Gain insights into the health of your transformer

With transformer monitoring solutions
Addressing transformers’ maintenance challenges
Addressing transformers’ maintenance challenges

From electrical generation to consumption to powering industries and enterprises, transformers are at the core of the grid.

It’s crucial transformers operate at their peak performance, but there are challenges:

- Transformer downtime is a critical issue for your business.
- Earlier replacement has a significant financial impact.
- There is a shortage of skilled people to manage transformers.

Did you know?

On average, 1 out of every 200 transformers experiences a major failure every year.

Source: CIGRE TB 642, 2015
Introducing transformer monitoring solutions
Introducing transformer monitoring solutions

EcoStruxure™ Transformer Expert provides unprecedented visibility into transformer health and enables fleet management.

Predictive maintenance
Help predict potential issues before they occur.

Reliability and safety
Help reduce the risk of downtime and detect early signs of potential issues.

Data-driven decision making
Make data-driven maintenance and asset replacement decisions.

Economic benefits
Help reduce the risk of downtime and extend asset life expectancy.
Introducing transformer monitoring solutions (cont.)

Start your monitoring journey
EcoStruxure Transformer Expert Essential
Offline DGA (Dissolved Gas Analysis) historian and analytics

Subscribe to our all-in-one monitoring solution
EcoStruxure Transformer Expert
All-in-one disruptive IoT sensor and software analytics subscription
Also available with an add-on option for hydrogen monitoring

Subscribe to a complete service plan
EcoCare membership
Advanced condition-based monitoring for transformers in a digital-enabled service plan

Please verify the availability of EcoCare in your region through a local services sales representative. If EcoCare is not yet available, you can start leveraging EcoStruxure Service Plan.
Introducing transformer monitoring solutions (cont.)

Start your monitoring journey with offline DGA through EcoStruxure Transformer Expert Essential.

With EcoStruxure Transformer Expert Essential, you can:

• **Store dissolved gas analysis (DGA) reports** of your fleet in Data Hub

• **Get advanced analytics and automatic interpretation** based on the latest industry standards (IEEE, IEC) and guides (Rogers, Doernenburg, Duval methods)

• **Prioritize transformers** that most need real-time monitoring across your fleet
Introducing transformer monitoring solutions (cont.)

All-in-one sensors and software analytics: EcoStruxure Transformer Expert

EcoStruxure Transformer Expert is an advanced monitoring system, which helps detect potential issues and proactively alerts customers when further actions are necessary. This enables a transition from time-based maintenance to a more efficient condition-based approach.

Thanks to the all-in-one, easy-to-deploy disruptive IoT sensors and software analytics subscription, you can track the critical health parameters of your transformers.

Through an innovative patented sensor for oil transformers and advanced software analytics, EcoStruxure Transformer Expert measures the health of critical transformers in 3 parameters:

- Moisture
- Overheating
- Discharge

Through powerful system insights and advanced cloud-based analytics, you get operating and aging insights along with risk assessment to monitor your transformers’ health, thanks to:

- Fleet-wide view of transformer health
- Efficient and insightful dashboards for each transformer
- Historical DGA oil test repository

EcoStruxure Transformer Expert comes with EcoStruxure Transformer Expert Essential included. Hydrogen monitoring is available as an add-on. By leveraging the Dual H2 sensor certified by FM Global, you are able to track hydrogen, a key early warning sign for transformer issues.
Introducing transformer monitoring solutions (cont.)

Advanced condition-based monitoring delivered through the EcoCare services membership

With EcoCare membership, a next-generation service plan, we take care of your electrical distribution equipment through exclusive support and innovative digital services. You get exclusive access to our remote experts and unlock the full potential of your equipment.

We will monitor the health of your oil transformers, so that you can act in anticipation. Enabled by advanced condition-based monitoring, this is an optional feature inside your EcoCare for Electrical Distribution Equipment membership.

24/7 remote monitoring and advanced analytics focus on four different indicators:

- Operating risk
- Dielectric risk
- Solid insulation risk
- Aging risk

If risk increases, our experts from the Connected Services Hub will take the necessary action and provide insights, analysis, and recommendations to help you improve your business continuity and optimize your transformers’ life.

Learn more

Please verify the availability of EcoCare in your region through a local services sales representative. If EcoCare is not yet available, you can start leveraging EcoStruxure Service Plan.
Learning from our customers

Locating additional resources

Introducing transformer monitoring solutions

Addressing transformers' maintenance challenges

Analytics and insights

Life Is On | Schneider Electric
Analytics and insights

Data, insights, and visualization to proactively manage oil transformers

Multi-experience visualization

Fleet-wide dashboard
Automatic reporting

System insights and automated recommendations

- **Operating state**
  - Partial discharge trends
  - Temperature profiles

- **Insulation aging state**
  - Degree of polymerisation (DP) assessment and forecasts

- **Risk assessment**
  - Operating risk
  - Dielectric risk
  - Solid insulation risk
  - Aging risk

- **Maintenance management**
  - Dry-out impacts and modeling
  - Leak identification
  - Cooling optimization

- **Asset management**
  - Life left forecasts
  - Fleetwide replacement ranking
  - Load management for improved life expectancy

Data hub

- **State-of-the-art monitoring data**
  - Water in oil, temperature, ultra high frequency (UHF) noise, and hydrogen*

- **Dissolved gas analysis**
  - Historical test reports

- **Latest industry standards and guides**
  - IEEE, IEC, Rogers, Doernenburg, Duval methods

- **Transformer health**
  - Knowledge base

* Optional
Analytics and insights (cont.)

