'DATA', 'DIST', 'ET1', 'ET2', 'ET3', 'ET4', 'ET5', and 'ET6'. A central chart displays a blue line graph with a y-axis ranging from -7.50 to 60.00. A 'Properties' dialog box is open on the right, showing the 'General' tab. The 'Trace' section is active, with 'Visible' checked and 'Caption' unchecked. The 'Tag' field contains '{G1METERING\HMI_KVARH}'. The 'Style' section has 'Line' selected. The 'Display' section has 'Trace line' checked. The 'Plotting algorithm' section has 'Sample and hold' selected. The 'Point markers' section has 'Shape' set to 'Star', 'Color' set to 'R: 0, G: 0, B: 0', and 'Size' set to '2'. The 'Numeric tags' section has 'Format' set to 'Decimal' and 'Precision' set to '2'. The 'Discrete and time tags' section has 'Enable shading' checked and 'Use trace color' unchecked. A table at the bottom of the dialog shows the following data:

| Tag | Historical Model | ... | Style | Axis M |
|------------------------|------------------|-----|-------|--------|
| {G1METERING\HMI_KVARH} | | | S.9 | |
| {G1METERING\HMI_KWH} | | | | -1.0 |
| {G1METERING\HMI_KVAR} | | | | 7.3 |

Two circular callouts highlight specific elements: one points to the 'Live Data' tree, and another points to the 'Properties' dialog box. A third circular callout highlights a list of tags in the bottom left corner:

- HMI_BUS_REF_HZ
- HMI_BUS_VOLT_AB
- HMI_HZ_FREQ
- HMI_KVAR
- HMI_KVARH
- HMI_KW
- HMI_KWH
- HMI_PF

3.03 Generator Demand

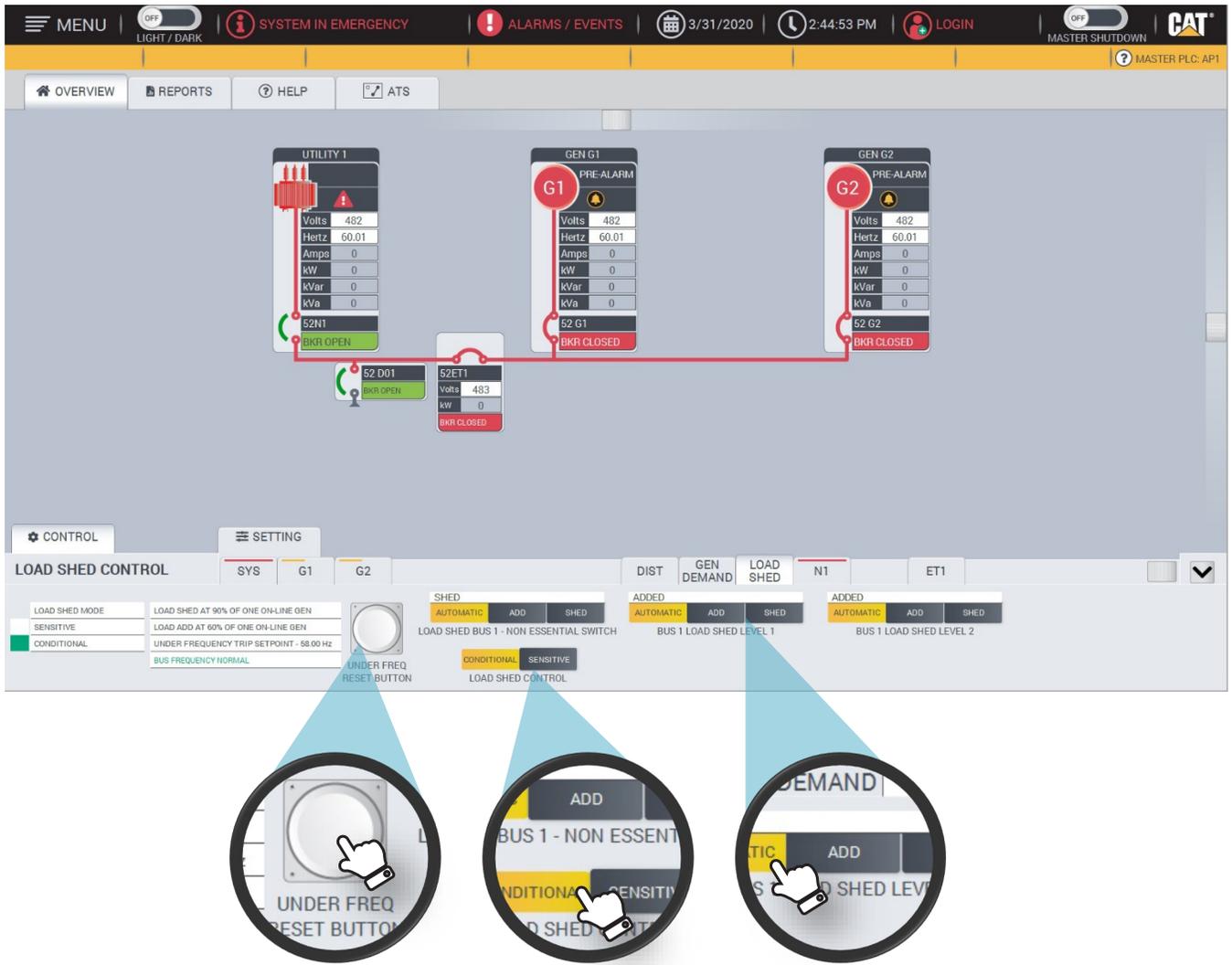
The Generator Demand Screen allows the operator to make the most efficient use of available Genset capacity. Upon entrance into Emergency or Load Management modes, all generators shall be started and paralleled to the bus. After the adjustable Remove Time Delay, generators shall be removed from the bus in descending priority order (i.e. Generator Priority #3 removed first, Generator Priority #2 removed second) when the bus load drops under the Remove Setpoint of each Generator. The remove setpoint is a function of the generator kW rating minus a minimum reserve Setpoint as well as Remove differential.



