



# EcoStruxure™ Grid Operation

# Agenda



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Key features

Benefits

High-level Roadmap

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# Industry Drivers

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# Industry drivers

Tighter budget constrains

Deployment of intelligent (grid automation) devices

Customer satisfaction

Accurate regulatory reporting

Limited resources

Cybersecurity risks

Situational awareness

Climate impacts

Crew and public safety

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# Offer Description



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# Grid Operations Management Portfolio

Enterprise solutions for the Grids of the Future



## ADMS

Realtime and look-ahead operations and planning



## DERMS

Optimization of DER to maximize grid flexibility



## Grid Operation

Boosting operational efficiency and reliability & resilience



## SCADA/EMS

Security assessment, network analysis & optimization



## AGMS

Natural gas grid operations management



State-of-the-art solutions for enabling clean energy transition



# Offer Description

*Value-driven, customer-focused, modern deployment approach*

For small & small-to-medium utilities who seek ways to maximize **operational efficiency** and improve **reliability & resilience** while reducing investments, **EcoStruxure™ Grid Operation\*** is a grid operations solution that provides unique set of integrated tools for managing **grids of the future**.

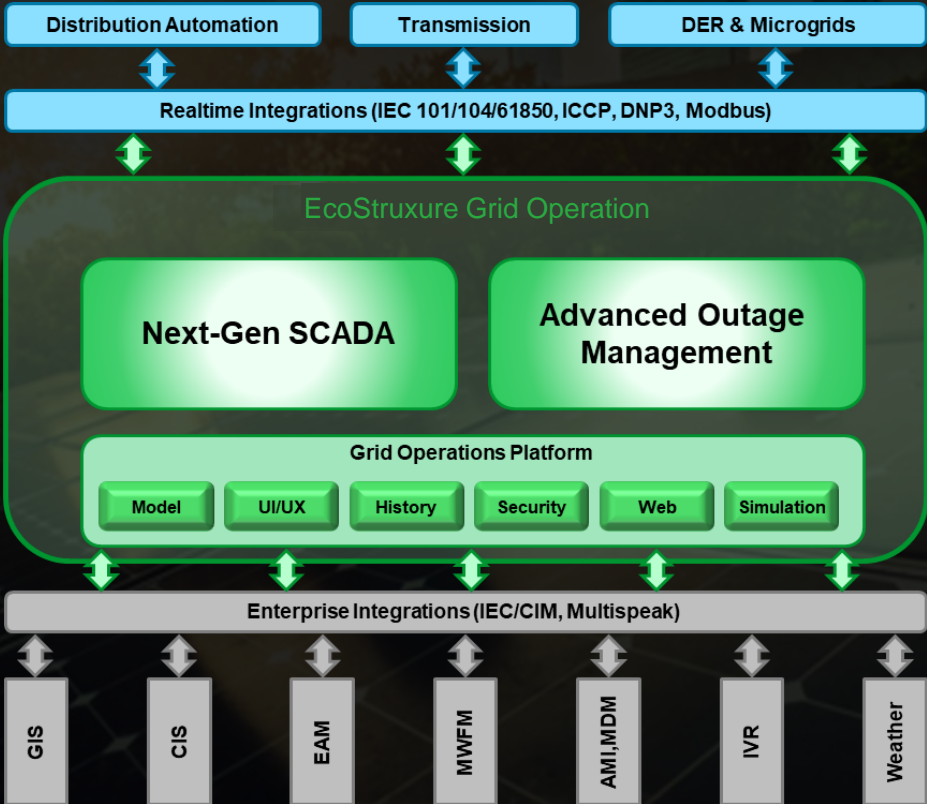
Unlike other mini-ADMS systems, **EcoStruxure™ Grid Operation** is a scalable and future-proof solution, bringing cutting-edge SCADA and Outage Management technology that will pave the way for best-in-class ADMS in a stepwise approach.

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# Offer Description

## Solution overview



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# Offer Description

*Flexible deployment*



**Standalone  
OMS**



**Standalone  
SCADA**



**SCADA +  
OMS**

On-prem	✓	✓	✓
On-cloud	✓*		

\* Future option

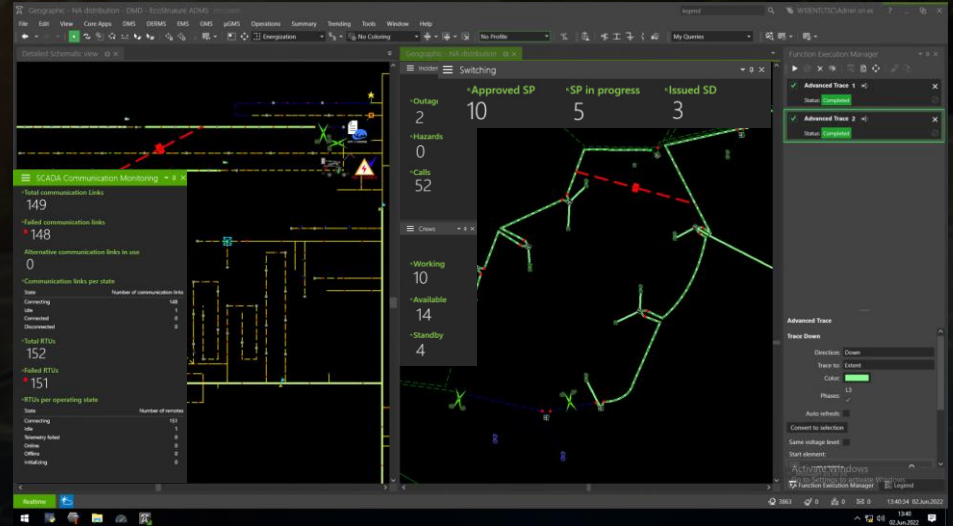
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# Offer Description

