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Artificial Intelligence as an Enabler for the Energy Transition

Qantic GmbH @ SBRT

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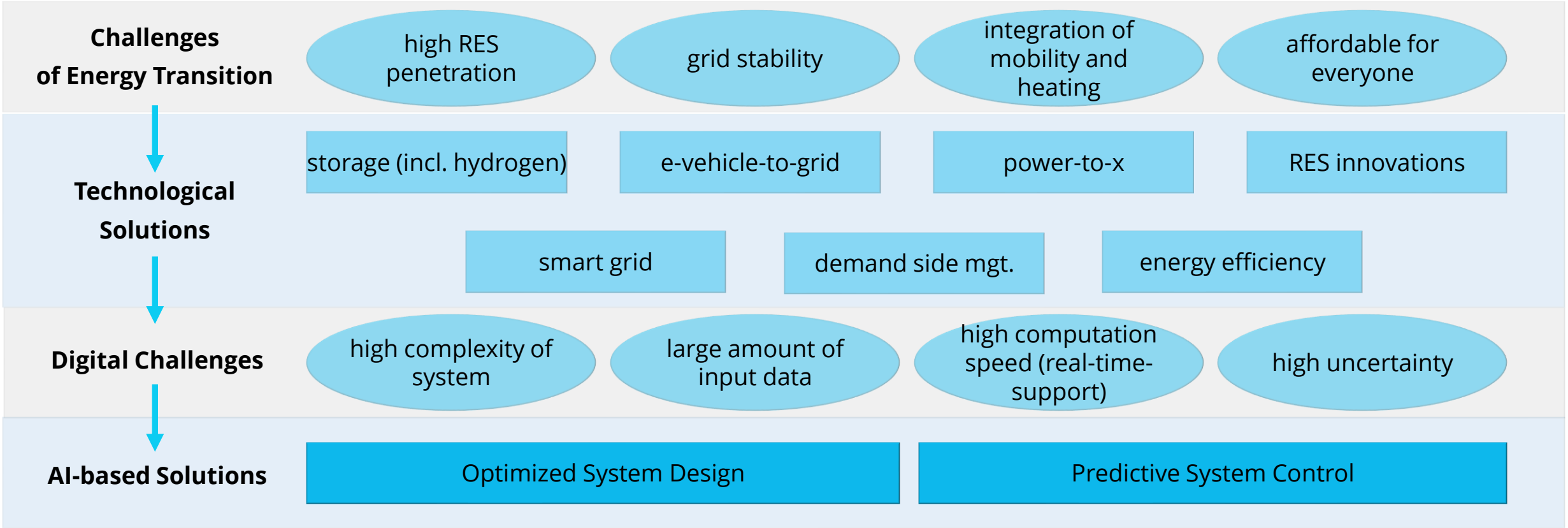
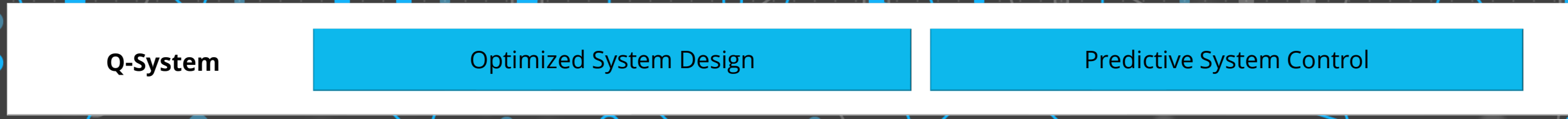
Hardware and software solutions need to be combined to cope with the challenges of integrating large amounts of renewable energy sources (RES)



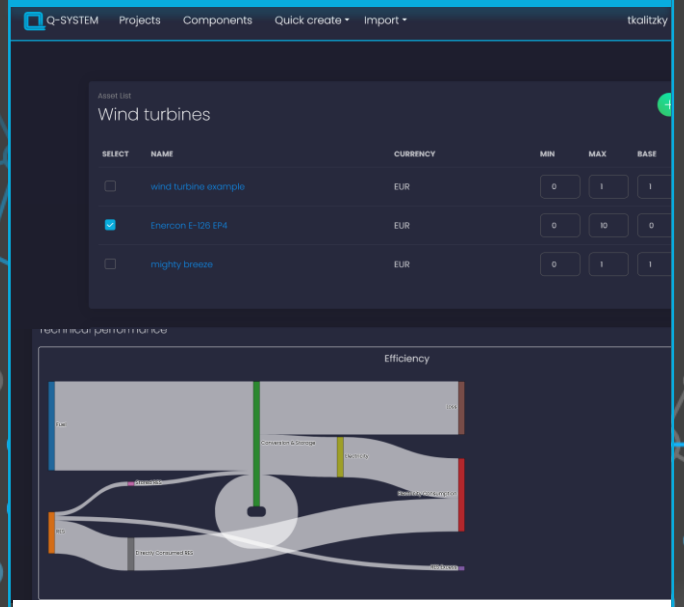
With Q-System we provide a solution for optimized system design and predictive control of energy systems