Simply set the Priority, turn on the Generator Demand Switch and you're done. Additionally, you can choose to allow priority to be set by Generator Hours by moving the Select Method Hours switch to the On position.

3.04 Load Shed Scheme

The Load Shed Control shall have one Essential Load Shed Priority Level for each generator in the system plus one Non-Essential Load Shed Priority Level (which is always shed in the Emergency Mode of operation). The Load Shed Control shall provide a 4 pole, 10A, 120VAC rated, form C set of contacts for each Load Shed Priority Level to allow the control of loads external to the Emergency Generator Paralleling Switchboard.

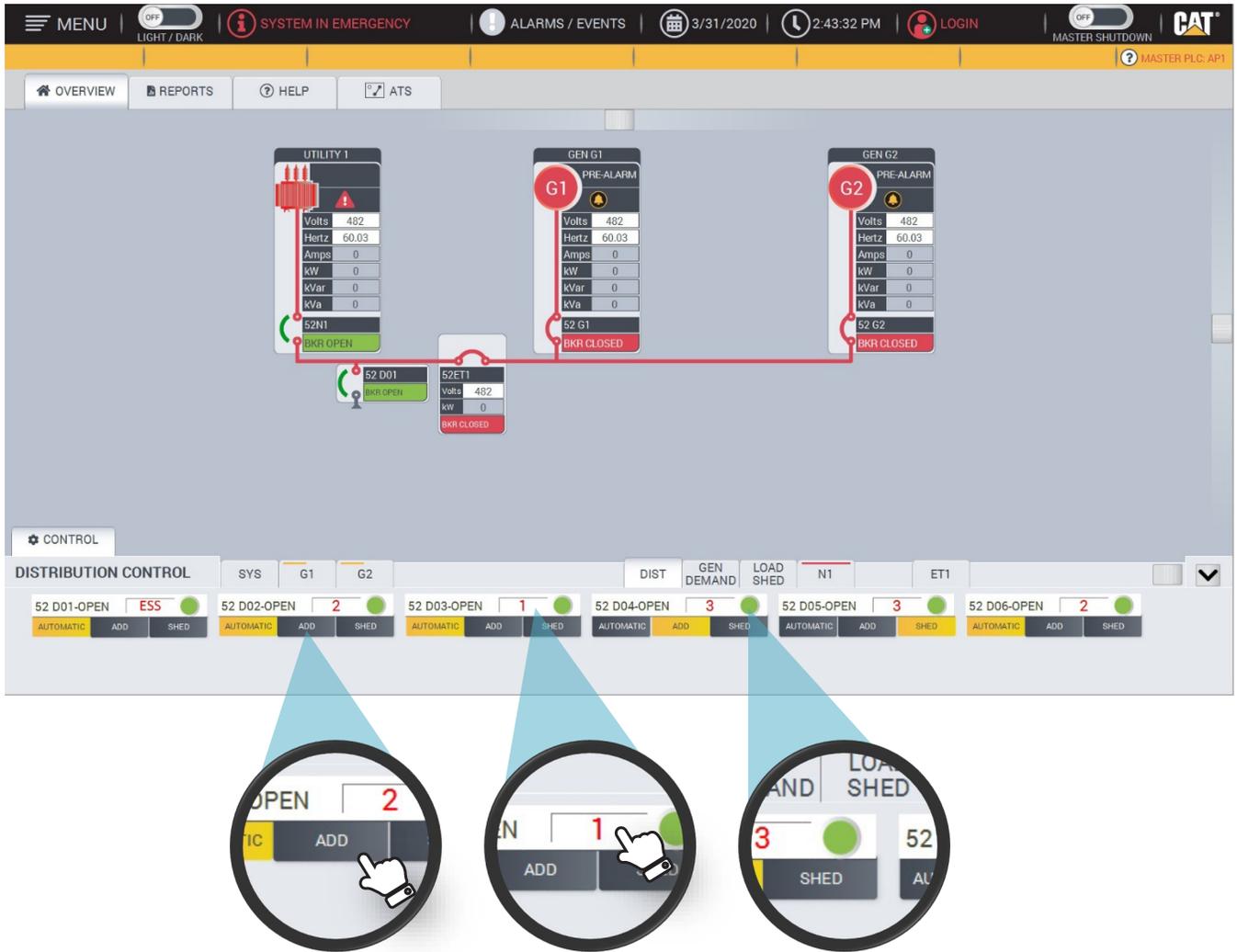


Conditional Load Shed: Upon entrance into Emergency Mode of operation, the Load Shed Control shall shed all Non-Essential loads. As generators come to the bus, Non-Essential Priority Level loads shall be added based on the number of generators online.

Load Sensitive Load Shed: After all generators have been given enough time to come to the bus, load shed shall shift to “Load Sensitive” mode. The system shall compare current generator on-line capacity (in kW) to current load requirements. If surplus capacity is greater than the calculated Load Add Setpoint, after the Load Add Time Delay the next Load Shed Priority will be added.

3.05 Distribution Control

Distribution controls are located on the Distribution Control Screen. The three select buttons also allows a load shed setting to be placed on each individual distribution breaker with electrical control. *Note: If after 3 seconds the breaker has not operated the controller output will no longer pulse and the Distribution Control Switch must be reset to AUTO and then placed in the position of desired operation.



