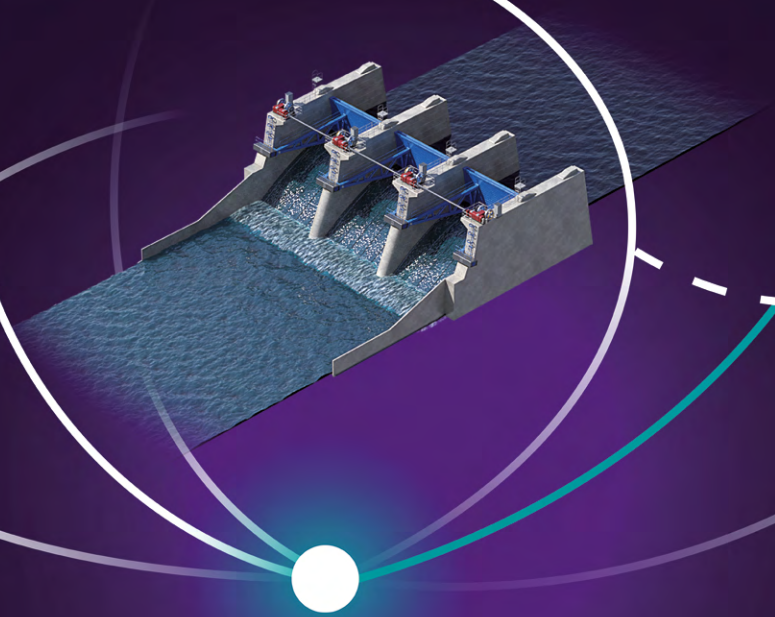
SIEMENS energy

With the power of water to a sustainable future

Comprehensive Solutions for Small Hydropower Plants



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Ready for the future

Making hydro energy an investment that pays off

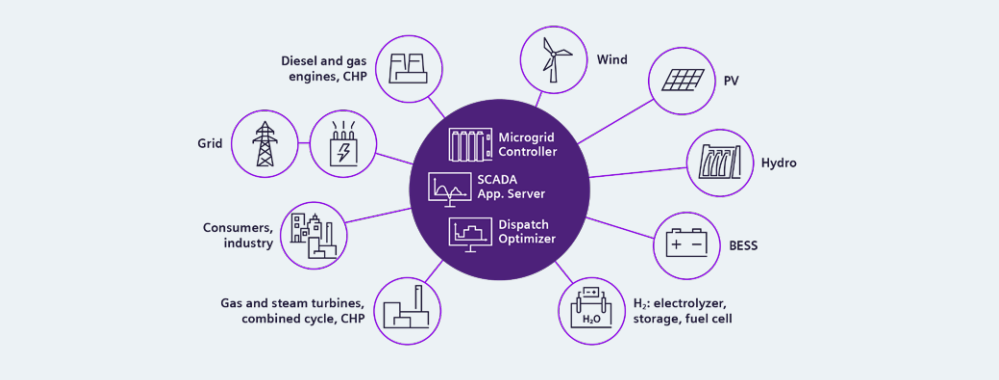
Renewable energy is the linchpin of todays energy mix. Solar, wind, bio-mass, and, of course, water are vital elements for an environmentally compatible global energy supply.

In view of the need to balance economical needs, ecological awareness and grid stability, hydropower stands out in terms of profitability, sustainability, and availability. Small hydropower plants in particular have proven to be a functional and intelligent source of energy.

Distributed power generation from hydro sources increases independence from fuel price developments and carbon emissions costs, potentially generating additional revenue from carbon emissions credits.

Siemens Energy can draw on decades of experience and hundreds of small hydropower plants installed worldwide. The company is renowned for its innovation strength, technical excellence and outstanding service and can serve as a system provider with comprehensive expertise in the implementation of turnkey projects – nowadays also often in combination with wind, solar and others (hybrid plants) and storage systems (e. g. batteries).