## Scalable platform

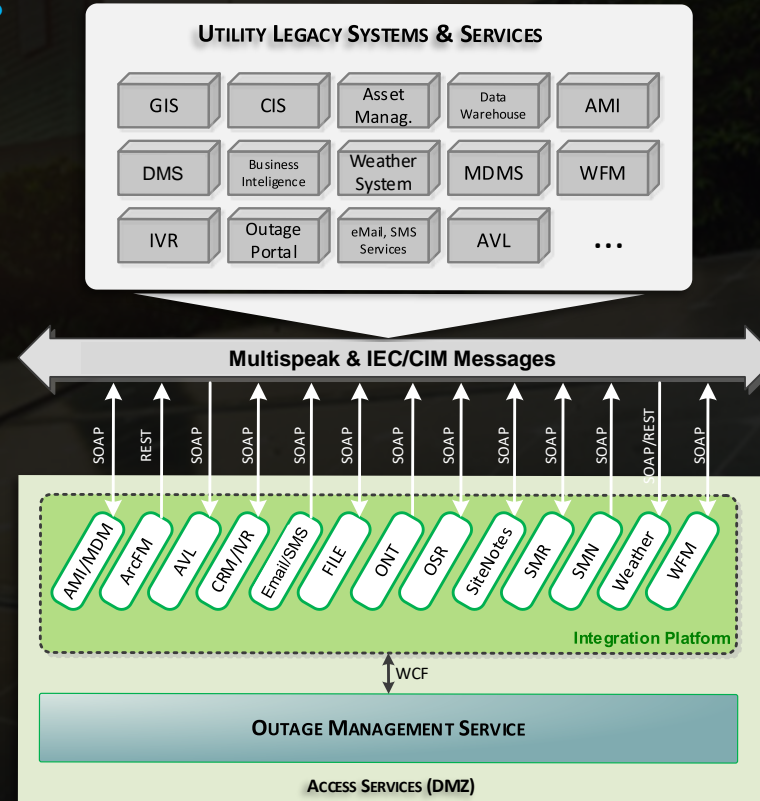
- Common User Interface
- Network Views
  - Geographic, Schematic, Substation, Autogenerated,...
- Real-time Topology
  - Dynamic symbols
- Temporary Elements
- Advanced Tracing
- Summaries
  - Carried by, Abnormal, Event, ...
- Trending
- Dashboards
- Native ArcFM GIS integration
  - GDB, UNM



# Offer Description

## Extensive, standards-based integration capabilities

- Minimize cost and risk
- Secure and reliable data exchange
- Interoperable technologies
- Micro-service like architecture
- Multispeak & IEC/CIM interfaces:
  - AMI/MDM
  - AVL
  - CRM/IVR
  - Proactive Outage Notifications (Email/SMS)
  - Outage Status and Reporting
  - Switching Management Notification and Reporting
  - Workforce Management
  - Weather







# EcoStruxure Grid Operation Advanced Outage Management – Key Features

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# Advanced Outage Management

*The most comprehensive outage management*

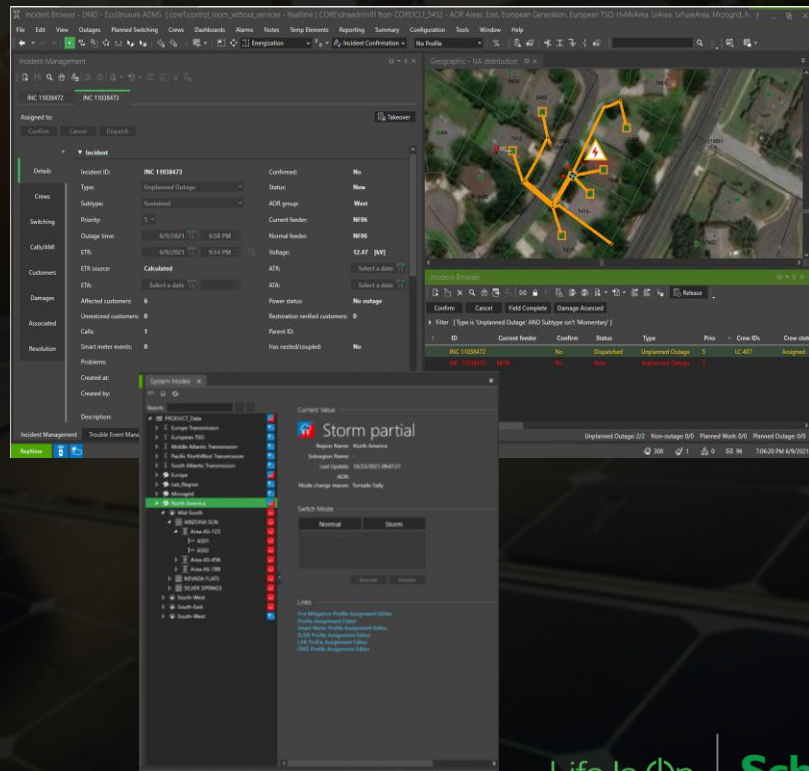


- Faster restoration time with incident management
- Improved visibility of customer complaints with trouble event management
- Safe and efficient end-to-end process with consolidated switching process
- Streamlined process for damage reporting
- Advanced reporting for simplified reliability reports
- Increased safety with as-operated state of the grid with field crew mobile app
- Boosted efficiency and awareness with proactive outage notifications

