

Generg: Monitoring and controlling renewable assets in real time



The question of how to get the most out of your assets is one that is high on the list of priorities for companies around the globe. In the renewable energy sector, this question is equally important to the companies monitoring and controlling renewable energy generation plants.

In Portugal, **Generg**, which is part of the Novenergia Group, an affiliate of Total Eren (one of the renewable arms of the energy major Total), has been building and operating renewable power plants for over three decades. With a company portfolio of 660 MW in operation across Europe, and responsibility for controlling the performance of other wind farms in addition, the company runs around 800 MW of green generating assets.

However, ambitious expansion plans have meant that the ability to control and monitor existing and new assets has gained increased importance for the company. In order to achieve their objective, Generg turned to **CGI** to help them implement a common platform for the real-time monitoring and remote control of all of their renewable assets, which include wind, solar and hydroelectric power plants, substations and meteorological stations. The need for a historical database to manage and improve the performance of these assets, and the need to reduce the time needed to analyse the information, were key additional considerations.

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This centre enables the realtime monitoring and control of Generg's production assets, including substations and other relevant equipment, across their portfolio. The solution interfaces with the Portuguese TSO Redes Energéticas Nacionais (REN), and handles the command and dispatch of TSO instructions. It is also the information hub for the historical operational data which is used to identify trends and key performance indicators (KPIs) for detailed performance analyses.

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A connection with the Portuguese DSO, EDP Distribuição (EDP Distribution), was integrated into the solution, and in 2019 the system was scaled up to include wind and solar power plants in France, Italy, Spain, Poland and beyond. In parallel with the real-time tools available for operators, the RMS Monitor interface offers real-time tracking of KPIs across the portfolio. It's accessible via both web and mobile devices, and so has been used by a range of users at Generg, from field teams to top management.

The Analyse module of RMS was also implemented at Generg. This handles the operational performance management of all the renewable assets. It is built on a database which supports a high volume of operational data, alongside a range of enquiry and reporting tools such as production analysis, availability management and efficiency improvement that can be accessed via a web interface.

"We identified the need to centralise information and to benchmark our assets in order to understand which are performing well versus those that need improvement," comments João Sardo, wind turbine expert and international asset manager at Generg. "This tool offers that insight. With the RMS we can focus on the assets that should be performing better. Previously we had to rely on our own experience to ensure we had a good grasp of the performance of each asset. Now it's much easier, as we have a tool that levels the playing field, and allows us to act with a greater degree of confidence in how we analyse the data."

"We understood what we wanted to accomplish from a technical perspective, but what CGI was able to do was integrate our specific needs into the tool. They provided us with a solution which is 'off the shelf' but which has the ability to accommodate the needs of different clients."

"This is a big part of CGI's DNA," says Rita Burnay, director of consulting for renewables & smart grids, at CGI. "We have technology which allows fast delivery of a solution, but we also have the ability to accommodate the client's specific requirements, and deliver those on top of our off-the-shelf solution."

The implementation has helped Generg improve operational excellence and accrue a number of benefits, including:

- Centralised control of energy production, improved performance, and quicker control and diagnosis of stoppages, enabling the reduction of downtime
- Automation of time-consuming tasks, enabling resource optimisation
- Adaptation to varied regulatory regimes, and consequent alignment with different requirements for grid connections
- Creation of a unique source of operational data and indicators that enables data transparency by various internal and external stakeholders
- Powerful data-driven, insight-led decision making, and
- Continuous improvement, benchmarking and analysis of renewable energy production.

Enter 2020 and the Covid-19 pandemic, and the world is faced with the need to shift operations and staff to an 'as-remote-as-possible' approach.

Sardo says: "We have tried to design procedures that allow our teams to operate as safely as possible and because of the network infrastructure and the RMS tools, we are able to keep everyone working from home. Our staff are only dispatched to the field in an emergency, or for vital maintenance work.

"We have strict safety procedures in place for both our teams and our suppliers, and we are constantly engaged with them to ensure we are not putting anyone at risk, nor taking any action which will impact on the availability of the assets."

However, there were some network upgrades which still needed to be made in order to achieve full remote working. Burnay explains: "There's a difference between being prepared to work remotely (with everyone able to access the platform from remote locations), and the reality of shifting to everyone using that approach. However, within a couple of days we had increased capacity and Generg was able to continue with their business as usual."

