

FUTURE

Pacific Islands chart a green course with SF6-free technology

EEC Engie - Nouméa - New Caledonia (France)

How EcoStruxure™ for Electricity Companies supports an electric distribution utility with a zero-carbon ambition.

se.com/ww/sf6free-engie

Life Is On

Schneider
Electric



A zero-carbon ambition

EEC Engie has been providing energy to the Caledonian territory for over 90 years, including to several municipalities in the Pacific islands of New Caledonia and the Loyalty Islands. The electrical distribution operator, a subsidiary of the French multinational electric utility Engie Group, has more than 65,000 customers, from private customers, SMEs, and SMIs, to industrial companies.

The Engie Group has long been committed to promoting sustainable development and offering zero-carbon integrated solutions.

“It’s at the heart of our strategy,” said Olivier Turc, Head of Innovation, Engie France Réseaux. “Our role is to provide solutions to businesses and communities to help them reduce their carbon footprint. We are therefore developing or identifying new carbon-free solutions. For the medium-voltage electrical equipment installed on our network, the opportunity to integrate brand-new SF6-free technology from Schneider Electric is part of our pioneering DNA.”

Defending against climate change in the Pacific islands

“We are on an island and that obliges us to be efficient from the start and to be innovative and to always seek the best in order to be at the forefront and satisfy our client,” said Dominique Roecker, Purchasing Manager of the Energy Division at EEC Engie.

Island nations are one of the first areas to be affected by climate change. This makes reducing the use of traditional CO₂-emitting energy sources and focusing on local, renewable energy sources particularly important for helping to improve the island’s self-sufficiency while also meeting local demand.

“It is important that we have more awareness of the international problems of ecology and the environment,” Roecker said. “We have the largest lagoon in the world and we have a lot of ecosystems endemic to the territory, so designing a clean industrial concept, without greenhouse gases is important -- it’s logical.”

Goal

EEC Engie, an electric distribution utility based in New Caledonia, has a zero-carbon strategy. The company wants to remove the SF6 gas from its network.

Story

The electrical distribution operator partnered with Schneider Electric to deploy an SF6-free sustainable solution that delivers improved reliability.

Solution

The answer was an innovative, green, and smart substation: new air-insulated SF6-free MV switchgear and the new connected Minera transformer that uses biodegradable vegetable oil -- both connected to the Easergy T300 remote terminal unit.

Results

An easy-to-use, fully green and digital solution eliminated the use of SF6 in EEC Engie’s MV switchgear and improved service continuity, cybersecurity, and reliability.



Overcoming challenges with a trusted partner

The remote island location presents difficult and unique challenges for EEC Engie. New Caledonia is halfway around the world from Engie's French operations base. This means that EEC Engie not only needs to manage the purchasing part of its business, but also logistics and the complexity of transportation -- all of which must be taken into account in order to be efficient.

Recycling SF6 is also complicated in New Caledonia because the island does not currently have channels for reprocessing SF6. The medium has been used in electrical equipment for decades. While it is very effective for insulating and breaking, it is also harmful to the environment because it is a potent greenhouse gas. New SF6-free MV switchgear uses only pure air insulation and vacuum interruption technology to eliminate the use of SF6.

"We were looking for a green and easy-to-use solution that no longer uses SF6. It was obvious to work with Schneider Electric." Roecker added. "We trust the manufacturer. The reliability of their equipment and their knowledge is a major asset. We benefit from Schneider Electric's experience and innovation capacity."

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— Dominique Roecker,
Purchasing Manager of
the Energy Division
at EEC Engie



Supporting sustainability goals with a green, smart substation

EEC Engie's main requirement for this pilot program was to eliminate the use of the greenhouse gas SF6. Other considerations were to maintain the same level of safety, the same footprint, and minimize changes to operations.

Schneider Electric offered a more ecological and intelligent substation. Located in Nouméa, the capital of New Caledonia, the green EcoStruxure-ready substation uses innovative new SF6-free MV switchgear technology combined with a connected new generation transformer. The equipment is capable of exchanging data with EEC Engie's energy management control system, an essential element for deploying the smart grid – all with a minimal ecological footprint.

"Using a technology that eliminates SF6, using air and vacuum, is a major advantage. It is a major advance in terms of environmental protection," according to Roecker. "SF6-free MV switchgear technology is safe for the environment. There is no need to store any gas bulbs for reprocessing. Another gas would require the creation of a waste reprocessing center, which is very difficult to set up due to our remote island location."

A Plug & Play solution

The product is easy to use because "SF6-free switchgear is identical to the previous version. At the technical level, there is no change," according to Roecker. "These new units have the same size and connection as the existing equipment, so there is no change in operation for our teams. The technicians have already completely mastered the technology in front of them. This reduces implementation time and avoids supply interruption for installation of the remote-control mechanism. Replacing existing SM6 cubicles with the SF6-free switchgear also eliminates the expenses of infrastructure modifications and brings cost savings."

