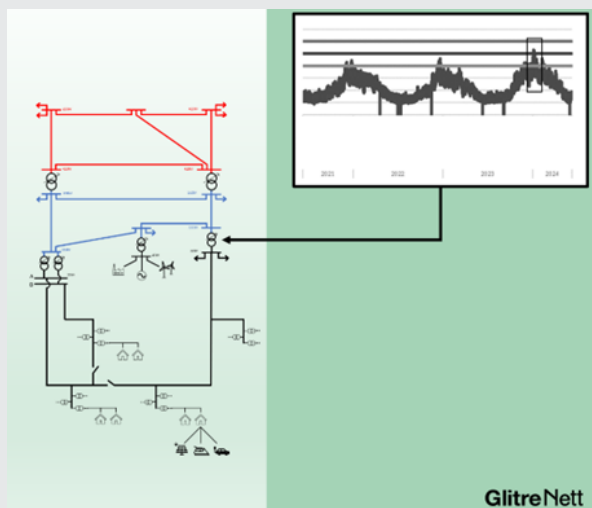


Overload condition managed with GridTools

A use-case that helps grid operators manage overload conditions using automated trading of flexibility as part of Euroflex in Norway.

Why?

The growing need for electrification in society puts stress on the electricity grid, especially at the LV and MV levels. The grid can be relieved from stress by using flexibility resources. To enable this trading of flexibility between the grid and the flexibility service providers, the NODES™ market platform is one of the prominent solutions in the market. To make trading of flexibility even easier and more effective, GridTools Platform has enabled an effective solution for grid operators. This use-case explains how a local flexibility market can work with the GridTools solution.



How?

This use-case manages overload conditions in winter-time when the temperature is low and energy consumption is very high during peak hours. Without smart grid operation and flexibility in the grid, lines and transformer stations would periodically be overloaded, reducing their lifetime or even worse: it leads to power loss for the customers.

About GridTools:

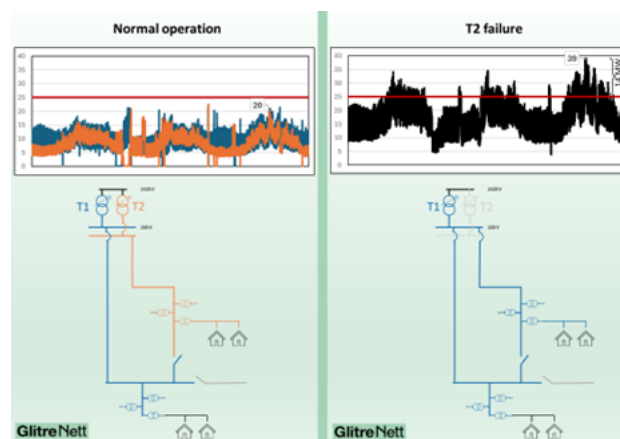
GridTools enables the grid operator to identify and automatically optimise solutions for the grid as described in the use-case above. When there is sufficient flexibility in the NODES™ market platform at a price the System Operator (SO) at Transmission or Distribution level is willing to pay, GridTools will make an optimised solution and automatically trade sufficient flexibility. Thus, solving the problem without the need for operator intervention. The System Operator has, however, full control of actions that can be performed inside the GridTools and can manually intervene if desired.

N-1 condition managed with GridTools

A reference use-case from Euroflex market in Norway, where a critical infrastructure failure could be resolved using flexibility.

Why?

An example below, where a transformer station is shown with Normal condition vs Transformer failure state. If there is a risk of overload if Transformer (T2) should suddenly and unexpectedly fail, there could be a N-1 situation for the grid. Where if another fault occurs on the other Transformer (T1), a blackout could occur.



How?

GridTools will ensure that Transformer (T1) can handle the situation and avoid a follow-up failure in T1 and a power outage for the customers. With the integration to NODES™ market platform, GridTools can see available Flexibility offers from Flexibility Service Providers (FSPs). This way a buy order placed in the local flexibility market can solve the N-1 condition for the grid operator.

What is done so far?

NODES™ Market Platform and GridTools through the Norflex and Euroflex markets in Norway, showcased how GridTools can automate the use of flexibility and utilize the grid with 35,000 automated flexibility activation trades from Distributed Energy Resources (DERs) ranging from kW to MW.

The goal of the Euroflex project is to scale up the flexibility volume in the grid to be sufficient to actually solve the problems that will occur. Also making all major Distribution System Operators (DSOs) in Norway able to use smart grid operations and flexibility.



