



INDUSTRIAL CASE STUDY:

Battery Storage System Drives Down Energy Costs and Carbon Emissions for NSG Group

CONVERGENT

Overview



Across North America, energy storage, most commonly found in the form of battery storage, is emerging as a practical, reliable, and affordable solution to meeting corporate sustainability goals and daily operational demands. Energy storage stores electricity from the grid (and on-site renewable energy deployments, such as solar) and dispatches it at the most strategic times. For example, when energy on the grid is most expensive and carbon-intensive, energy storage provides an always-on energy resource that helps businesses reduce costs and increase reliability, improve sustainability, and reduce electricity costs.

Battery storage is especially valuable to energy-intensive industries, where energy costs are a major component of operating budgets. Such is the case at NSG Group, one of the world's largest manufacturers of glass and glazing products for the architectural and automotive markets, including its Pilkington plant in Collingwood, Ontario.

Large manufacturing operations can have an outsized influence on the towns in which they operate, and the Pilkington plant is no exception. It is one of the area's largest employers and one of the local grid's biggest customers. In other words, getting energy "right" means more to NSG than simply keeping the lights on. It means reducing stress and expense on the local grid, decreasing carbon emissions, being a good neighbor and community member, and, simultaneously reducing operational costs.

A battery storage system by Convergent Energy and Power (Convergent) checked each of these boxes, delivering a powerful, intelligent, and flexible, new energy resource to NSG: its first battery storage solution across its global operations. The battery system was installed at its Pilkington plant at a particularly demanding and critical time to deploy a large-scale energy project, during the heart of the COVID-19 crisis.

The Challenge

NSG Group's Pilkington plant, which manufactures automotive windshield glass, uses a lot of energy. Large industrial ovens run constantly to create the renowned glass, contributing to Pilkington's over 5MW peak demand. Such peaks are expensive all over North America, including in Ontario, which levies fees—through a mechanism called Global Adjustment (GA)—on manufacturers and other large users of electricity based on their five periods of highest energy use per year.

Eager to reduce its peak demand charges while advancing its sustainability goals, NSG Group weighted energy storage options over more highly polluting back-up generators.

The company selected Convergent to build, operate, and manage the battery storage system after a rigorous, competitive process. With over a decade of expertise and largest portfolio of operating assets in Canada (~50 MW installed), Convergent had an advantage over other providers, sealed by its industry-leading 100% project-completion rate.

And that project expertise would be called upon. Everything about the energy storage project would be big. The size of the battery storage system, the involvement of and impact on the local community, the challenges and additional safety requirements posed by COVID-19 during the construction, and the resulting reduction of the Pilkington plant's energy costs and carbon-footprint.



The Construction

At the time of development, there was near \$500M dollars in potential savings on the line per year, Convergent committed to an aggressive construction schedule to deliver a fully operational 5 MW / 10 MWh energy storage system by the summer of 2021, a key period of peak energy demand.

**SIZE**

5 MW / 10 MWh

APPLICATIONBehind-The-Meter
Peak Shaving**TECHNOLOGY**Samsung E3
NMC
Lithium Ion Batteries**INTERCONNECTION VOLTAGE**

44kV

INTEGRATOR

IHI Terrasun

Working closely with its system integrator partners and local construction teams, Convergent and NSG Group committed to investing in the community by employing local construction and other project help.

Leveraging its experience, Convergent overcame a number of unforeseen obstacles that could have derailed lesser providers:

1. The project broke ground in the winter of 2020 just at the emergence of the COVID-19 pandemic and related shutdowns.
2. The entire project team had to adapt to stringent local safety protocols and travel restrictions brought on by the pandemic to construct the system.
3. Convergent worked through supply chain shortages and bottlenecks, relying on years of experience and close partnerships with suppliers, distributors, and other local resources to ensure timelines were met.

Successfully threading the needle, Convergent pulled off one of the most impressive battery storage system installations in its history, and in the industry at large.