Enabling technological solutions for the energy transition with AI-based tools and control algorithms



Our Software “Q-System” simulates energy systems and optimizes design as well as operation based on an AI-Algorithm (Deep Reinforcement Learning)

Configure Options

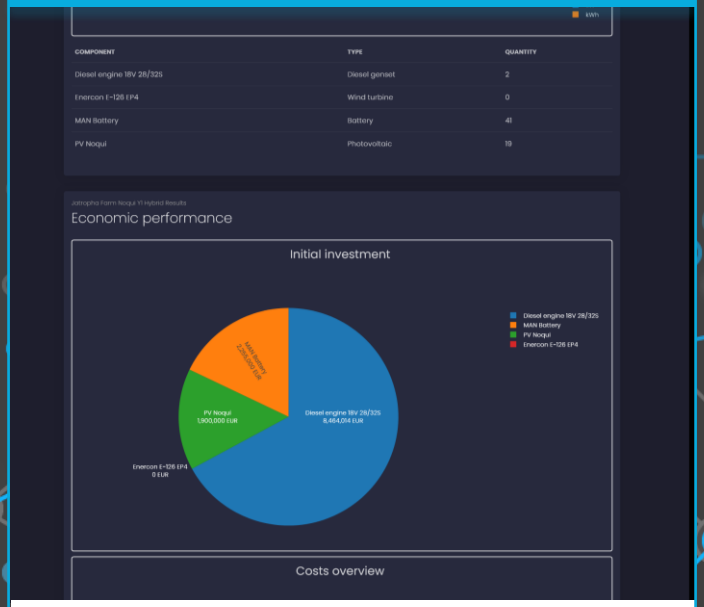


- Configure options for generation and storage
- Site-specific restrictions

Simulate Systems

- Digital Twin of the system architecture allows for in-depth technical and economical analysis

Optimize Performance



- Optimal system configuration
- Optimal operation/dispatch

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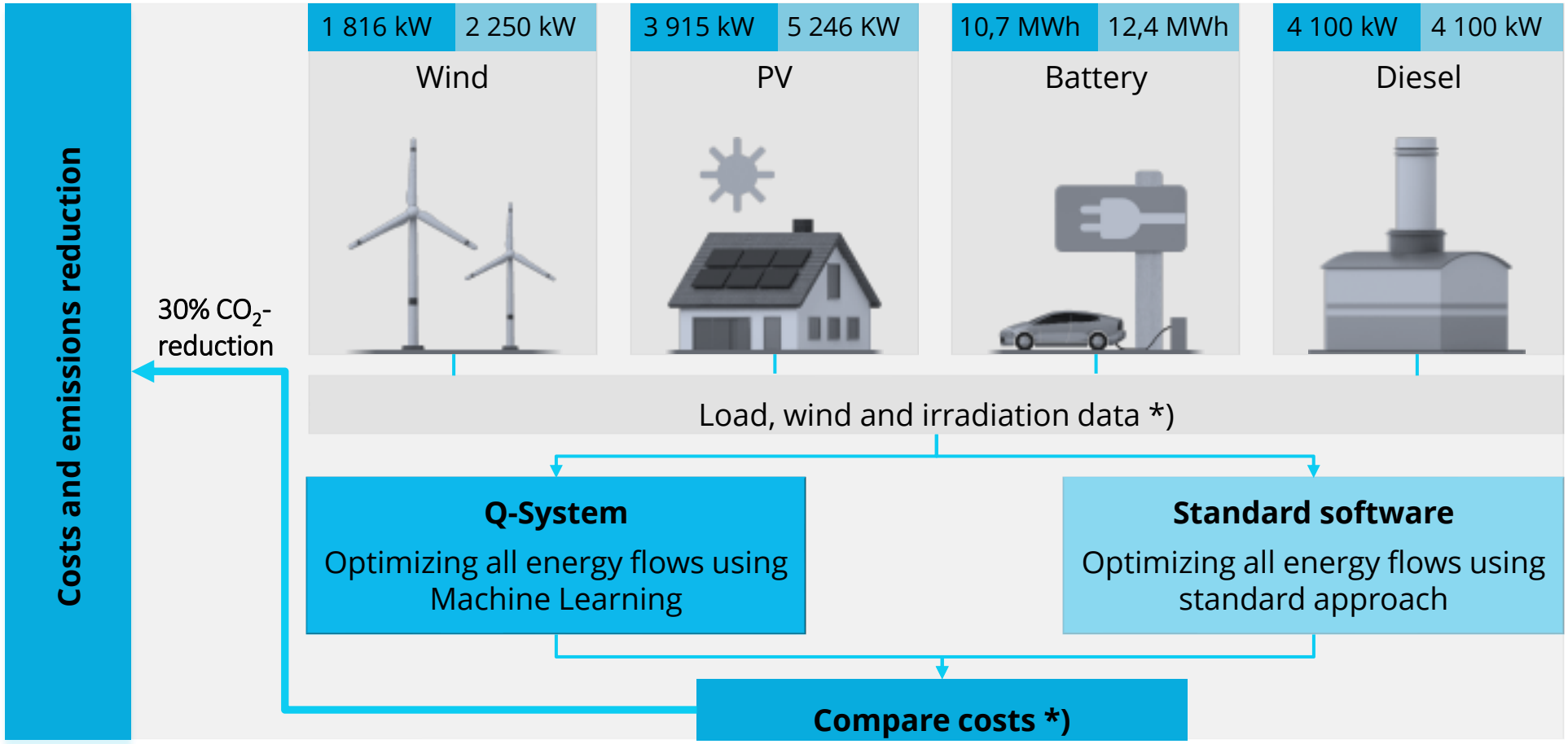
Although less renewables are installed the use of Machine Learning lowers emissions



