

A photograph of two men in an office setting. One man is seated at a desk, looking at a computer monitor, while the other man stands behind him, pointing at the screen. The scene is brightly lit by a window in the background. A green semi-transparent banner is overlaid across the middle of the image, containing white text.

Asset Connect & EcoStruxure Asset Advisor Preventive Customer presentation

Agenda

- 1 Key challenges
- 2 Value proposition
- 3 Offers description
- 4 Takeaways

Prepare Marathon ?

How to increase efficiency



A **machine**



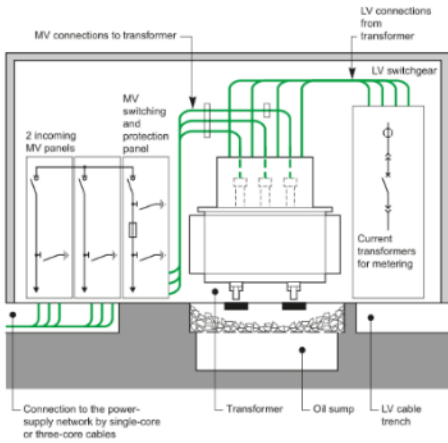
A set of **sensors**
with just enough
local HMI



A **connected apps** for historian,
alarming and insights.

Pilote substation ?

How to increase efficiency



A **machine**



A set of **sensors**
with just enough
local HMI

ASSET CONNECT



A **connected apps** for historian
alarming and insights.

ASSET ADVISOR PREVENTIVE

EcoStruxure Asset Advisor for Power... a digital journey

CONNECT



Capture critical data
from sensor to cloud

ANALYZE



Convert data into
meaningful
information

TAKE ACTIONS



... and drive
profitable growth

How to extend advanced maintenance to your electrical system

REACTIVE in case of failure

- I can only react when failures happen
- I cannot prevent downtime
- I need to replace my equipment more often
- Urgent maintenance is expensive: High costs of process loss, urgent intervention cost...






PREVENTIVE (Time-based)

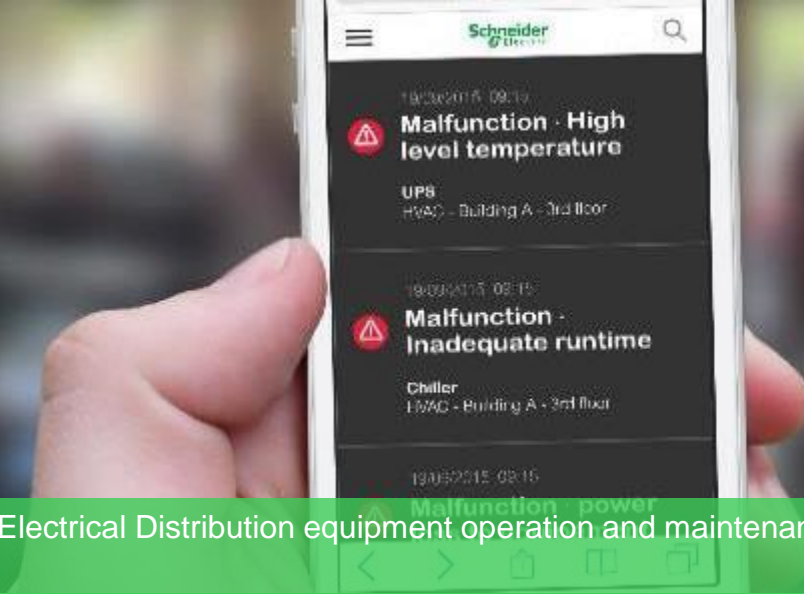
- I can anticipate failures
- I can mitigate risk
- but catastrophic failure still at risk

PREDICTIVE (conditioned-base)

- I predict asset failure and reduce downtime
- I contribute to a better protection of my staff
- I optimize my maintenance scheduling
- I will be in position to enhance my maintenance costs

Do you feel at risk?