We value Convergent Energy + Power's expertise from system design to dispatch, bringing the battery storage system online as quickly and safely as possible during the pandemic.

JOHN WILGAR
NSG Group
Head of Procurement

The Operations – PEAK IQ®



Through PEAK IQ, Convergent is saving NSG Group, along with other large industrials and utilities millions of dollars per year on their electricity costs.

Achieving NSG Group's goals of reducing electricity costs and carbon emissions simultaneously is about more than the battery storage solution itself—the value of the system comes from its operations.

Unlike solar and wind generation, which passively produce electrons and deliver them to the grid when the sun is shining or the wind is blowing, a battery should be actively managed and monitored to deliver optimal performance and value.

Batteries do not generate power; batteries store power. As a result, knowing when to charge and discharge a battery storage system is critical to extracting the most value from a battery asset.

The decision about when to discharge an asset is determined by many complex factors, including customer load characteristics, utility rate tariffs, wholesale market pricing, grid peak times, and weather forecasts.

In order to reduce costs and carbon emissions, the batteries are most often charged at night, when energy is least expensive and least carbon-intensive, and discharged during the peak hours of the peak days, when energy is most expensive and most carbon-intensive.

Convergent's **PEAK IQ**® energy storage intelligence ensures energy is stored and dispatched at the most strategic times. PEAK IQ uses the latest artificial intelligence (AI) and machine learning technologies to seamlessly maximize asset performance.

PEAK IQ has been in development for over a decade and is one of the world's longest-running, most trusted energy storage intelligence platforms. The primary benefit of PEAK IQ is its unparalleled operating experience, performance metrics, and algorithms. Through PEAK IQ, Convergent is able to save NSG Group, along with other large industrials and utilities millions of dollars per year on their electricity costs.

The Results

With all systems go, i.e., a 5 MW / 10 MWh behind-the-meter battery energy storage system interconnected to Pilkington's system and the local grid operator, Convergent put the resource to work. Using PEAK IQ to determine with pinpoint accuracy the costliest, most carbon-intensive grid consumption peaks, Convergent enabled Pilkington to meet its initial sustainability and cost-cutting goals.

The system is performing as anticipated, capable of taking ~ 50% of the plant's demand off-line and supplying that power from the batteries directly.

Building on this early success, the new Convergent battery storage system is projected to drive 7-figures in electricity savings over the life of the system without any up-front, out-of-pocket expenses for NSG Group. The system is fully financed and managed by Convergent, putting the onus of optimizing battery dispatching and performance squarely on Convergent (Convergent only makes money if NSG Group does).

And by selecting a carbon-reducing battery storage system over a carbon-producing generator, NSG Group is well on its way to



fulfilling its local sustainability goals while meeting commitments to its local community.

In 2021, Ontario's Minister of Energy toured the battery storage system, hosted by NSG Group, Pilkington, and Convergent, to better understand the role of energy storage for both businesses and the grid at large. Pilkington shared why they chose a battery storage system—and Convergent. The outcome was a greater governmental understanding of the role of battery storage in the clean energy transition.

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Locally, this battery storage system is part of our commitment to support our community in Collingwood and the broader efforts in Ontario to create a more efficient, sustainable grid.

RON YOUNG
Engineering Manager, Pilkington

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ABOUT CONVERGENT

Convergent Energy and Power (Convergent) is a leading provider of energy storage solutions in North America. Convergent has over a decade of experience financing and managing all aspects of the energy storage development cycle to help customers reduce electricity costs and increase reliability. The company's commercial, industrial, and utility-scale assets can yield seven-figure savings while advancing the clean energy transition. Convergent's proprietary asset management platform, PEAK IQ® leverages machine learning and deep market knowledge to optimize asset performance and maximize value. Convergent has over \$500M invested in or committed to projects in operation or under development across North America. For more information, visit convergentep.com or follow us on [LinkedIn](#) or [Twitter](#).