# Incident Management

*Faster restoration time*

- Industry terms: Incident, Trouble Order, Job, Ticket, etc.
- Incident types:
  - Outage – Unplanned, planned, load shedding, momentary
  - Non-outage – Hazards, Voltage issues
- Versatile configuration options
  - lifecycle, types, visualization, resolution fields, etc.
- Adaptive prediction engine
- Performant storm mode
- Embedded damage handling



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# Trouble Events Management

*Improved visibility of customer complaints & customer satisfaction*

- Embedded Web Call center
- Divers call sources
  - IVR
  - Customer portals
  - 3rd party applications
- Standards-based integrations
- Location-based and emergency calls
- Smart meters events and pings
- Automatically created callbacks

The image displays two screenshots of the EcoStruxure ADMS Call Center interface. The top screenshot shows the 'Customer details' page for a customer named Victor Torres. The page includes fields for 'First name' (Victor), 'Last name' (Torres), 'Account number' (116610000), 'Account type' (RESIDENTIAL), 'Connected status' (Connected), 'Priority' (Low), and 'SDP custom ID' (1166100928). The bottom screenshot shows the 'Submit customer call' page, which displays incident information for a power outage. The incident ID is INC 11038473, and the location is AFC 7412 AMANDA ELLIS WAY, Schneiderville. The outage time is 06/09/21 06:58 PM, and the estimated restoration time is 06/09/21 09:14 PM. The incident status is 'New', the incident type is 'Unplanned Outage', and the power status is 'No outage'. The device type is 'UG Transformer Fuse'. The page also shows a table of customer statistics: Customers (6), Unrestored crit. (0), Restoration verified (0), Calls (1), and Hazards (-).

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# Consolidated Switching

## Safe and efficient end-to-end process

- All-inclusive Work Request management
- Adaptable Switching Plans
  - Auto-generated & descriptive steps
  - Automatic validations
  - Single click simulation
- Integrated Safety Document
  - De-energized work
  - Energized work
- Intelligent Gantt chart
- Automated Outage report
  - Timely customer notification

**Work Request**

Assigned to: W10ENTAdmin

Submit

**Work request basic information**

Type: De-energized Work  
Status: Draft  
History: @

Incidents: ADR group: West\_group  
Emergency work:

Safety document type: Clearance  
Voltage level: 132 [kV]

Type of work: Equipment  
Continuous/Daily: Continuous

Start date/Time: 3/31/2018 15:00 AM  
End date/Time: 3/31/2018 15:00 PM  
Company: SE DMS  
Phone No.: 135-856

Created by: W10ENTAdmin  
Date/Time created: 3/30/2018 11:11

Purpose: Replacement of distribution transformer

Details

History of state changes

Multimedia attachments (0)

Requested equipment

No.	Station/feeder	Current feeder	Equipment
1	Milhopper	Milhopper 3r 1	

Isolation points

No.	Station/feeder	Current feeder	Isolation point
1	Milhopper		MH_LCB
2	Milhopper		MH_CB
3	Milhopper		MH_DISC
4	Milhopper		MH_DISC

Grounding points

Switching Plan

SP 11000001

Notes

**Switching Plan**

SP 19000090\*

Assigned to: dmscore\ivan.protic

Submit Ready Cancel

Release

Switching plan basic information

Coordinates

History of state changes

Multimedia attachments (0)

Switching steps

- 1 > loadbreaker\_352187342429 OPEN, Add 'Clearance Tag' tag
- 2 > loadbreaker\_352187342443 OPEN, Add 'Clearance Tag' tag
- 3 > SEC\_137438957849 Place temporary earthing (L1 L2 L3), Add 'Information Tag' tag
- 4 > SEC\_137438957849 Place temporary earthing (L1 L2 L3), Add 'Information Tag' tag
- 5 > SD 19000004 Proceed
- 6 > SEC\_137438957849 Remove 'Information Tag' tag, Remove temporary earthing (L1 L2 L3)
- 7 > SEC\_137438957849 Remove 'Information Tag' tag, Remove temporary earthing (L1 L2 L3)
- 8 > loadbreaker\_352187342443 Remove 'Clearance Tag' tag, CLOSE
- 9 > loadbreaker\_352187342429 Remove 'Clearance Tag' tag, CLOSE

# Crew Management

## Powerful & versatile

### ➤ Comprehensive crew data management

- Crews
- Members
- Vehicles
- Skills

### ➤ Optimal crew dispatching

- Incidents
- Switching Plans

### ➤ Adaptive, realtime visualization

- On assignment
- On location

### ➤ Flexible crew shift calendar

- Simplified resource planning

The screenshot displays the Crew Management software interface. The main window is titled 'Crew Management' and shows a map of a geographic area with various locations marked. A sidebar on the left provides details for a specific crew, LC 406, including its name, type (Line crew), company (Schneiderville Utility), and availability (Available). Below this, there are sections for 'Members' and 'Vehicles'. The 'Members' section lists several individuals with their member IDs, types, and contact information. The 'Vehicles' section lists a pickup truck with its status and radio ID. The bottom right corner features a 'Crew Browser' table with columns for Name, Crew ID, Type, Availability, Assignments, Work location, Working limit, and On site. The table lists various crew members and their current status and assignments.