Risks	Potential consequences	With EAA Preventive
 Fire	<ul style="list-style-type: none">➤ Facility physical damage➤ Reputational damage➤ Injuries and fatalities	<ul style="list-style-type: none">➤ 24/7 thermal status of critical equipment➤ Smart alarms in case of emergency➤ Preventive approach to fire risk reduction
 Corrosion	<ul style="list-style-type: none">➤ Equipment failure➤ Reduced equipment lifetime➤ Not optimal environmental conditions	<ul style="list-style-type: none">➤ Equipment failure prevention➤ Extended asset lifetime➤ Optimal environmental conditions
 Asset Failure	<ul style="list-style-type: none">➤ Unscheduled downtime➤ Expensive and time-consuming corrective maintenance	<ul style="list-style-type: none">➤ Reduced risk of unscheduled downtime➤ Data-driven preventive service
 Excessive Energy consumption	<ul style="list-style-type: none">➤ Higher utility bills➤ Potential penalties (Power factor)➤ Not optimal network quality	<ul style="list-style-type: none">➤ On-line power consumption data➤ Historical data and trends on power consumption
 Inefficient Emergency management	<ul style="list-style-type: none">➤ Late issue identification➤ Issue escalation➤ Costly and time-consuming delayed maintenance	<ul style="list-style-type: none">➤ 24/7 alerts and alarm notifications➤ Remote monitoring asset health data



A cloud base service to manage Electrical Distribution equipment operation and maintenance through remote monitoring and smart alarming

Ecostruxure Asset Advisor Preventive helps you make the right operation and maintenance decisions at the right time while ensuring fast reactivity in case of emergency