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A complete digital solution for equipment and operator safety

The innovative kiosk uses SF6-free medium voltage switchgear, a new-generation Minera connected MV/LV transformer with extended digital capabilities, and a dielectric based on biodegradable vegetable oil. The SF6-free switchgear and the new Minera transformer connect to Easergy T300. The powerful remote terminal unit (RTU) manages bidirectional and intermittent power flow, improves SAIDI, and optimizes MV and LV networks. It also delivers sustainability and efficiency data to the network. Information from sensors and equipment is collected, analyzed, and transmitted.

The Easergy TH110 wireless thermal sensors installed in the kiosk provide 24/7 monitoring of the equipment via ZigBee communication. Signal issues that may arise during operations would normally only be identified during maintenance, such as problems from equipment, climate, or temperatures. This feedback is provided to technicians on a mobile device for faster intervention.

The Schneider Electric digital solution allows EEC Engie to remotely monitor the substation for better service continuity for the inhabitants of Nouméa, which is an important goal because it is one of the major indicators with a permanent objective of improvement.

“EEC Engie and Schneider Electric teams have worked hand-in-hand and we are proud of this great cooperation. EEC Engie now has a fully green and digital solution,” said Philippe Dupont, French Pacific Islands area manager at Schneider Electric. “At Schneider Electric, we are convinced that the best gas is air, and we are eager to provide green energy players with green and sustainable solutions that meet environmental challenges. That’s why we have developed our new SF6-free technology, which represents an ideal alternative to traditional solutions.”

An innovative solution to EEC Engie’s environmental concerns

Since 2014, EEC Engie has been looking for ways and innovations to recycle SF6, or remove it from its networks. This solution responded to the company’s environmental concerns, but also to ISO 50001-2018 (Energy management) and ISO 14001-2015 (Environmental management) standards for which EEC Engie has been certified since 2019.

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EcoStruxure™

Innovation At Every Level

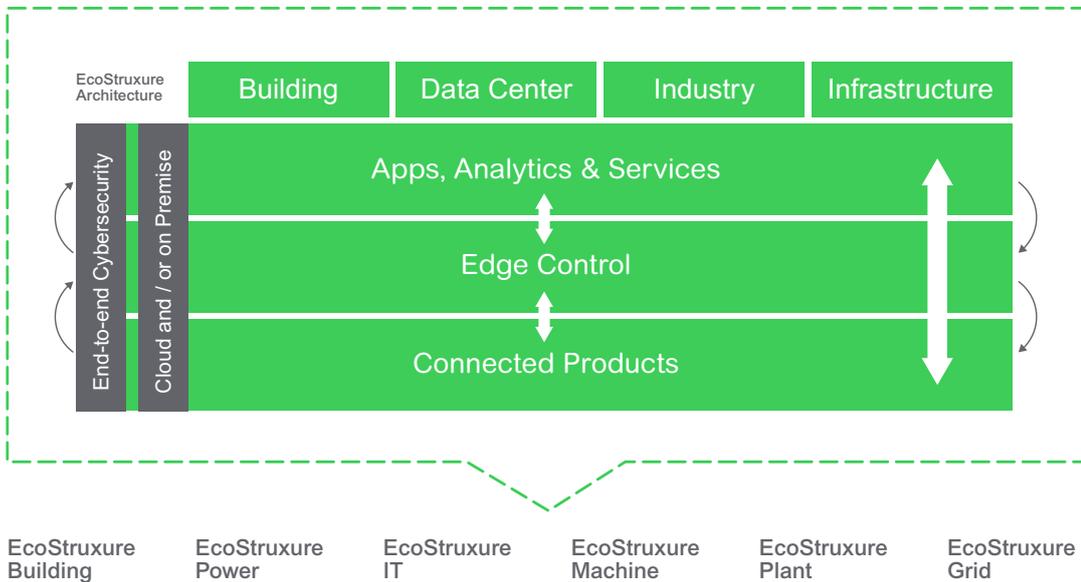
IoT-enabled solutions that drive operational and energy efficiency

EcoStruxure is Schneider Electric’s open, interoperable, IoT-enabled system architecture and platform.

EcoStruxure delivers enhanced value around safety, reliability, efficiency, sustainability, and connectivity for our customers.

EcoStruxure leverages advancements in IoT, mobility, sensing, cloud, analytics, and cybersecurity to deliver Innovation at Every Level including Connected Products, Edge Control, and Apps, Analytics & Services. EcoStruxure™ has been deployed in 480,000+ sites, with the support of 20,000+ system integrators and developers, connecting over 1.6 million assets under management through 40+ digital services.

One EcoStruxure architecture, serving 4 End Markets with 6 Domains of Expertise



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Interoperability is imperative to supporting the diverse hardware and systems in building, data center, industry, and grid environments. EcoStruxure enables a breadth of agnostic Applications, Analytics, & Services for seamless enterprise integration.

Find out more about EcoStruxure

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Learn More



How EEC Engie looks after the local ecosystem with sustainable strategy.



How GreenAlp makes a city better with green innovation.



How E.ON in Sweden is providing greener energy.



How green and digital technology helps fight the climate emergency.



How electricity companies contribute to a low-carbon future.



Discover EcoStruxure for Electricity Companies.

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