Additionally, Siemens Energy is also a leading company in the field of digitalization. Beside the Fleet and Control system solutions we can create a Digital Twin of your generating unit with our Sipocon H Optimizer to keep it optimized over its lifetime. This can translate into high profitability and availability of the plant and low total cost of ownership.



Siemens Energy Hybrid Control combines different decentralized sources to optimize efficiency, flexibility, reliability and sustainability.



In Véroia at the western edge of the Thessaloníki plain in Greece, the Aliakmon river is used to produce hydroelectric power.

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Expertise that generates revenue

Proven solutions

Siemens Energy stands out as an independent and reliable partner drawing on comprehensive know-how and technologies. The company promotes and continuously improves innovative solutions that help clients operate successfully.

Siemens Energy presents one face to the customer for an entire project as the solution provider. Its expertise in small hydropower plants covers:

- Turnkey solutions for the water to wire scope of supply
- Customized design and installation to meet the client's individual needs
- Modernization of existing plants with minimized production losses utilizing parts and equipment as suitable
- Plant performance optimization using a digital plant model (Digital Twin)
- Integration of turbines from various manufacturers
- Integration of different turbines in one plant
- Local support, maintenance, and service help provide high availability
- Highest degree of operational safety and efficiency even for smallest plants



Hydropower plant Klimatia in Greece: Interior overview of Francis and Pelton turbines with synchronous generators and hydraulic units, medium voltage panels.

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Project references



St. Anton, Austria
8 MW

Scope of supply and solutions

- Complete electro-technical solution for two twin-nozzle Pelton-turbines rated at 4,000 kW each
- Engineering, supply, installation, and commissioning
- 5 kV switchgear, 6,300 kVA and 5,250 kVA transformers
- Supply includes 50 switchboards providing automation for 3,000 I/O
- Control system with redundant PROFIBUS coupling via Ethernet

Customer benefits

- Energy supply security
- Cost-competitive, environmentally friendly renewable energy
- Comprehensive electro-technical solution



Smådola, Norway
15.5 MW

Scope of supply and solutions

Engineering, supply, erection, and commissioning of

- 3 different sized Francis turbines (9,8/3,25/1,4 MW)
- Synchronous generators
- Electrical equipment including: transformers, 22 kV and 0,69 kV switchgear, low-voltage switch-boards automation, control and monitoring (SCADA)

Customer benefits

- Customized turnkey solutions
- Highest energy production due to high-efficiency systems
- Reliable electro-mechanical components/systems

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A convincing scope of supply







As the only integrated energy company that serves the entire energy conversion chain with products, solutions, and services, Siemens Energy provides both sophisticated technology and substantial knowhow. This includes the construction of new, small hydropower plants as well as the modernization of existing ones. Siemens Energy is able to provide comprehensive solutions for small hydropower plants up to 30 MW unit capacity from various worldwide locations.

Modernization of existing plants

If an existing plant needs to be upgraded with state-of-the-art technology, Siemens Energy is the partner of choice. By using the pre-existing technical equipment that is already installed on site, Siemens Energy can optimize the technology with minimal budget requirements.

In addition to that, Siemens Energy is able to optimise the plant performance of the existing plant (in case of a modernisation) as well as for a new-built plant by using a Digital Twin.

The Siemens scope of supply includes:

- Turbines from leading manufacturers
- Generators, transformers
- Turbine control
- Medium-voltage switchgear
- Excitation devices, voltage and efficiency factor regulators
- Machine automation
- Monitoring and control of the entire hydraulic system (dam, reservoir operation, weir system, residual water release)
- Safety devices
- Alarm signals and telephone alerts
- Remote control devices
- Remote data transfer
- Integrated power plant control systems
- Plant Optimizer using a Digital Twin
- Lighting, power installations, earthing and lightning protection
- Energy feed-in to the regional network
- Linking multiple plants

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