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Solo Energy Case Study

About Solo Energy

Solo Energy is a renewable energy specialist that was established in Cork in 2015. It deploys and operates distributed energy storage systems, in the form of home batteries and 'Vehicle-to-Grid' (V2G) electric vehicle chargers, at any home or business in the UK that wishes to host one. Hosts store excess generation in exchange for low cost, 100% renewable electricity, which is supplied by one of Solo's local energy supply partners.

Solo has created an energy trading economy that allows consumers to share renewable energy across the grid via a blockchain-based, peer-to-peer energy trading platform known as FlexiGrid. It centrally controls the batteries and chargers, enabling hosts to share excess local generation quickly and easily across the grid.

This digitally connected series of batteries and electric vehicles is known as a Virtual Power Plant (VPP) - an intelligent, connected system of assets in homes and businesses across the grid that enables the flexible supply and demand of energy. This flexibility helps balance the intermittency of renewable energy generation and allows hosts to receive energy that is stored in the assets of other hosts when necessary, allowing Solo to shape demand to follow renewable supply.

By remotely controlling the hosted batteries and chargers, Solo can charge them from onsite solar and wind generation facilities, or from the grid when sufficient renewable generation is already present. When renewable generation decreases, the energy stored in hosts' batteries or electric vehicles is used to supply homes and businesses instead, which also enables the energy to be supplied cheaply.

The Challenge

In order for the energy to be stored and shared securely, Solo needed to find a control platform capable of remotely communicating with and controlling the batteries and chargers, as well as enabling vast amounts of data to be recorded and securely stored. The platform needed to allow Solo to control and remotely communicate with all its distributed assets both individually and as a collective unit, enabling energy to be shared between them quickly and efficiently.

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Solo Energy Case Study

It also needed to provide visualisation tools capable of enabling Solo to visualise and analyse all its energy data so that it could identify trends and improve performance of the VPP, and present this information back to its customers as a simple, user-friendly interface. In order to allow Solo's software to grow along with the business, the virtualisation software needed to be fully scalable.

With data security of paramount importance, Solo also needed to find the most secure environment in which to host the control platform - one which required zero IT infrastructure in order to deliver a cost-effective option, and which could be quickly setup, deliver 24-hour monitoring and comprehensive customer support, and guarantee uptime.

The Solution

Daniel Dransfield, VP of Engineering at Solo Energy, said:

"We needed a control platform that we could deploy quickly, that would remove the need for secondary OPC software, offer object-based deployment to make scaling more efficient, allow for quick development of visualisation clients for the VPP, and deliver excellent data storage and reporting capabilities. It was also important for us that our platform provider be able to deliver comprehensive customer support, particularly while the project was in its infancy and just getting off the ground."

As a result, in 2017, Solo contacted us for a recommendation. Andrew Graham, our Wonderware Product Manager discusses how we identified Wonderware System Platform 2017 as the software most suitable for Solo's needs. he said:

"Wonderware System Platform 2017 is essentially an operating system for industrial applications – a responsive control solution for supervisory, SCADA, MES and IIoT. It provides configuration, deployment, communication, security, data connectivity and people collaboration, bringing essential context to organisations' data, greatly assisting with diagnostics and troubleshooting, and providing valuable system documentation throughout the system lifecycle – all the things Solo was looking for.

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Solo Energy Case Study

"Additionally, it also includes the first ever fully responsive Operations Management Interface (OMI). Providing improved situational awareness and an intuitive user experience through its modern user interface (UI). It also enables users to take advantage of the greater connectivity delivered by the Industrial Internet of Things (IIoT), bringing together information, from all relevant systems, and giving it real context so that you can clearly understand current performance and predicting future behaviour.