EcoStruxure Asset Advisor for Power – preventive services

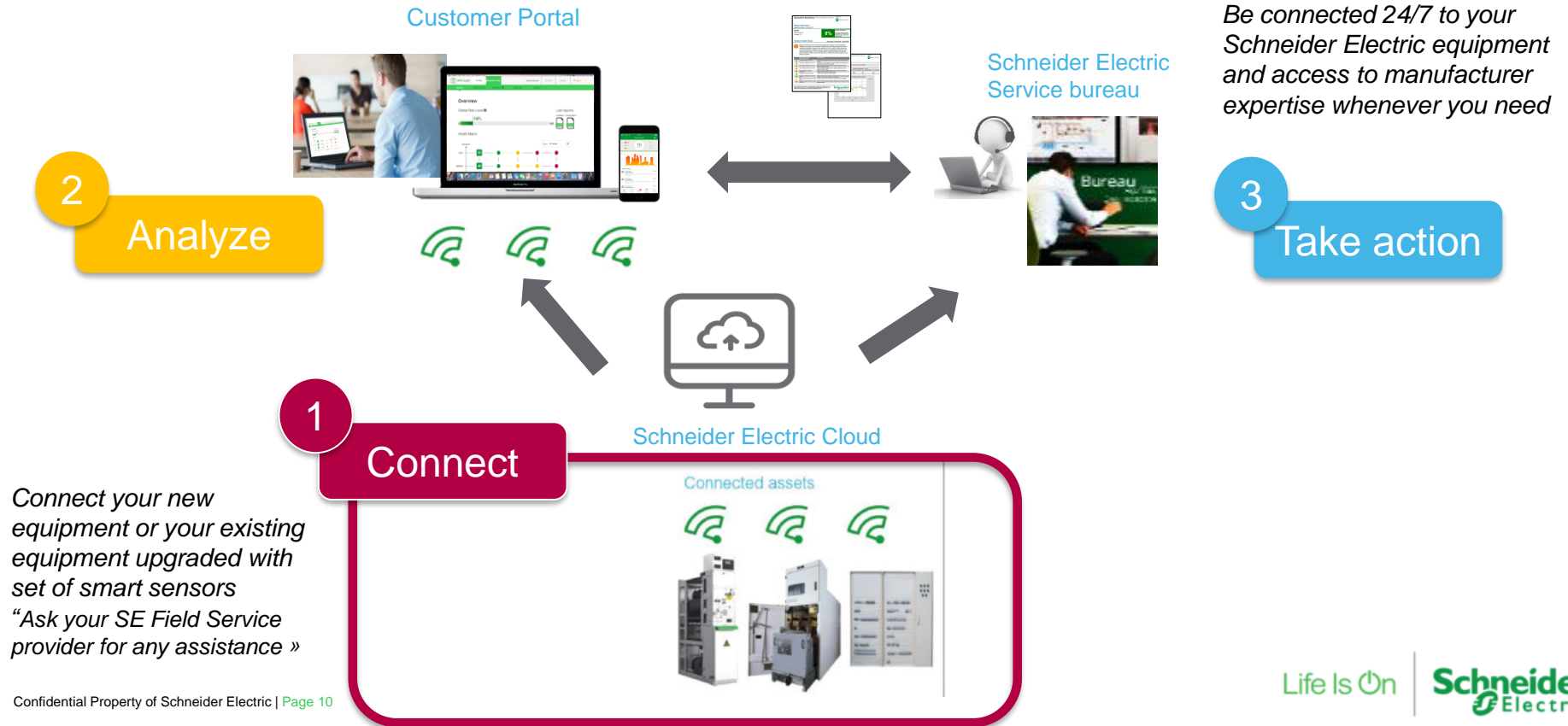


This new-generation digital service **connects** Schneider Electric electrical distribution equipment to the cloud for 24/7 monitoring and analytics.

You will receive 24/7 remote **live data** on critical electrical distribution assets' health, **smart alarming** through web dashboard and mobile app, data on energy consumption, monthly reporting and **24/7 access to a service bureau**.

Equipped with this data, you can perform data-driven maintenance and ensure fast reactivity in case of emergency.

EcoStruxure Asset Advisor, preventive: how it works



Ask for Asset Connect service



Asset Connect helps you to upgrade your installation with smart sensors, transforming non-communicating equipment into **connected assets**

These **upgrades open electrical installation** to full spectrum of **advanced capabilities**, such as preventive **asset performance management** services

Keep watching where it matters most and where things can go wrong!

1. The electrical connections

- > To ensure proper connection and that energy is not being dissipated through heat loss
- > Faulty or damaged connections will deteriorate and cause thermal issues

Sensors will constantly monitor the Temperature changes!



2. The Ambient Conditions

- Ambient Humidity in severe cases could be a threat to the System
- Pollution Levels and Condensation are factors of premature aging !

Environmental Monitoring to avoid threatening conditions to equipment!

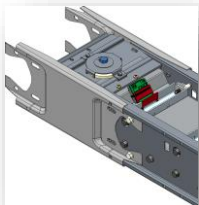


What could be upgraded ?

- Thermal sensors are mounted in our equipment at **critical connections point**
- Environmental sensors are mounted **in critical equipment** and in the **substation room.**



Busways



Transformers*



LV switchgears*



MV switchgears



* For specific range ask your Field Service representative

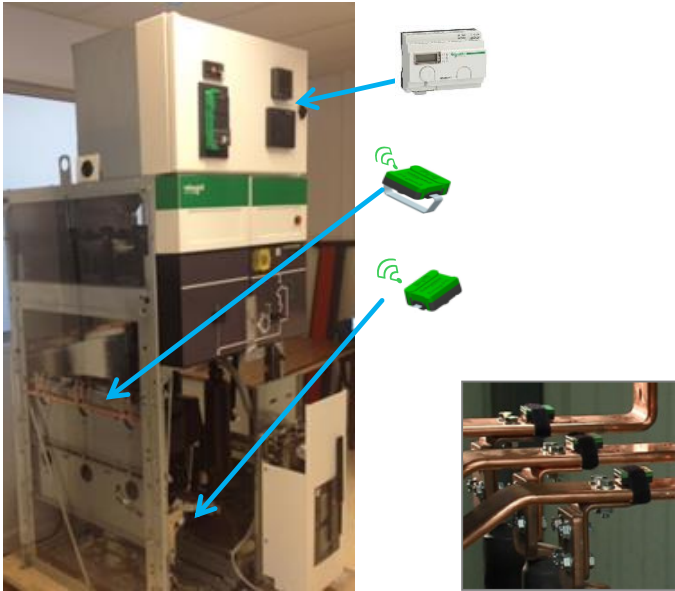
Life Is On

Schneider
Electric

How does it work?

