

Artelys Crystal Super Grid

Capacity expansion planning for power generation, transmission, storage and flexibility options

Energy systems are rapidly evolving to ensure households and business have access to a reliable, affordable and climate-friendly provision of energy. Artelys Crystal Super Grid helps you understand the impact of structural evolutions of the power sector in terms of flexibility needs, revenues, CO₂ emissions, etc. You can also let Artelys Crystal Super Grid automatically find out the optimal level of investments to meet the demand for energy and reserves!



Artelys Crystal Super Grid is a tool that combines a detailed representation of the system with an ergonomic interface, allowing decision-makers and analysts at the national and continental levels to assess the costs and benefits of infrastructure projects.

The solution for power system economics

Key features

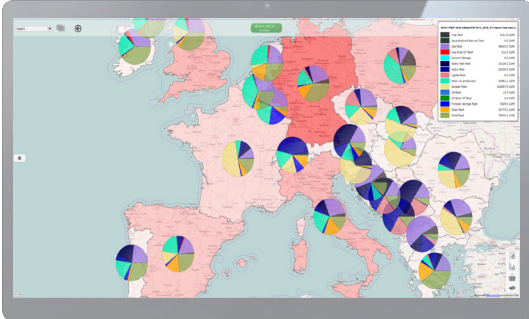
- Built-in library of 30+ technologies
- User-friendly interface with built-in techno-economic and environmental indicators
- Multi-energy modelling: gas and power
- Multi-zonal representation of the energy system with transmission capacity constraints (NTC)
- Multiple import/export formats
- Supply-demand equilibrium computed with an hourly time resolution (8760 time-steps per year)
- Stochastic optimization over numerous weather scenarios (RES profiles, demand)
- Reference pan-European scenarios included
- Support provided by a strong team of energy consultants and IT experts

Our clients use Artelys Crystal Super Grid to..

- Perform cost-benefit analysis for power transmission projects (for ISO/TSOs or regulators)
- Analyse the impact of energy policy analysis: evolution of social welfare, congestion, and marginal costs in every zone
- Dimension infrastructure project: transmission, storage or production
- Study the benefits of a joint management of power and gas systems

An intuitive way to compare your scenarios

- Easily compare the results of your scenarios thanks to an intuitive comparison mode
- Import and export from/to Excel with a simple copy/paste



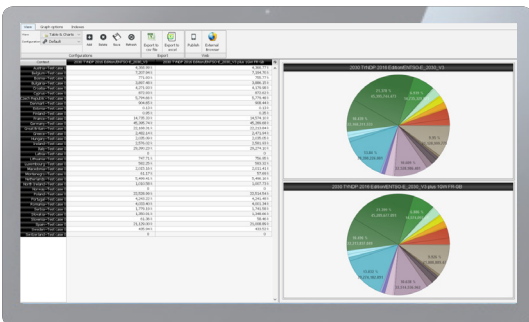
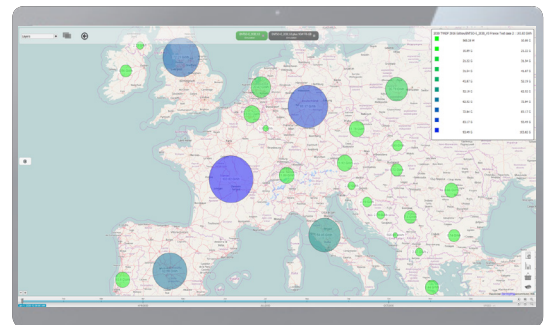
An ergonomic graphical user interface

Artelys Crystal Super Grid comes with a user-friendly interface, allowing you to create high-impact presentations of the key results:

- Visualize and compare results directly on the map: installed capacities, total demand, nodal prices and more
- Observe the hourly evolution of generation, flows and revenues
- Custom temporal and geographical aggregation capabilities

Usable out-of-the-box

- More than 30 assets types (generation volumes and costs, consumption, transmission, dynamic storage, demand side management)
- Provided with prospective scenarios of the power sector
- Numerous built-in indicators such as social welfare, congestion revenue, generation quantities and costs, loss of load or CO₂ emissions

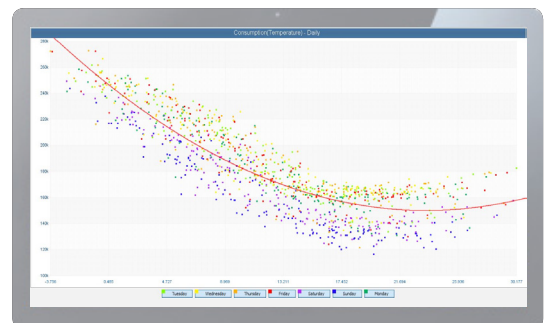


Optimization engine & detailed analysis

- Jointly optimize generation, transmission, storage and flexibility options using the powerful Artelys Crystal Optimization Engine
- Optimize the hourly management of your assets and generate marginal costs, social welfare, loss of load expectation, etc.
- Store and analyse the hourly results for each of your scenarios

Additional modules

- Capacity expansion planning: let Artelys Crystal Super Grid automatically and robustly determine the optimal set of investments
- Demand modeling, considering weather and economic drivers
- Integrated database module: run automatic consistency checks and collect feedback on your data



Personalization and support

- Artelys engineers will help you integrate Artelys Crystal Super Grid in an existing environment and/or workflow, with tailored models, import/export and communication capabilities, etc.
- Provision of guidance on the best way to use Artelys Crystal Super Grid for your studies
- Highly efficient support team, with energy specialists and IT experts

Independence

Artelys Crystal Super Grid is developed by Artelys, an independent software edition company.