Name	Crew ID	Type	Availability	Assignmen	Work location	Working limit	On site
Control room	CR	Other	On break	1			
Line crew 406	LC 406	Line crew	Available	1	UCGFMR 941941 B	Exceeded	
Line crew 403	LC 403	Line crew	Off work	0			
Damage assess	DA 2	Assessment crew	Off work	0			
Trouble crew 508	TC 508	Trouble crew	Available	0			
Damage assess	DA 5	Assessment crew	Off work	1	801CS		
Vegetation mana	VM 302	Tree crew	Off work	0			
Protection tech 2	TECH 202	Technicians/special	Off work	0			
Line crew 403	LC 403	Line crew	Available	0			



# Advanced Reporting

## Simplified creation of reports

- Out-of-the-box standardized reliability reports
- Additional data analytics for:
  - Incident history
  - Calls history
  - Customer interruptions history
  - Reliability analysis
- SQL Server Reporting Service
- Correctable historical data
  - Realtime
  - Study mode



# Real-time Field Client

*Increased safety with as-operated state*

- Web-based client for Field Crews
- Real time topology and awareness
- Improved safety and autonomy
- Online and offline mode
- Decreased control room workload
- Rich & structured assignments management:
  - Incidents
  - Switching plans
  - Outage and work request
  - Damage reporting
  - Ping/Poll meters
  - Access relevant historical data

The image displays three overlapping screenshots of the EcoStruxure ADMS Field Client web interface. The top-left screenshot shows a dashboard with sections for 'My Incidents' (1 Unplanned Outage, 0 Non-outage, 0 Planned Work, 0 Planned Outage), 'My Documents' (1 Incidents, 0 Damage Assessment Request, 1 Switching Plans, 0 Safety Documents), 'My upcoming ETR' (INC 11038473, Unplanned Outage, 06/09/21 9:14 PM), and 'My Switching Plans' (1, 0 Inquiring, 0 Ready for Execution, 1 Executing, 0 Completed). The top-right screenshot shows the 'Incident - INC 11038473' details, including fields for Incident ID, Type (Unplanned Outage), Subtype (Sustained), Priority (4), Status (Dispatched), Power status (No outage), Description, Location, and various customer-related metrics. The bottom screenshot shows a map view of a residential area with a network topology overlaid in yellow, highlighting a specific incident location marked with a red triangle.

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EcoStruxure Grid Operation  
Advanced Outage Management – Key Benefits

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# EcoStruxure Grid Operation

## Advanced Outage Management – Key Benefits



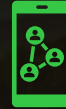
### Outage Management

*Globally field proven, fast restoration, intelligent prediction, comprehensive reporting*



### Switching Management

*Fully digitalized and secure, reduces control room workload and enhances safety & efficiency of field crews*



### Real-Time Field Client

*Single application for managing all types of work, improving crew safety, efficiency & real-time awareness*



### Proactive Outage Notifications

*Keep information-hungry stakeholders well informed all the time, while saving up to 1M€ yearly*

The background of the slide is a dark, low-key photograph. The upper portion shows a city skyline with several tall buildings, partially obscured by trees in the foreground. The lower portion shows a close-up, slightly blurred view of solar panels, highlighting their grid-like structure and reflective surfaces.

# EcoStruxure Grid Operation Next-Gen SCADA – Key Features

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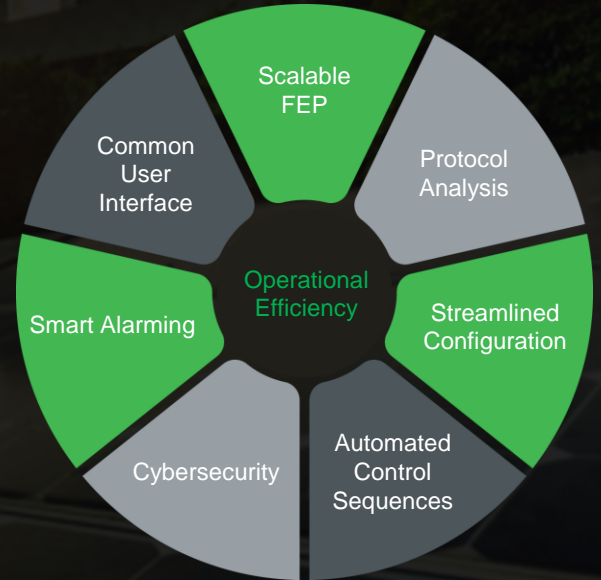
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# Best-in-class SCADA

## Key features

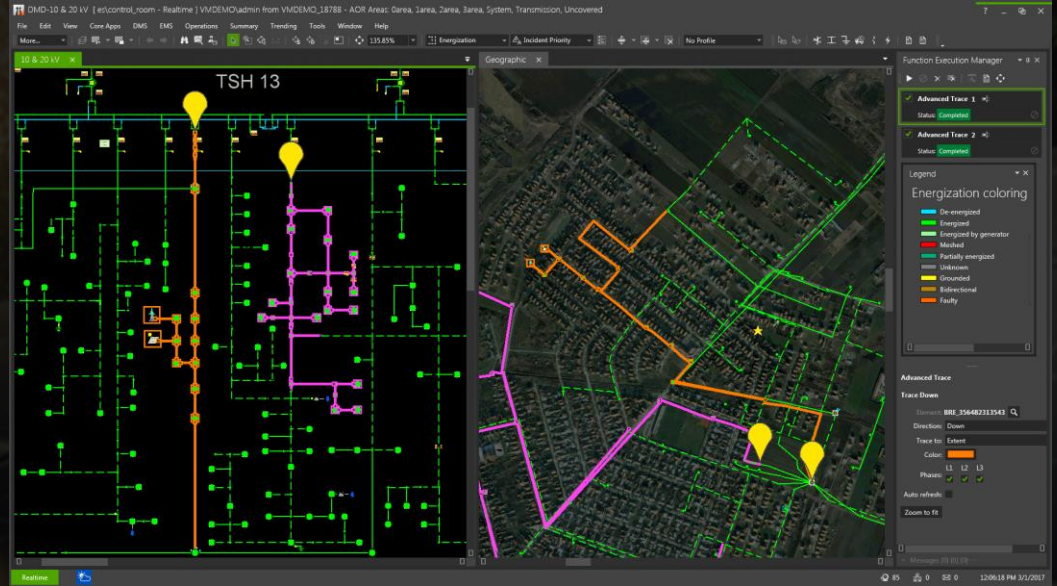
- Common user interface
- Unified network model management and maintenance
- High performance for large number of points
- Scalable Front-End Processing (FEP)
- Rich communication protocols portfolio
- Powerful communication troubleshooting tools
- Cyber Security – IEC 62351 standard series
- Smart alarming



