



Moving mountains – smart electricity for snowy Sjusjøen

Elvia and Pixii Grid battery pilot

As Norway becomes more electrified, 1950s grid infrastructure struggles to get a grip of high consumption and load imbalances.

Peak problems

Providing Norway’s consumers with electricity supply within regulation is a Galdhøpiggen-sized (highest mountain in Norway) task.

Remote, mountainous terrain and a cold climate compound the difficulties of building and maintaining power lines. And a scattered population makes the business case of larger grid upgrades difficult to justify.

But historically, at least the objective was simple – supplying quality power efficiently and reliably to consumers.

Nowadays, things aren’t quite so straightforward. Penetration of electrical vehicles, high peak consumption, and load imbalance create low voltage challenges. And solar power has converted consumers to prosumers – who produce as well as consume energy.

In low consumption periods, solar energy fed to the grid can create voltage peaks way above strict regulations. Ironing out those peaks is a mainstay of DSO Elvia’s mission, because it enables prosumers to participate in the Green revolution – making the grid more inclusive for solar and wind power in any location.

But 1950s infrastructure can’t support these more dynamic peak loads with local power generation. And legacy systems take significant investment and years to upgrade.

Meantime, Elvia can’t leave consumers in the dark. Which is exactly why it commissioned a Pixii PowerShaper pilot project for iconic snow sports destination Sjusjøen.

Case details

Objective: Installing a quickly deployed system that provides stable power to consumers without upgrading grid infrastructure

Client: Eidsiva

Industry: DSO/DNSP

Country: Norway

Background

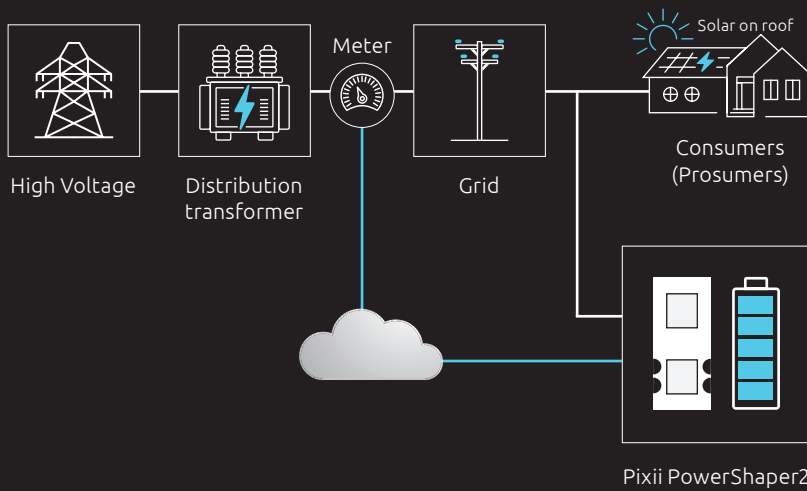
By far Norway’s biggest DSO, Elvia is responsible for ensuring 2 million people in Innlandet, Viken and Oslo have electricity in their outlets.

This 50,000 sq km power grid is Norway’s largest. And Elvia works 24/7/365, using innovative, sustainable solutions to improve the supply.

One major challenge Elvia faces is that the power grid in many remote parts of the network hasn’t been upgraded since the 1950s. It’s simply unfit to provide electricity that meets the complex demands of modern consumers.

Grid infrastructure upgrades are expensive and time-consuming. So Elvia worked with Pixii to deploy a semi-permanent solution in the form of Pixii Powershaper2 Cabinets.

Solution and benefits



The solution

Elvia self-installed one Pixii Powershaper cabinet (30 kW, 65kWh system) delivered with NMC batteries.

The project was completed smoothly in just half a day, with one cabinet serving around 20 houses in this particular Sjusjøen pilot.

Applications/functions in use:



Phase balancing



Voltage support



Arbitrage



Easy installation

The boundless benefits

Pixii Powershaper systems enables Elvia to deliver a unique solution for Sjusjøen consumers.

Its single-phase unit allows power to be transferred to and from individual phases. And there's an ultra-fast response time because each module can react immediately to grid changes.

DSOs like Elvia need a flexible, low-maintenance solution that's quick and easy to install, with advanced functionality for phase balancing, and active or reactive power compensation for the extremes.

Pixii PowerShaper2's 48-volt internal architecture allows easy maintenance, while modularity means hassle-free installation and flexibility. Should Elvia upgrade the grid at this location, the Pixii BESS can be easily moved to support another area where it's needed to enhance the ageing grid.

And there's more. Because careful placement of the Pixii PowerShaper system also maximises its impact. When it's located in a 'sweet spot', a single cabinet can improve the voltage quality both downstream and upstream on an electricity line. Utilizing the flexibility in the built in scheduler, different functions and settings can be adjusted to daily, weekly or seasonal differences.

Technical overview

Storage system:	Pixii PowerShaper 2
Power:	300kW
Battery:	NC
Discharging power:	30kw/65 kw hrs
Daily use:	1 cabinet serves around 20 houses.
Operating temp:	- 50 °C to + 50 °C
Efficiency:	up to 96%
Installer:	Elvia

"Our experience with distributed grid batteries, is that this can give us significant cost reductions as well as new opportunities to enable environmentally friendly electrification"

Alf Tunheim, Project Leader, research & Development, Elvia (Norway's largest DSO)

Revitalizing results

The Pixii Powershaper2 unit allowed Elvia to effectively upgrade the Sjusjøen grid without investing in expensive new infrastructure – fast-forwarding a process that might have taken 10 years to just a few hours.

This cost-effective solution resolves the issue with phase balancing and means consumers enjoy better quality electricity - with the grid stabilised through seasonal fluctuations and changes in demand. It's particularly suited to rural and remote areas but can be equally effective in urban locations.

With Sjusjøen consumers enjoying smart, responsive, cost-effective electricity, watch this space as Pixii and Elvia bring Norway's grid back to the future – one clever cabinet at a time.



"Our system, based on single phase units and with an extremely fast response, provides a unique solution to these grid challenges"

Morten Schøyen, CPO, Pixii AS



*At work in this case: Pixii Powershaper2 cabinet
30 kW, 65kWh system with NMC*

Project contacts

Pixii Oslo

E-mail: post@pixii.com

Visiting address: Sommerrogata 13-15,
0255 Oslo

Project manager Pixii

Morten Schøyen

CPO

Tel. +47 915 17 452

E-mail: morten.schoyen@pixii.com