Products and sensors' concentrator are wired to a gateway that connects to the monitoring solution

- 1 > Install sensors in your equipment
> Connect to Com'X gateway via a Zigbee concentrator



- 2 > Connect your communicating equipment to Com'X gateway
> Connect the Com'X gateway to the SE cloud via Internet, and access to EcoStruxure Asset Advisor preventive

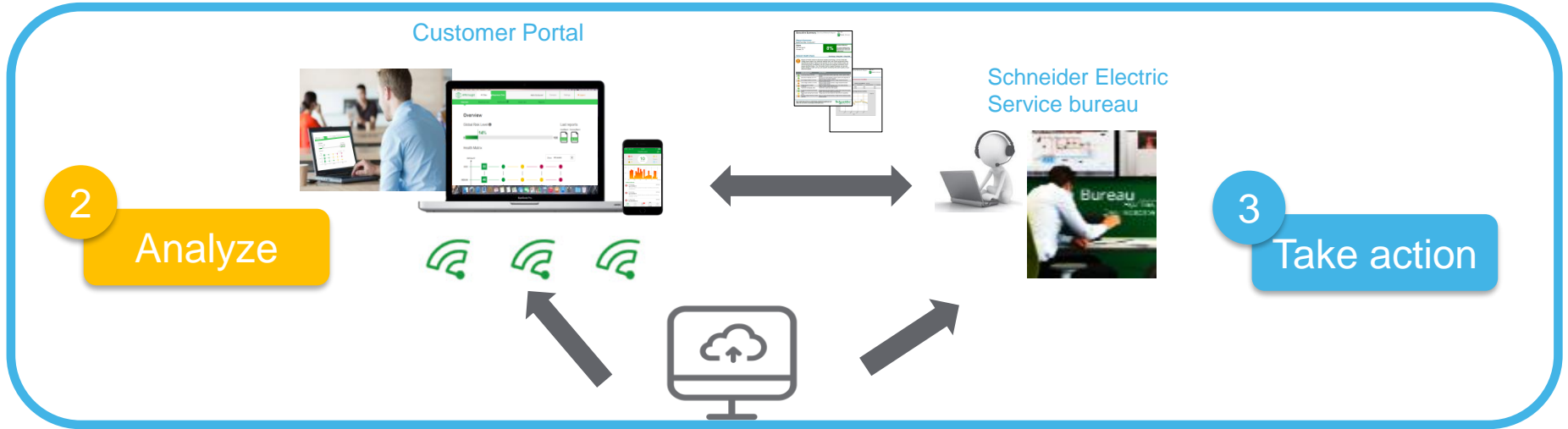


Option 1: Cloud SE only



Option 2: Cloud SE + local HMI (SMD)

EcoStruxure Asset Advisor, preventive: how it works



1
Connect

Schneider Electric Cloud

Connected assets



*Be connected 24/7 to your
Schneider Electric equipment and
access to manufacturer expertise
whenever you need*

EcoStruxure Asset Advisor for Power – preventive services

Digital monitoring offer that provides data driven services for Electrical Distribution equipment

1

Stay connected to your installation !

Smartphone App and Web-dashboard offer live data & alarms, enabling remote monitoring of your assets 24/7



2

Privileged Access to Schneider Electric service bureau

*Increase your installation uptime with intelligent 24x7 monitoring & get privileged access to **Service Bureau***



3

Insight

Gain insight into how well your Electrical Distribution installation runs (receive recommendations & data-driven Intelligence)



Main features



- Remote asset monitoring (LV, MV equipment, transformers)



- Thermal monitoring



- Humidity monitoring



- Asset health, aging, alarms, alerts, etc.