# Common User Interface

## Truly Single Pane of Glass

- Single solution for monitoring, commanding, alarming, tagging
- intuitive navigation within substation, schematic and geographic displays
- Aerial photo and landbase information
- Integrated search



# Streamlined Configuration

Configure, validate and test SCADA data in a safe and efficient way

- Incremental changes of SCADA configuration
- Powerful engine for testing, validation and promotion
- Online changes without downtime
- Templated configuration

The screenshot displays the Telemetry Editor interface. The left pane shows a hierarchical tree of configuration elements under 'East region (Geographical region)'. The center pane is a table titled 'Remote Units' with columns for Name, Type, Location, Rank, Protocol, and Communication channel. The right pane shows the 'DNP3 Main remote unit Properties' for the selected 'KELLY DNP3 Main RTU'.

Name	Type	Location	Rank	Protocol	Communication channel
Innwood	RTU	Innwood	Sub	None	
New DNP3 Main remote unit	RTU	Innwood	Main	DNP3	
New DNP3 sub-remote unit	RTU	DW	Sub	DNP3	
New IEC104 Main remote unit	RTU	Innwood	Main	IEC104	
32823-LBS105	RTU	32823-LBS105	Sub	None	
32826-NONE737	RTU	32826-NONE737	Sub	None	
69993-LBS	RTU	69993-LBS	Sub	None	
IN2	RTU	IN2	Sub	None	
UNK4676-LBE1633L1	RTU	UNK4676-LBE1633L1	Sub	None	
45299-LBS108	RTU	45299-LBS108	Sub	None	
22028-DXL071	RTU	22028-DXL071	Sub	None	
New Remote ICCP configuration	RTU	BAV_JW	Main	ICCP	
New ICCP dataset / transfer set	RTU	BAV_JW	Sub	ICCP	
Kelly	RTU	Kelly	Sub	None	
New Remote ICCP configuration	RTU	Kelly	Main	ICCP	
New ICCP dataset / transfer set	RTU	Kelly	Main	ICCP	Test DNP3 channel
KELLY DNP3 Main RTU	RTU	KELLY	Main	DNP3	Test DNP3 channel
KELLY	RTU	KELLY	Sub	None	
McMichen	RTU	McMichen	Sub	None	
69891-3745R1	RTU	69891-3745R1	Sub	None	
MM1	RTU	MM1	Sub	None	
32999-LBS101	RTU	32999-LBS101	Sub	None	
19578-DXL195	RTU	19578-DXL195	Sub	None	
DE	ControlCenter	DE	Sub	None	
DE_FDRI3	RTU	DE_FDRI3	Sub	None	
FO_DE_GVR1	RTU	FO_DE_GVR1	Sub	None	
New DNP3 sub-remote unit	RTU	Innwood	Sub	DNP3	Test DNP3 channel

**DNP3 Main remote unit Properties**

- Enable initial integrity poll:  False
- Enable periodic remote poll:  False
- Time zone:
- Use DST:  False
- Enable periodic clock sync:  False
- Source address:
- Periodic clock sync cycle:
- Destination address:
- Class 1 unsolicited messages:  True
- Class 1 periodic poll:  False
- Class 1 poll cycle:
- Class 2 unsolicited messages:  False
- Class 2 periodic poll:  True
- Class 2 poll cycle:
- Class 3 unsolicited messages:  False
- Class 3 periodic poll:  True
- Class 3 poll cycle:

**Communication Links**

- Test DNP3 channel (DNP3 communication link)