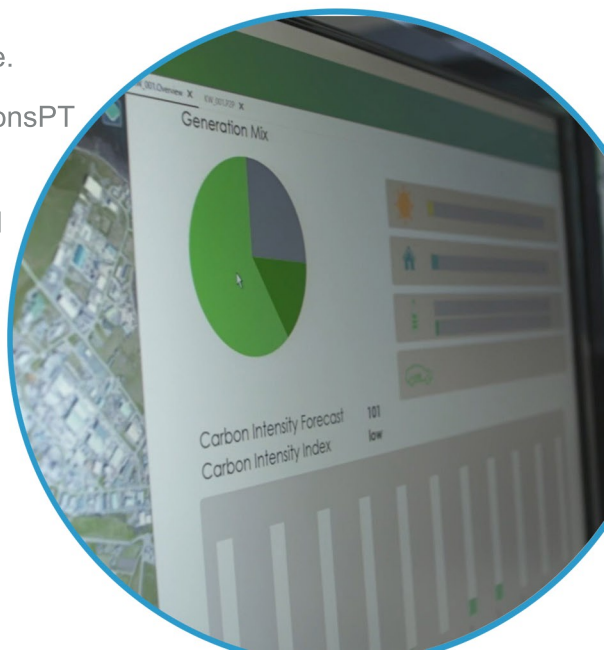
"System Platform also allows screen resolution independent templates of your assets to be digitally modelled and shared on any device. This allows Solo to receive insights from its operations anywhere in the world, as well as keeping development and maintenance costs minimal. Crucially, it also enables application scaling from a single node to hundreds of nodes without the need to redesign the entire application. Using drag and drop technology, assets can be easily deployed onto other machines, allowing users to scale up from a single box solution to multi-tier deployment easily and in keeping with the needs of the business and the technology supporting it, offering a future-proof investment."

Differently to most users, Solo have innovatively chosen to host System Platform in a cloud environment. Due to the nature of their business, they're not restricted by safety or latency concerns which would make an on-premise solution necessary. So, hosting System Platform in the cloud allows them to eliminate the need for additional IT infrastructure and have a fully scalable and easily deployed system that can be installed with minimal resource.

After trialling System Platform 2017 Solo acknowledged it as the right solution for its operation. As well as being quick and easy to setup, System Platform has allowed Solo to:

- Minimise costs as there was no need to setup and/or maintain any IT infrastructure.
- Keep security a priority – the cloud service also delivers a fully managed firewall service, IP limited VPN connection and 24-hour monitoring.
- Guarantee uptime and improve resilience.

To assist in the adoption of the technology, SolutionsPT provided Solo with Wonderware training and certification to Solo Energy in System Platform (Application Development, Historian, InTouch OMI Visualisation) at our training facilities. Throughout the trial and set-up of the solution full technical support was provided to Solo Energy, assisting with any technical product queries.



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Solo Energy Case Study

The outcome

By taking the decision to embrace a cutting-edge control platform and host it in a cloud environment, Solo has:

- Become a constantly evolving company with runtime operations and a full system platform development setup
- Completed a number of pilot projects which, in turn, have enabled it to prove its business model in the UK and Ireland
- Moved from a testbed agreement to a commercial agreement with the Cork Internet Exchange by proving the viability of its business model
- Begun preparations for its commercial rollout

Daniel Dransfield, VP of Engineering at Solo Energy, said:

We're delighted with the new control platform, and glad that we took the decision to host it in a secure cloud environment. The wide range of solutions offered by System Platform 2017 has been invaluable to us as it's essentially an 'everything under one roof' product. If we'd opted for a different platform, we'd have needed to employ additional services from other third-party companies, which would have increased operating costs significantly."

"Wonderware has also helped with the pilots we've been working on. For example, a pilot we worked on in the Orkney Islands in Scotland – a new housing development of circa 30 houses - was required by building regulations to have renewable energy, however the network operator was unable to connect all the homes to the grid. We used FlexiGrid to get all the households connected by storing renewable generation from their solar panels in our FlexiGrid-controlled batteries and preventing any excess generation from being exported to the wider grid".

"We're now in a position to begin rolling out our service commercially across the UK and Ireland and that's not something that would have been possible without System Platform 2017."