As more and more work has moved into remote mode, cybersecurity has gained in importance. Burnay comments: "Because we are talking about controlling and managing dispersed renewable energy assets, we have built security into the platform. We have utilised special networks for the solution and security is hard baked into the design."

Sardo adds: "This is not a new concern for us. We cannot say that any system is bulletproof, but our systems were designed specifically for remote access and are constantly upgraded to ensure that security concerns are addressed. The system is designed to ensure it is as safe as possible, and the way CGI designed the tools and implements the system met our pre-existing security criteria."

"When you are preparing for a shift to enhanced, remote monitoring and control, you need to be prepared for how it will impact the way you work. This works a LOT better than your old Excel sheets," Sardo jokes.

There are other positives to this shift in your way of working. "It gives you the confidence and opportunity to look at your internal processes and adapt some of them in order to improve performance," shares Sara Pires, renewables solution specialist & business analyst, at CGI.

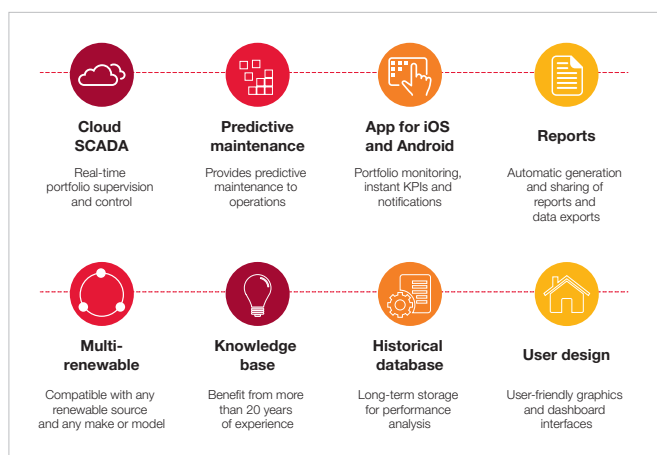
Sardo agrees: "We already had the teams and structure in place, so we were able to implement the RMS tools as an upgrade, and we also took the opportunity to upgrade the management of our renewable assets. At the end of the day, this is a tool – it doesn't work by itself but it's a tool that will enable you to be more efficient."

One of the unexpected benefits of the application for the Generg team was the way in which the mobile tool has been utilised during this time. Sardo explains that the ability to communicate internally between team members had to improve during the pandemic. While the team had been expecting to benefit from having access to a mobile tool, the RMS application has, during this time thus far, exceeded expectations.

It has been said that data is the new gold and digital innovation is reshaping the way in which utilities today function – and is influencing how they will function in the future. Generg has been able to dig deep into the information provided by the remote access and enhanced analytics in order to continue successfully running its assets, making the shift from pre-COVID to post-COVID in a natural and seamless way.

MORE INFORMATION ABOUT RMS

CGI's Renewables Management System (RMS) is a centralised platform used to monitor and control the operation of renewable energy power plants. The solution includes the Monitor module to track a portfolio remotely, via either a mobile application or a web interface; the Operate module to run a portfolio utilising real-time supervision and control; the Analyse module to improve asset performance, understand the root causes of problems and improve efficiency; and the Predict module to extend the lifetime of assets by anticipating potential faults.



RMS has built-in mechanisms to cater for scalability, micro-services and real-time streaming of KPI calculations. The solution offers all the advantages of a cutting-edge cloud-based solution. It leverages IoT, supports big data and real-time analytics, and offers agile developments and deployments.

RMS is part of the **CGI OpenGrid360** portfolio, which is designed to help utilities improve data insight and support the move to a more flexible and sustainable future grid.

PAY-AS-YOU-GO SERVICE

RMS is offered as a subscriber-based cloud service allowing clients to pay according to the current portfolio size and choice of modules. Hosting services can be customised based on service-level requirements of availability, security, location and standards.

BENEFITS:

- Manage all your renewable assets from a single system
- Enjoy real-time monitoring and control
- Support end-to-end business processes
- Integrate seamlessly with grid operators
- Plan and track maintenance activities
- Save time with automated reports
- Flexible working with web and mobile platforms



ABOUT CGI

Founded in 1976, CGI is among the largest IT and business consulting services firms in the world. Operating in hundreds of locations across the globe, CGI delivers an end-to-end portfolio of capabilities, from IT and business consulting to systems integration, outsourcing services and intellectual property solutions.

CGI works with clients through a local relationship model complemented by a global delivery network to help clients achieve their goals, including becoming customer-centric digital enterprises.