Basic operations on the Distribution Control Switch:

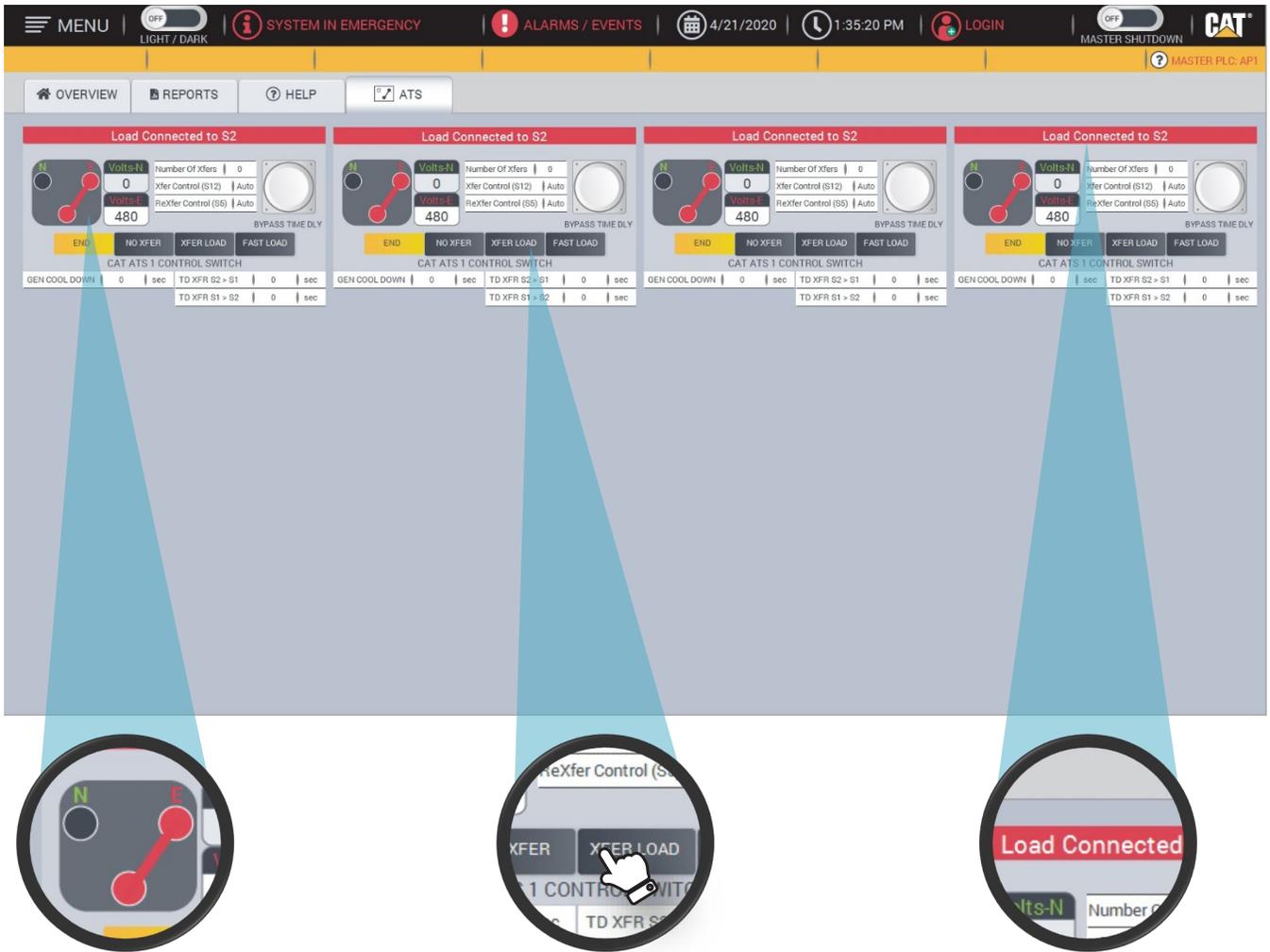
- Add: This position will close the distribution breaker.
- Shed: This position will open the distribution breaker.
- Auto: This position will allow for automatic operation via the load-shed/add scheme.
- Essential/ Non-Essential: Places Circuit Breaker in Essential or Non-Essential condition.

Breaker status is also shown on the distribution control switch.

Touching the Shed level button allows the operator to select the desired load shed level.