Powerful system insights with advanced analytics enable continuous risk assessments

<table>
<thead>
<tr>
<th>Operating risk</th>
<th>Dielectric risk</th>
<th>Solid insulation risk</th>
<th>Aging risk</th>
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<tbody>
<tr>
<td>Expose problems with operating the transformer given current conditions.</td>
<td>Assess the risks of a partial or complete breakdown of the electrical properties of the solid or liquid insulation.</td>
<td>Assess the risk of a breakdown of the solid insulation due to thermal-related failure modes.</td>
<td>Assess whether the asset is exposed to accelerated aging.</td>
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These analytics and insights are available with EcoStruxure Transformer Expert subscription (including add-on hydrogen monitoring) and EcoCare membership.
Analytics and insights (cont.)

Fleet view of transformers and their health allows you to:

- **Gain visibility** into the health and operating status of your oil transformers
- **Prioritize transformers that most need care** across your fleet
- **Make data-driven decisions** for maintenance and asset replacement

These analytics and insights are available with EcoStruxure Transformer Expert Essential and EcoStruxure Transformer Expert subscription (including add-on hydrogen monitoring).
Analytics and insights (cont.)

Efficient and insightful dashboards for each transformer

Predictive maintenance improves workforce and OpEx decisions, and life extension reduces CapEx. We can help you achieve this thanks to:

- Recommendations and insights
- Real-time transformer health chart
- Transformer Health Index
- Scientific references to go further

These analytics and insights are available with EcoStruxure Transformer Expert subscription (including add-on hydrogen monitoring).
Analytics and insights (cont.)

Historical dissolved gas oil test reports in the Data Hub are:

- Archived in the platform
- Automatically analyzed to international standards

Try our advanced analytics and insights capability by simply uploading your existing oil test reports.

These analytics and insights are available with EcoStruxure Transformer Expert Essential and EcoStruxure Transformer Expert subscription (including add-on hydrogen monitoring).
Analytics and insights (cont.)

Connected Services Hub as your 24/7 remote experts team

A dedicated and highly skilled team of 125+ experts worldwide is available remotely 24/7 to proactively monitor and analyze your critical electrical assets leveraging our EcoStruxure digital platform.

We continuously monitor and support your assets and systems 24/7.
- Remote experts monitor and diagnose
- Alarm notification

You have visibility and get recommendations from our experts.
- Live data available through mobile app
- Quarterly customized reports based on advanced analytics with recommendations
- Annual summary report and consultation meeting on how to improve your assets' performance

Did you know?

Schneider experts from the Connected Services Hub:

- Support over 140 countries
- Deliver 1200+ expertise reports per year
- Treat 500+ incidents per year
- Provide, on average, actionable recommendations on 50% of their monitored electrical assets. Experts deliver just the relevant information at the right time.

Learn more

Connected Services Hub is available only with EcoCare membership

Please verify the availability of EcoCare in your region through a local services sales representative. If EcoCare is not yet available, you can start leveraging EcoStruxure Service Plan.
Learning from our customers
Learning from our customers

CERN, Geneva, Switzerland

CERN (the European Organization for Nuclear Research) is one of the world's largest and most respected centers for scientific research.

To deliver their mission – understanding what the universe is made of and how it works – they provide scientists with a unique complex to push the frontiers of science and technology for the benefit of all.

In this research environment, the availability of facilities remains crucial.

“The relationship with the Schneider Electric Services team has been great. You have listened and responded to my suggestions. I feel we are on a journey together to solve problems, and I’ve really appreciated the fast response from the team.”

– Giuseppe Cappai, High Voltage Maintenance Manager for CERN

Goal

Make the best decision to refurbish or replace critical transformers, which were over 30 years old, to keep facilities available.

Solution

Monitor the behavior, analyze risk, and recommend best practice in the asset management of 8 transformers using EcoStruxure Transformer Expert.

Story

Following the outcomes of the online analysis, maintenance actions were implemented and replacement plans made to minimize the risk of these critical assets impacting operations.

Results

Innovative, affordable, and easy-to-use technology that helps inform maintenance decisions and critical asset management to keep assets continuously online.
Locating additional resources

Learn more about how you can optimize your transformer's health with our Transformers Monitoring Solutions:

Web
- EcoStruxure Transformer Expert
- EcoCare for Electrical Distribution Equipment

Blog posts
- 5 ways that transformer monitoring helps avoid failures, extend asset lifespan, and reduce OpEx
- Why assessing transformer health is critical for utilities, businesses, and consumers
- How CERN research lab uses innovative oil-filled transformer monitoring to reduce operational risks

White papers
- Benefits of shifting from traditional to condition-based maintenance in electrical distribution equipment
- Strategies of maintaining electrical distribution equipment