**Data source:** Manual

**AQR group:**

**IP Address:** 0

**Connection retries:** 0

**Connection:** Test DNP3 channel

**Port:** 1

**Connection retry interval:** 10

**Cost factor:** 0

**Request timeout:** 10

**Remote unit:** KELLY DNP3 Main RTU

**Connection:** Test DNP3 channel

**TCP connect timeout:** 60

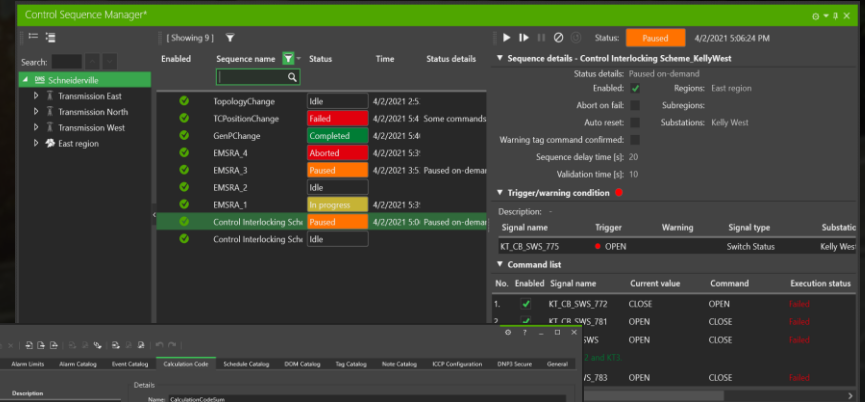


# Automated Control Sequences & Calculations

*Avoid unsafe, repetitive & error-prone operations*

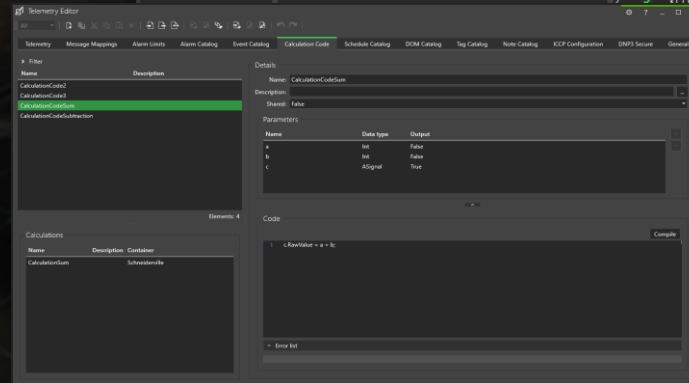
## ➤ Automated Control Sequences

- Create and execute advanced control and automation schemes
- On demand and condition-based execution
- Define exit criteria
- In depth sequence execution monitoring



## ➤ Generic Calculation Engine

- Points calculation based on static and dynamic model
- Simple drag & drop from display to the calculation
- Time/event driven execution
- Generate alarms, placing tags, issue commands towards RTUs, etc.



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# IEC 61850

*First ever to speak natively via IEC 61850*

## ➤ Harmonized communication with IEDs\*

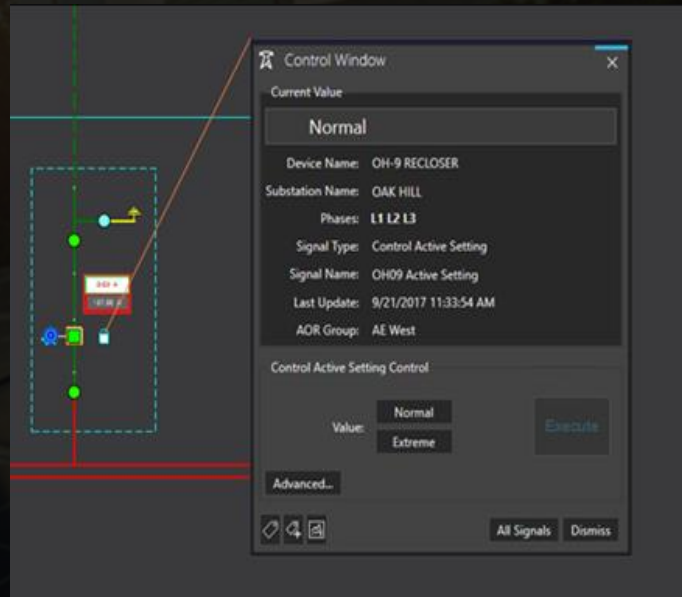
- Direct/indirect access
- Data acquisition
- Supervisory control
- Communication
- Troubleshooting
- IEC 62351 compliant

## ➤ Streamlined configuration

## ➤ Simplified testing

## ➤ Reduced costs

- No protocol converters
- Less wiring



\* IED – Intelligent Electronic Device

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# Off-the-shelf Protocol Analyzer

## Comfortable and fast troubleshooting

- Real-time & offline analysis
- Available directly from the workstation
- Improved cybersecurity
- Network model-aware navigation
- Raw & human readable protocol traffic
- Powerful filtering
- Encrypted packages analysis

The screenshot displays the Protocol Analyzer application window. The top bar shows the device name 'Ironwood', connection 'RCC\_Secure1', and protocol 'IEC104'. The main table lists protocol traffic with columns for process time, field time, direction, RTU address, remote point, coordinate, field value, quality, message type, and additional info. Below the table, a detailed view of a protocol data unit is shown, including application control information and service data unit details.