- Equipment Alarm/event management (sorting, prioritization, routing and visualization)



- Maintenance notifications towards site manager



- Energy consumption visualization



- Automatic monthly reporting



- 24/7 Service Bureau



- Emergency on-site intervention

EcoStruxure Asset Advisor Preventive with a freemium model

EAA Preventive (**)



Time based maintenance



Recommendations & insights



Installation Config storage



24/7 Service bureau

Asset Monitoring freemium*



Energy visualization



Incident tracking



Alarm notification on app & Web portal



Live data on App & web portal

- Asset monitoring associated with time based maintenance
- Event / incident management & remote smart alarming
- Product obsolescence management

“Gain insight into how well your Electrical Distribution installation runs”

(*) Free offer when connected to SE Cloud for first 12 months

(**) Standard offer focus on SE Electrical Distribution assets

EAA Preventive sold as stand-alone version, starting with Asset Monitoring (free trial version), or integrated into an Advantage Service Plan

Main features	Asset Monitoring	EAA Preventive	ASP Connect Plus	ASP Connect Prime	ASP Connect Ultra
Continuous remote asset monitoring	✓	✓	✓	✓	✓
Equipment Alarm/event management (sorting, prioritization, routing and visualization)	✓	✓	✓	✓	✓
Maintenance notifications and recommendations	✓	✓	✓	✓	✓
Energy consumption data visualization	✓	✓	✓	✓	✓
Detection of abnormal conditions (consumption, over/under voltage...)	✓	✓	✓	✓	✓
Monthly performance report and recommendations		✓	✓	✓	✓
24/7 Service Bureau		✓	✓	✓	✓
On-site intervention commitment			✓	✓	✓
On-site time-based preventive maintenance			✓	✓	✓
On-site condition maintenance (ProDiag)			✓	✓	✓
Labor			Preferred rates	✓	✓
Spare parts			Preferred rates	Preferred rates	✓
Asset scope	Connected assets	Connected assets	Full-site	Full-site	Full-site
Duration	12 months	Multi-year	Multi-year	Multi-year	Multi-year

How it works: Gain actionable insights and access to Service Bureau



With subscription to EAA preventive only (not available with freemium)



Events

- Alarms
- Alert
- Information



Manage locally

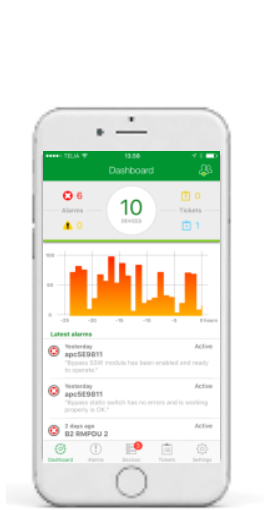
- Remotely access to data on your critical equipment
- Inform your maintenance/operations team
- Organize and perform necessary actions based on the insight and recommendations



Service Bureau

- 24/7 answer questions on alarms, alerts, monthly reports
- Give recommendations and insights
- Provide additional services when relevant

The value of connectivity and remote monitoring



- Visibility of your assets health and energy consumption
- Connected to your team & Schneider Electric experts
- 24/7 site monitoring
- Enables limited local skills
- Enables proactive incident management providing faster time to resolution



The value of insights



- Identifying threats to availability of your electrical power
- Regular reporting underlying efficiency issues
- Recommendations on how to maximize asset lifetime, lower costs of energy, and better control of maintenance & operations budget
- Track alarms and incidents



The value of 24/7 service bureau

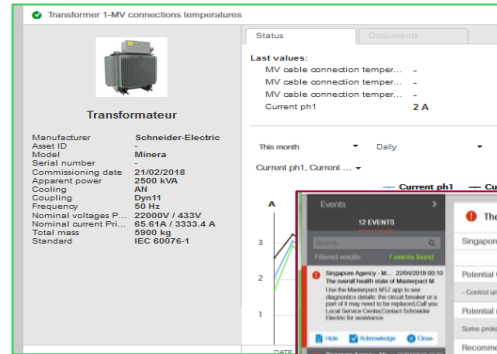
- Save and track incidents
- Save and store your installation config
- Call the service bureau for any technical question related to alarms/alerts/events on your connected equipment
- Proactive call from Service bureau to connected sites when critical alarms occur on your site (commitment to address your cases within xxh00)
 - Dispatch engineers on site upon request
- Remote support in your local language with our specialist