- ✓ **Reduced GHG emissions**
- ✓ **Reduced sensitivity to fuel price volatility**
- ✓ **Reduced overall costs (OPEX and CAPEX)**
- ✓ **Higher usage of RES produced electricity**

*) To avoid any effects from over-optimization i.e. perfect foresight Q-System has been trained on different time-series, whereas the validation has been done on the same set of data for Q-System and standard software

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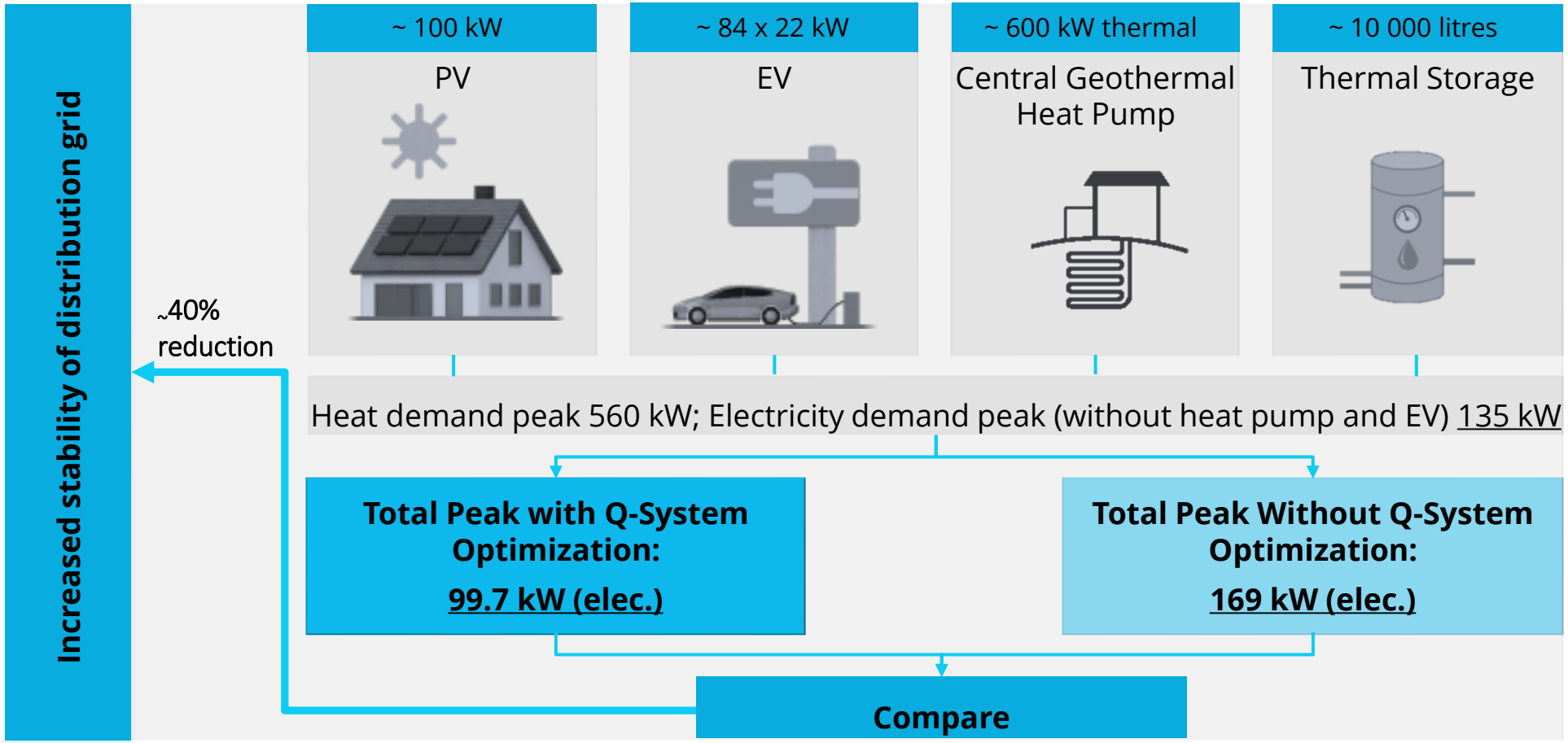
AI based predictive system control can increase grid stability



- ✓ **Reduced Peak (lower grid charges)**
- ✓ **Higher level of RES self-consumption**
- ✓ **Less volatile grid usage (good for grid operator)**
- ✓ **Less need of fossil back up**

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