Process time	Field time	Direction	RTU address	Remote point	Coordinate	Field value	Quality	Message type	Additional Info
10/15/2019 02:13:37:623 PM		From RTU	1	IW1_MEAS_RPW_591_RP	144	208.633	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation
10/15/2019 02:13:37:623 PM		From RTU	1	IW1_MEAS_APW_591_RP	143	-419.6559	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation
10/15/2019 02:13:37:623 PM		From RTU	1	IW3_MEAS_APW_593_RP	146	533.4209	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation
10/15/2019 02:13:37:623 PM		From RTU	1	IW2_MEAS_APW_592_RP	147	790.4802	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation
10/15/2019 02:13:37:623 PM		From RTU	1	IW1_MEAS_APW_594_RP	148	-424.0797	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation
10/15/2019 02:13:37:659 PM		From RTU	1	IW1_MEAS_I_001	187	0	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation
10/15/2019 02:13:37:659 PM		From RTU	1	IW1_MEAS_Q_001	188	0	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation
10/15/2019 02:13:37:659 PM		From RTU	1	IW4_MEAS_APW_896_RP	189	10.10714	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation
10/15/2019 02:13:37:659 PM		From RTU	1	IW4_MEAS_RPW_803_RP	190	4.1909999	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation
10/15/2019 02:13:37:659 PM		From RTU	1	IW4_MEAS_APW_893_RP	191	10.11717	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation
10/15/2019 02:13:37:659 PM		From RTU	1	IW4_MEAS_RPW_800_RP	192	4.1892375	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation
10/15/2019 02:13:37:659 PM		From RTU	1	IW4_MEAS_APW_890_RP	193	10.11766	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation
10/15/2019 02:13:37:659 PM		From RTU	1	IW4_MEAS_RPW_807_RP	194	4.183668	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation
10/15/2019 02:13:37:733 PM		From RTU	1	IW1_MEAS_A_588_L1	199	62.41815	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation
10/15/2019 02:13:37:733 PM		From RTU	1	IW1_MEAS_A_588_L2	200	60.11975	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation
10/15/2019 02:13:37:733 PM		From RTU	1	IW1_MEAS_A_588_L3	201	62.36042	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation
10/15/2019 02:13:37:733 PM		From RTU	1	IW2_MEAS_A_589_L1	202	187.7593	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation
10/15/2019 02:13:37:733 PM		From RTU	1	IW2_MEAS_A_589_L2	203	162.3319	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation
10/15/2019 02:13:37:733 PM		From RTU	1	IW2_MEAS_A_589_L3	204	187.6584	Good	Measured value, short floating point number (M_ME_NC_1)	Station interrogation

```
Raw Protocol Data 68 FA 20 00 06 00 00 1E 14 00 01 00 83 00 00 3E D4 69 C4 00 04 00 00 0E EA 82 C4 00 85 00 00 4E 71 71 C4 00 86 00 23 4E 81 C3 00 87 00 00 11 47 7E C3 00 88 00 00 0F 97 8D 44 00 89 00 00 AD
Protocol Data
  Application Protocol Control Information
  - ApdLen: 250
  - Type: I
  - Tx: 16
  - Rx: 3
  Application Service Data Unit
  - TypeId: Measured value, short floating point number (M_ME_NC_1)
  - SQ: False
  - NumIt: 30
  - CauseTx: IronOden (20)
  - Negative: False
  - Test: False
  - Obj: 0
  - Addr: 1
  - Objects:
  - Object:
```



# Smart Alarming

Very advanced level of managing alarms

➤ Network topology-based alarm management

➤ Intelligent alarm grouping

- Dynamic topological organization
- Static network model relations
- Alarm classification
- Alarm category semantics

➤ Root cause suggestion

➤ Augmented situational awareness

➤ Alarm noise cancelation

- Better focus and prompt reaction

The screenshot displays a Schneider Electric alarm management interface. The main window shows a list of alarms with columns for Search, Indicators, Process time, Field change time, St, Message, and Category. A search filter is set to 'RockyPT [30/37]'. Below the main list, a detailed view of a 'Root Alarm' is shown, listing multiple related alarms with their respective times and messages.

Search	Indicators	Process time	Field change time	St	Message	Category
Schneiderville [265]	1933					
W10ENT	14	3/25/2021 10:02:42 PM	3/25/2021 10:02:42 PM	★	Value = 12.57805 kW (CREEP occurrence)	ANALOG_5
MM5	33	3/25/2021 10:02:42 PM	3/25/2021 10:02:42 PM	★	Value = 1011.226 kW (CREEP occurrence)	ANALOG_5
RockyPT	37	3/25/2021 10:01:24 PM	3/25/2021 10:00:16 PM	★	Value = 1130.978 kW (in FLATLINE state for 67 seconds)	ANALOG_5
MM4	19	3/25/2021 10:01:24 PM	3/25/2021 10:00:16 PM	★	Value = 1111.689 kW (in FLATLINE state for 67 seconds)	ANALOG_5
IW1	25	3/25/2021 10:01:24 PM	3/25/2021 10:00:16 PM	★	Value = 1011.226 kW (in FLATLINE state for 67 seconds)	ANALOG_5
RP1	17	3/25/2021 8:47:42 PM	3/25/2021 8:47:42 PM	★	Value = 133.5254 kW (CREEP occurrence)	ANALOG_5
CBMM1	10	3/25/2021 8:47:42 PM	3/25/2021 8:47:42 PM	★	Value = 1130.978 kW (ROC GROWTH occurrence)	ANALOG_5
MM2	10	3/25/2021 8:17:10 PM	3/25/2021 8:17:09 PM	★	Value = 1011.226 kW (ROC GROWTH occurrence)	ANALOG_5
FC2	15	3/25/2021 8:17:10 PM	3/25/2021 8:17:09 PM	★	Value = 1011.226 kW (ROC GROWTH occurrence)	ANALOG_5
KA1	7	3/25/2021 5:02:43 PM	3/25/2021 5:02:42 PM	★	Value = 133.5254 kW (CREEP occurrence)	ANALOG_5
MM3	16	3/25/2021 5:02:43 PM	3/25/2021 5:02:42 PM	★	Value = 1001.257 kW (ROC DROP occurrence)	ANALOG_5
		4:02:42 PM	3/25/2021 4:02:42 PM	★	Value = 960.053 kW (below LOW LEVEL 3 limit value 1000.00)	ANALOG_5
		4:02:42 PM	3/25/2021 4:02:42 PM	★	Value = 1433.401 kW (below LOW LEVEL 2 limit value 1500.00)	ANALOG_5
		3:17:43 PM	3/25/2021 3:17:42 PM	★	Value = 1471.243 kW (below LOW LEVEL 2 limit value 1500.00)	ANALOG_5
		2:47:42 PM	3/25/2021 2:47:41 AM	★	Value = 1459.448 kW (below LOW LEVEL 2 limit value 1500.00)	ANALOG_5
		10:47:41 AM	3/25/2021 10:47:41 AM	★	Value = 1098.666 kW (below LOW LEVEL 2 limit value 1500.00)	ANALOG_5
		10:47:41 AM	3/25/2021 10:47:41 AM	★	Value = 1079.876 kW (below LOW LEVEL 2 limit value 1500.00)	ANALOG_5
		4:47:36 PM	3/21/2021 4:47:36 PM	★	Value = 45.68512 MW (below LOW LEVEL 4 limit value 50.00)	ANALOG_5
		4:47:36 PM	3/21/2021 4:47:36 PM	★	Value = 48.3392 MW (below LOW LEVEL 4 limit value 50.00)	ANALOG_5