A privileged dedicated number to call and be called 24/7



Managing your assets with EcoStruxure Asset Advisor preventive (1/3)

- Detailed and updated ID card of your equipment
- Equipment Alarm/event management
 - Monitor operating conditions and alert in case of identified risks in order to improve uptime and optimize equipment usage
 - Each event is sorted into critical / alert / information category
 - For each alarm and alert, an analysis is proposed including
 - Potential causes / Potential consequences / Recommendation
- Maintenance notifications and recommendations
 - Last maintenance date
 - Next maintenance date
- Product obsolescence management



Asset ID Card

Alarm

The overall health state of Masterpack MTZ_SEK-MSB-INCA is : malfunction.

Singapore Agency 22/04/2018 00:10
 Masterpack MTZ_SEK-MSB-INCA

Potential Causes
 - Control unit malfunction - Maximum number of operation has been reached - Closing/Opening malfunction

Potential results
 Some protection of the load or the electrical installation is not anymore insured

Recommendations
 1 Use the Masterpack MTZ app to inspect
 2 Call your Local Service Co
 3 Contact Schneider Electric

Alarm

Alert

The overall health state of Masterpack MTZ_SEK-MSB-INCA is : No change.

Singapore Agency 26/03/2018 19:06
 DMD-J01-CHA, Transfo 1

Potential Causes
 - Heat heating on cable connection
 - The cable's cover may be unfastened

Potential results
 Cable insulation may get damaged
 Cable connection may fall into thermal runaway

Recommendations
 1 Check connection tightening or torque tightening

Alert

Managing your assets with EcoStruxure Asset Advisor preventive – LV/MV Equipment & sub-station (2/3)

Examples of alarms & alerts for ACB (type Masterpact); MCCB (type Compact NSX); AIS-GIS (type SM6, RM6...) *The list is non-exhaustive*



Event coming from protection relay	Generating an alert or alarm	Available into Web PC portal or Smartphone App
Health status (*)	Alert or Alarm	Web PC & Smartphone Apps
Protection relay default	Alarm	
Over/under voltage	Alert	
Trip circuit supervision	Alarm	
Over/under frequency	Alert	
Data acquisition	Alert	
Circuit breaker trip (ground, earth, type 50/51, 50N/51N, 49RMS, 67N...)	Alarm	
CT/VT supervision	Alarm	
SF6 level	Alarm	
Circuit breaker close	Alert	
Fuse status	Alarm	
...		

Cable / busbar thermal protection	Generating an alert or alarm	Available into Web PC portal or Smartphone App
Absolute threshold	Alert	Web PC & Smartphone Apps
Absolute threshold	Alarm	
3 x relative thresholds inter-bar (1-2, 2-3, 3-1)	Alarm	
3 x relative thresholds inter-bar (1-2, 2-3, 3-1)	Alert	
Substation environmental monitoring	Generating an alert or alarm	Available into Web PC portal or Smartphone App
Severity degree	Alarm	Web PC & Smartphone Apps
Severity degree	Alert	
Room temperature	Alert	
Room humidity	Alert	
...		

Managing your assets with EcoStruxure Asset Advisor preventive – Transformer (3/3)



Examples of alarms & alerts for Transformers (type Trihal)