3.06 Transfer Switch Detail Screen

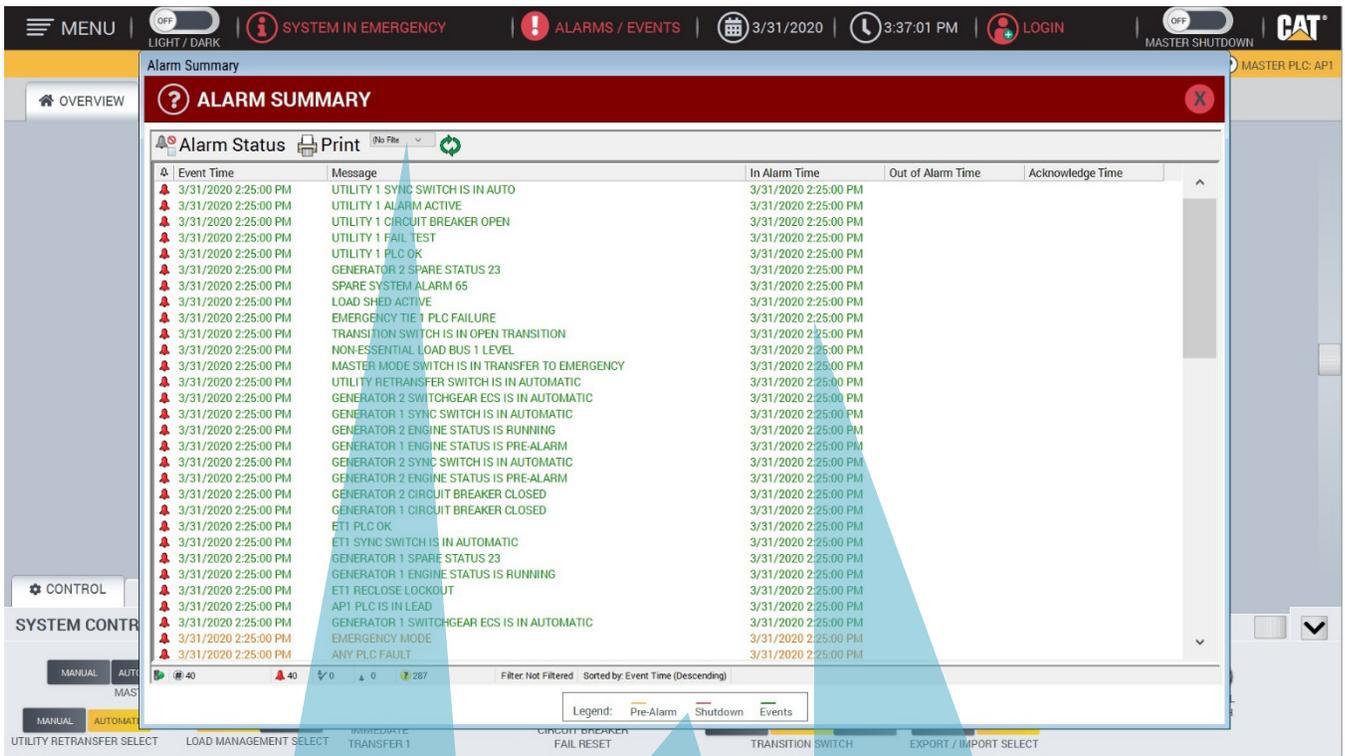
The Cat Automatic Transfer Switch (ATS) Screen is configured to display information for numerous Automatic Transfer Switches communicating over a RS-485 serial Modbus or Modbus TCP/IP network. Primarily designed to monitor the Cat Automatic Transfer switches, however the screens can also be custom programmed to accept other manufacturers Automatic Transfer Switches. This will require information regarding the Modbus communications and access to the Modbus registry.



Control and available details from the ATS (position, status, timers and metering) are shown for each switch.

3.07 Alarms and Events

The Cat Switchgear HMI provides advanced capabilities for recording and assessing historical data about critical power equipment, conditions, and events. This screen displays tracked events and alarm records that include Alarm Severity, Event Time, Message, In and Out of Alarm Time and Acknowledge Time. The alarms and events are saved in a file that can be opened in Excel or other data analysis applications.