CBMM1 [10]	Message	Time
★	Root Alarm	3/26/2021 11:16:49 PM
★		/2021 5:57:33 PM
★		3/22/2021 4:41:44 PM
★		3/22/2021 4:41:43 PM
★		3/22/2021 4:41:43 PM
★		3/22/2021 4:41:43 PM
★		3/22/2021 4:41:43 PM
★		3/22/2021 4:41:41 PM
★		3/22/2021 4:41:14 PM

The background of the slide is a dark, low-key photograph. The upper portion shows a city skyline with several tall buildings, partially obscured by trees in the foreground. The lower portion of the image shows a close-up, slightly blurred view of solar panels, highlighting their grid-like structure and the texture of the glass.

# EcoStruxure Grid Operation Next-Gen SCADA – Key Benefits

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Electric

# EcoStruxure Grid Operation - Next-gen SCADA

## Key benefits



### Data Commissioning

*Significant savings in SCADA telemetry commissioning with the use of RTU templates and IEC 61850*



### Performance

*100k changes/sec processed during high activity scenarios*



### Protocol Analyzer

*Save time needed for analysis of SCADA communication issues up to 70%*



### TCO

*Reduce total cost of ownership by utilizing single network model for all voltage levels and all grid configurations*





# Utility Use Cases & Benefits



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# Grid Operation

## Utility use cases

### Foundation

- Digital twin creation & maintenance
- Seamless integration with other systems
- System administration
- Monitoring and observing the distribution grid
- Tracking system KPI
- Utilizing historical data
- Locating elements of interest

### Operational Efficiency

- SCADA Commissioning
- SCADA Troubleshooting
- Operating the distribution network
- Improving Cybersecurity
- Situational awareness and critical situation handling with smart alarming

### Reliability & Resilience

- Planned work and outage management
- Unplanned outage management
- Trouble event management
- Damage Assessment
- Crew management
- Field Operations
- Storm management
- Operational and performance Reporting

# Grid Operation

## Key benefits



### Outage Management

*Globally field proven, fast restoration, intelligent prediction, comprehensive reporting*



### Switching Management

*Fully digitalized and secure, reduces control room workload and enhances safety & efficiency of field crews*



### Real-Time Field Client

*Single application for managing all types of work, improving crew safety, efficiency & real-time awareness*



### Proactive Outage Notifications

*Keep information-hungry stakeholders well informed all the time, while saving up to 1M€ yearly*



### Data Commissioning

*Significant savings in SCADA telemetry commissioning*



### Performance

*100k changes/sec processed*



### Protocol Analyzer

*Save time needed for analysis of SCADA communication issues up to 70%*



### TCO

*Reduce total cost of ownership by utilizing single network model*



# Addons

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# EcoStruxure ADMS - Outage Management

## Fire Mitigation

- Reduces fire risks with minimum impact on SAIDI/SAIFI
- During the periods of elevated fire risk, identifies protection/switching operations
- Visualization of geo-areas on electrical network in accordance with weather conditions
- Operations based on as-operated state
  - Manual, advisory/semi-automatic, automatic modes

The screenshot displays the EcoStruxure ADMS Fire Mitigation interface. It features several key components:

- Fire Mitigation Plan Browser:** A table listing mitigation plans with columns for ID, Feeder(s), State, and Status.
- NEVADA FLATS:** A map showing the geographical layout of the electrical network with highlighted risk areas.
- Pilot Area:** A detailed view of a specific area within the network, showing individual components and their status.
- Geographic - NA distribution:** A map showing the distribution network overlaid on a satellite image.
- Distribution Reclosers:** A table listing recloser status for various breakers.
- Major Event Risk Level Summary:** A table summarizing the risk levels for different index areas.

ID	Feeder(s)	State	Status
ME 11000003	AS01	ElevatedFireRating	Completed
ME 11000001	NF05	ElevatedFireRating	Completed
ME 11000004	AS01	ReturnedToNormal	Completed
ME 11000002	NF05	ElevatedFireRating	Completed

Dist. Recloser #	Recloser Breaker	Recloser On/Off	Ground Trip On/Off
R105	[Red Square]	[Red Circle]	[Green Square]
R110	[Red Square]	[Red Circle]	[Green Square]
R111	[Red Square]	[Green Circle]	[Green Square]

Name	Signal type	Operational value
RiskLevel_Fire Index Area 1	Risk Level	Medium
RiskLevel_Fire Index Area 2	Risk Level	Low
RiskLevel_Fire Index Area 4	Risk Level	Low
RiskLevel_Fire Index Area 5	Risk Level	Low
RiskLevel_Fire Index Area 3	Risk Level	High

# EcoStruxure™

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