The list is non-exhaustive

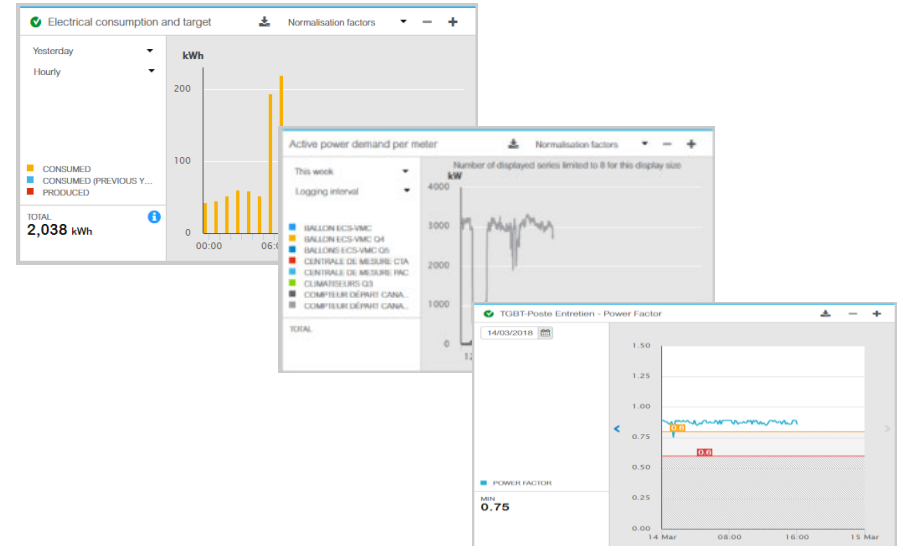
Event coming from protection relay	Generating an alert or alert	Available into Web PC portal or Smartphone App
Over heating on winding#1	Alarm	Web PC & Smartphone Apps
Over heating on winding#2	Alarm	
Over heating on winding#3	Alarm	
Quick temp. increase fault	Alarm	
Protection relay default		
Relay trip	Alarm	
Relay Alarm	Alarm	
...		

Cable / busbar thermal protection	Generating an alert or alert	Available into Web PC portal or Smartphone App
Absolute threshold (primary)	Alert	Web PC & Smartphone Apps
Absolute threshold (primary)	Alarm	
Absolute threshold (secondary)	Alert	
Absolute threshold (secondary)	Alarm	
3 x relative thresholds inter-bar (1-2, 2-3, 3-1) – primary	Alert	
3 x relative thresholds inter-bar (1-2, 2-3, 3-1) - primary	Alarm	
3 x relative thresholds inter-bar (1-2, 2-3, 3-1) – secondary	Alert	
3 x relative thresholds inter-bar (1-2, 2-3, 3-1) – secondary	Alarm	
...		

(*) availability depending on type of product

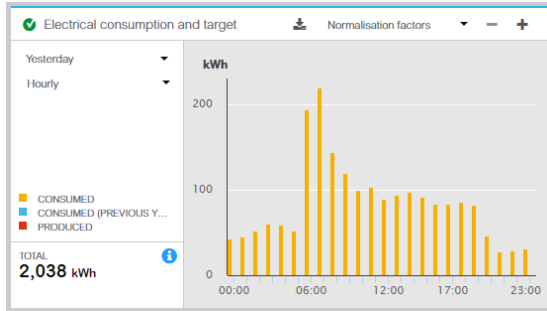
Managing your energy with EcoStruxure Asset Advisor preventive (1/3)

- Monitor Energy trends and follow targets
- Track Energy consumption
- Track power factor and power demand and be alerted to avoid utilities penalties
- Monitor Energy quality

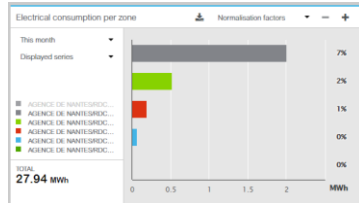


Managing your energy with EcoStruxure Asset Advisor preventive (2/3)

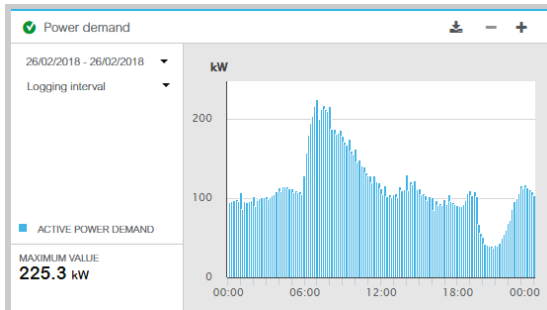
Get visibility of the Energy of your site



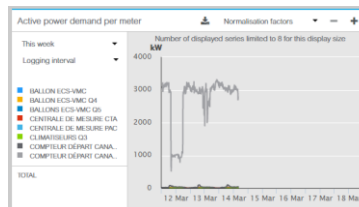
1- 10' / Hourly / Daily electrical consumption - Total