Automated Flexibility
Trading with
GridTools



nodesmarket.com
info@NODESmarket.com



GridTools

GridTools enables the grid operator to identify and automatically optimise solutions for the grid.

GridTools allows you to create a digital grid model, create load forecasts, optimise the use of flexibility and automatically trade flexibility.

Thus, solving the problem without the need for operator intervention. The grid operator has however, full control in each of the step in the GridTools process and can manually intervene if desired.

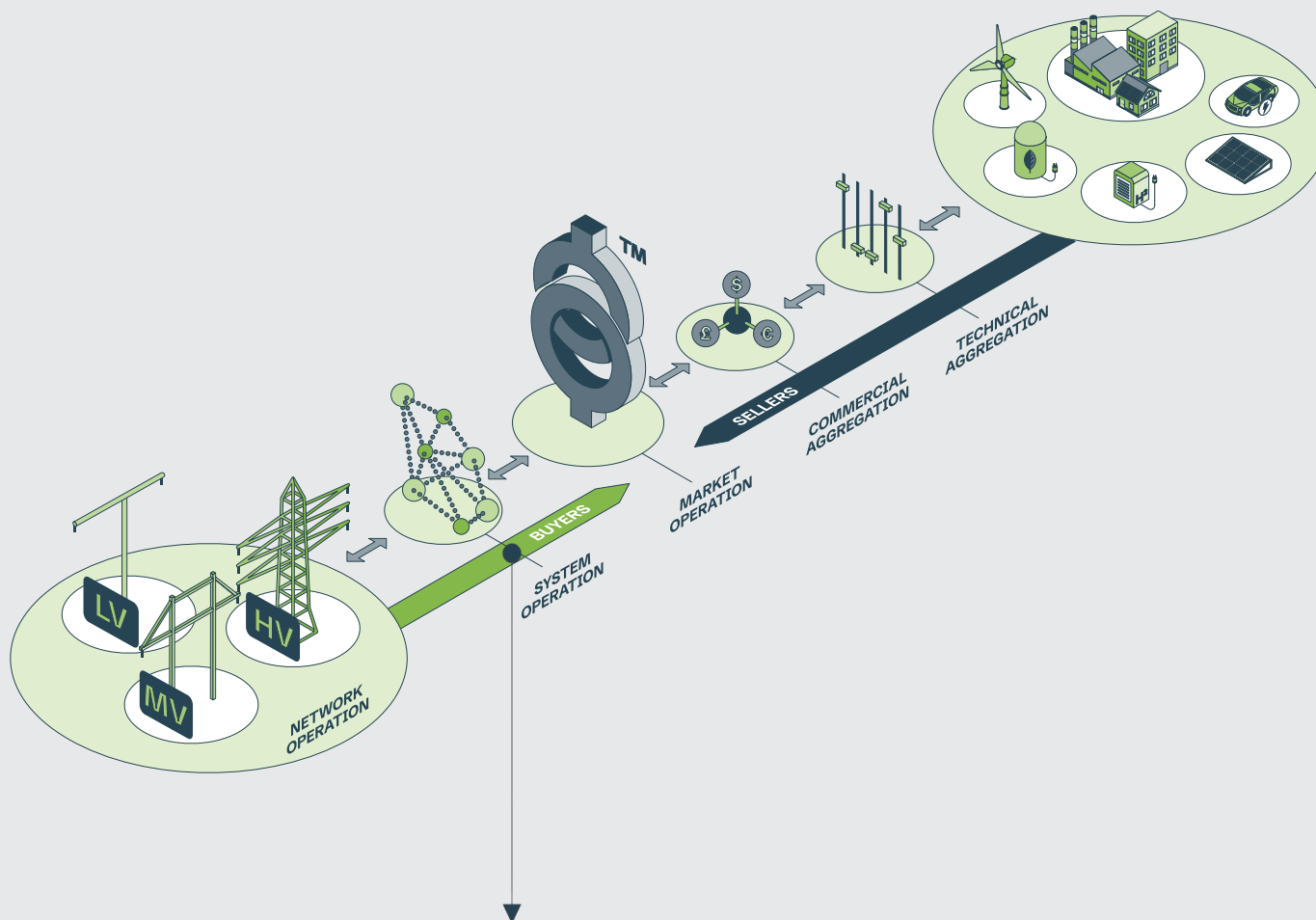
Use-cases

- Overload condition managed with GridTools
- N-1 condition managed with GridTools

35 000

Automated Flexibility
Activation Trades

New digital flexibility value chain



gridtools

Dashboard

Grid Modelling

Load Forecast

Optimizer

Trading Bot