Each individual component with an annunciation system can be filtered to view only the alarm information pertaining to that component.

3.08 Built-in Security

For system protection the Cat Switchgear HMI System requires your Username and Password. Every button, switch, setting, etc. is protected until the operator signs in with the proper credentials. Once the operator signs in it is logged into the Alarm / Events Summary. There's also an inactivity timeout input that is settable from the System Settings Screen. Once the inactivity timeout is activated the HMI will automatically navigate to the Screensaver Screen and automatically logout the operator. That way, access to the important commands is protected instantly. The Login icon changes color from Red to Green when the correct Username and Password is entered. If you are not logged in and touch a switch or button, a popup will appear that will inform you that you have to login in order to initiate commands.

The screenshot displays the Cat Switchgear HMI interface. At the top, a status bar shows 'SYSTEM IN EMERGENCY', 'ALARMS / EVENTS', the date '3/31/2020', time '2:26:43 PM', and a red 'LOGIN' button. Below this, a navigation menu includes 'OVERVIEW', 'REPORTS', 'HELP', and 'ATS'. The main area shows three panels: 'UTILITY 1' (BKR OPEN), 'GEN G1' (PRE-ALARM, BKR CLOSED), and 'GEN G2' (PRE-ALARM, BKR CLOSED). A 'SYSTEM CONTROL' section at the bottom contains various buttons and knobs, including 'IMMEDIATE TRANSFER 1'. A circular callout highlights the 'LOGIN' button in the top right. Another callout highlights the 'IMMEDIATE TRANSFER 1' knob, which has triggered a 'Login' popup window.

The 'Login' popup window contains the following text:

LOGIN TO INITIATE COMMANDS.

CAUTION!
YOU ARE NOT LOGGED IN. YOU HAVE TO LOG IN TO INITIATE ANY COMMANDS.

A 'LOGIN' button is located at the bottom of the popup.

3.10 Engine Exerciser – Optional

The Engine Exerciser screen allows the operator to schedule a day and time to run all engines on a Utility Fail Test. All engines will start, parallel to the bus, and generator circuit breakers will close. The engines will run until the specified time elapses.

The screenshot shows the 'ENGINE EXERCISER' screen within the CAT control system. The interface includes a top navigation bar with 'MENU', 'SYSTEM IN EMERGENCY', 'ALARMS / EVENTS', a date/time display (4/29/2020, 3:21:59 PM), and 'LOGIN'. A sidebar on the left contains sections for 'GENERATOR', 'SYSTEM', 'UTILITY', 'EMERG. TI', 'DISTRIBUT', and 'MISC.'. The main area features a 'GEN NO LOAD TEST SWITCH' and a 'Day Selection' table for 'JANUARY'. The table lists days from Day 01 to Day 31, with 'Day 01' selected as 'ISLAND' and others as 'OFF'. An 'End Time' field is set to '0 Hr 0 Min 0 Sec'. Below the table is a month selection bar. Three callout circles with hand icons point to the 'January' month button, the 'ISLAND' day button, and the 'End Time' field.

| Day Selection: | JANUARY | Start Time: | End Time: | Day Selection: | JANUARY | Start Time: | End Time: |
|----------------|---------|------------------|-----------|----------------|---------|-------------|-----------|
| Day 01 | ISLAND | 0 Hr 0 Min 0 Sec | | Day 16 | OFF | | |
| Day 02 | OFF | | | Day 17 | OFF | | |
| Day 03 | OFF | | | Day 18 | OFF | | |
| Day 04 | OFF | | | Day 19 | OFF | | |
| Day 05 | OFF | | | Day 20 | OFF | | |
| Day 06 | OFF | | | Day 21 | OFF | | |
| Day 07 | OFF | | | Day 22 | OFF | | |
| Day 08 | OFF | | | Day 23 | OFF | | |
| Day 09 | OFF | | | Day 24 | OFF | | |
| Day 10 | OFF | | | Day 25 | OFF | | |
| Day 11 | OFF | | | Day 26 | OFF | | |
| Day 12 | OFF | | | Day 27 | OFF | | |
| Day 13 | OFF | | | Day 28 | OFF | | |
| Day 14 | OFF | | | Day 29 | OFF | | |
| Day 15 | OFF | | | Day 30 | OFF | | |
| | | | | Day 31 | OFF | | |