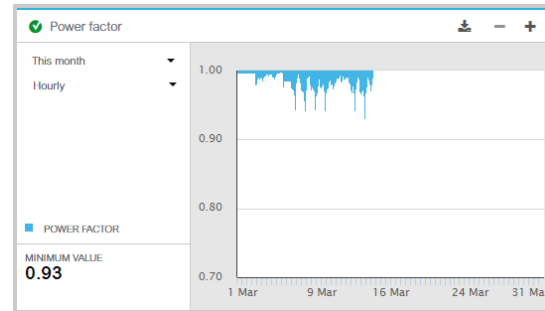
Electrical consumption – per zone



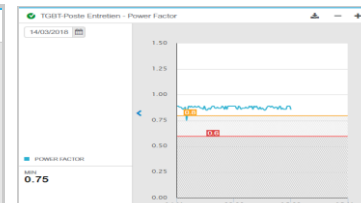
2- Power demand - Total



Electrical consumption – per meter



3- Power factor - Total

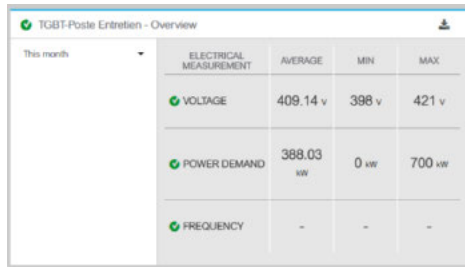


Power factor – per meter

1. Adjust your automation settings depending on usage... and save money
Identify inefficient loads and decide improvement plan
Benchmark with previous year
Identify consumption per line of product
2. Optimize the power demand subscription (utilities)
Reduce maximum power demand penalties
Reduce power demand with load scheduling
3. Avoid penalties from utilities

Managing your energy with EcoStruxure Asset Advisor preventive (2/3)

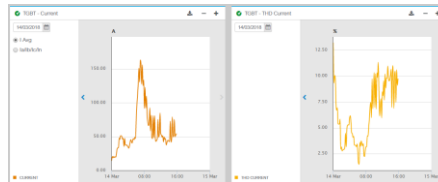
Get visibility of the Energy for each connected asset



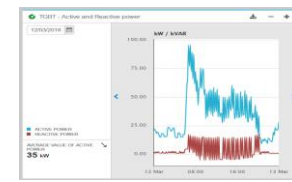
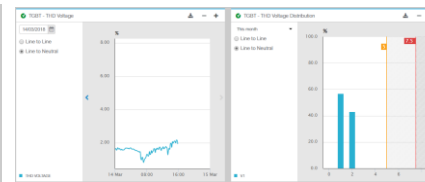
1- Synthesis of the main indicators



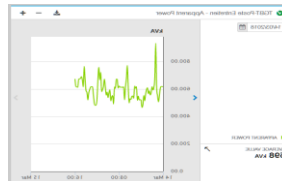
2- Voltage / Current



3- THD Voltage / current



3- Active / Reactive Energy



4- Apparent Power



5- Frequency

1. Give insights concerning quality of energy provided by utility
2. Identify loads sensitive to voltage drop, and limit failure of assets
3. Monitor energy quality
 - Harmonic level – (generating power losses, overheating, premature aging...)
 - Active/reactive energy – (to be optimized to make savings in energy consumption, energy bill and increase equipment life time)
4. Monitor transformer load and optimize its efficiency
5. Monitor quality of frequency and identify assets sensitive to frequency drop

By using your data intelligently

we can help you with....



- **Visibility of asset health anywhere, anytime**
 - Understand wear and tear of your Electrical Distribution equipment
 - Reduce downtime risk, maximize asset lifetime
- **Proactive incident management providing faster time to resolution**
 - Resolve issues remotely
 - Benefit from 24/7 service bureau
- **Financial efficiency**
 - Reduce failures
 - Lower cost of your energy bill, and better control of your maintenance & operations budget

EcoStruxure™

Innovation At Every Level

Life Is On

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Electric