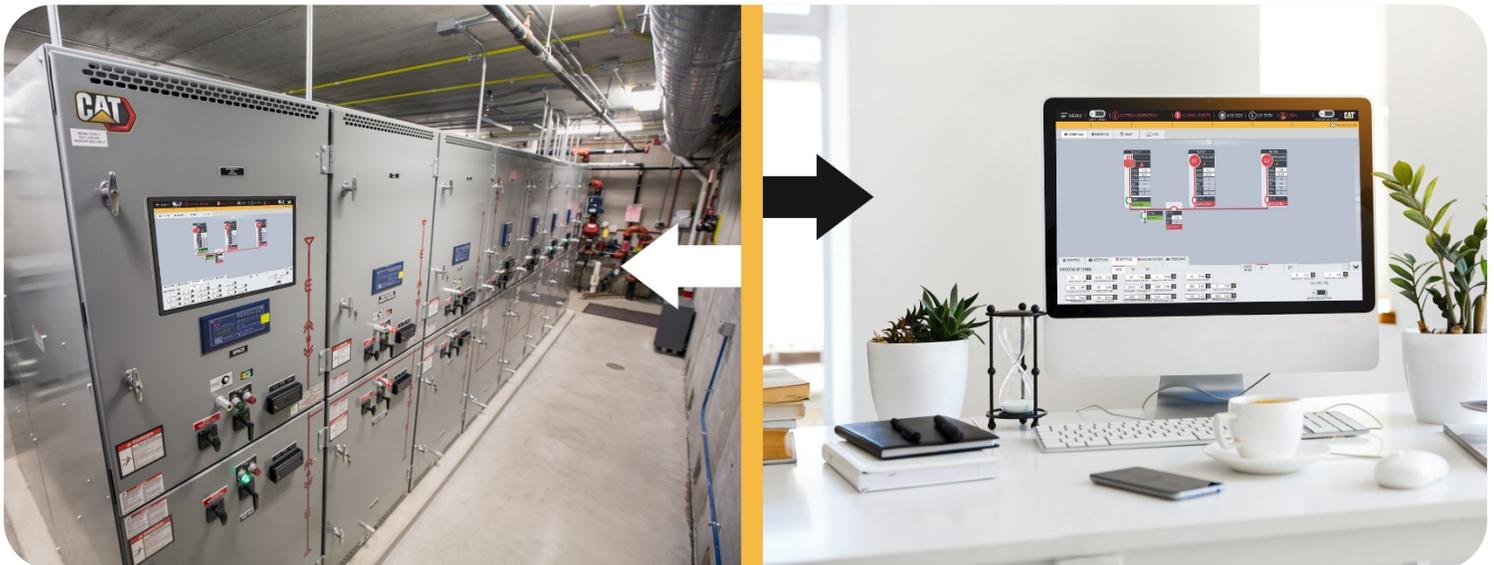
To setup the schedule simply choose the desired Month first. Proceeded by selecting the desired days next. Lastly, select the desired duration time of the test. The Engine Exerciser uses Military Time.



3.11 LAN / Fiber connected Remote - Optional

For customers needing remote access we typically provide Local Remote Access via an Ethernet connection or Fiber connection. A Server / Client connection is established through the HMI Software and the remote computer. The remote computer should have Antivirus software loaded, by the End User, for protection. Some applications provide connections via a web browser, instead of a Server / Client connection.

To minimize data loss and down time, and to help ensure that critical parts of your system are always available to connected clients, we provide the health monitoring and redundancy features. In process monitoring and control automation, redundancy refers to the ability of the system running the process to continue working correctly, when parts of the system become unavailable or fail. In our network distributed application, we can set up redundancy on paired computers, for critical components such as HMI servers. One computer in the pair hosts the primary server, and the other hosts the secondary (or backup) server. In the event that the primary HMI server cannot provide service to application clients, the system switches to the secondary server, and the clients continue to function normally. There is no need to restart client or active server computers. Contact your Dealer for more information about these and other availability features.





3.12 Remote Support – Tech-Link - Optional Service & Support You Can Rely On

Tech-Link is an intelligent remote access system that serves as an endpoint for secure remote connections. The system is a service tool that allows code-level support from our factory engineers. Devices connected to Tech-Link are securely accessed over the Internet and most LAN and WAN networks through an encrypted VPN connection. Tech-Link is NAT and firewall friendly. Tech-Link is especially designed for industrial environments with its robust housing.

Flexibility:

- Provides a pathway to load future software changes or activate additional features remotely
- Accessibility is not limited by Windows updates or other programming software versions

Velocity:

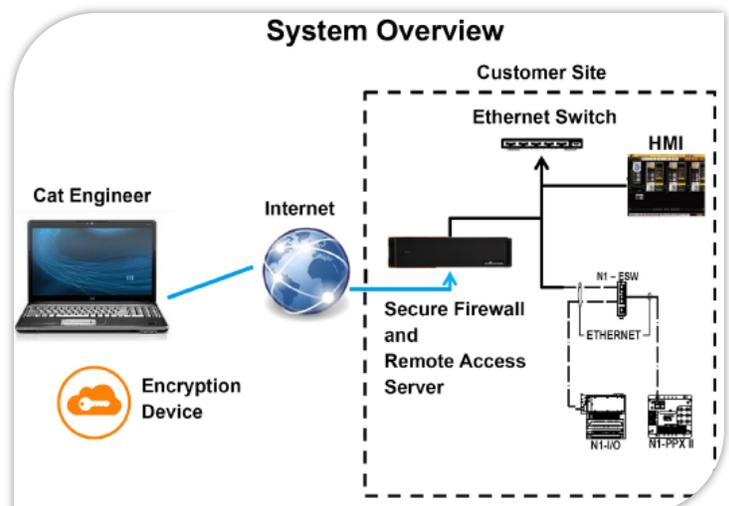
- Provides immediate factory support at the code level
- May reduce Switchgear startup time

Accessibility:

- Compatible with all Internet Connections
- Optional cellular connection available
- Project specific software resides directly on the Remote Access Server (RAS) for reliable updates

Security:

- Audited, Tested, and Secured with a physical firewall
- Access is not password dependent
- A security team manages the security key access





Section IV. Options

4.01 Key Features and Options

Below are the key features that are offered with our GUI / HMI Systems. We are custom solutions integrators, so our scope goes beyond what's listed below. Ask your Dealer for more information.

| Key Features / Options | Standard HMI | Enhanced HMI | Advanced HMI |
|----------------------------|--------------|--------------|--------------|
| System Features: | | | |
| Alarms and Events: | | | |
| Real Time | ✓ | ✓ | ✓ |
| Historical | | ✓ | ✓ |
| Trending: | | | |
| Real Time | ✓ | ✓ | ✓ |
| Historical | | ✓ | ✓ |
| Custom | | | ✓ |
| Reports: | | | |
| Standard | ✓ | ✓ | ✓ |
| Joint Commission | | ✓ | ✓ |
| Custom | | | ✓ |
| Engine Exerciser | | ✓ | ✓ |
| Tech-Link - Remote Support | ✓ | ✓ | ✓ |
| Network Diagram | | ✓ | ✓ |
| Tablet Access | | ✓ | ✓ |
| Redundant HMI | | ✓ | ✓ |
| Built-In Security | ✓ | ✓ | ✓ |
| Alerts and Notifications | | ✓ | ✓ |
| Control Center Navigation | | | ✓ |
| Light / Dark Mode | | | ✓ |
| Tooltips | | | ✓ |
| Help Files | | | ✓ |
| Clean Screen Mode | | | ✓ |
| Screen Saver Mode | | ✓ | ✓ |

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