SIEMENS energy

Instrumentation, Controls & Electrical

A proven solution for any challenge in hydropower automation

Small Hydropower Solution Sipocon-H

Control and Governor System

As an integral element of the hydropower plant control system, the Sipocon-H digital governor system combines flexible and modular architecture to meet tailor-made customer requirements. Furthermore, the system serves a huge variety of hydropower plant control systems ensuring availability and proven performance.

The Task

The hydropower plant operation and its performance largely depend on the turbine governor system. Irrespective of hardware properties, the system ensures a safe and stable operation, maximum availability as well as precise functionality.

Our Solution

The Sipocon-H is the core element of our integrated and customized hydropower plant automation solution. It is based on universally available PLC / DCS systems, such as the globally established industrial standard of the SIMATIC family or the SICAM 1703 family.

The system meets the highest demanding requirements and is easy to adapt and parameterize without any kind of programming.

Software and user interfaces (local and remote) can be provided in a variety of platforms, such as SIMATIC S7, PCS 7, SPPA-T3000, SICAM, WinCC, Zenon etc.,which all have modular architecture and graphic interfaces in various designs.

Operation and visualization is done via local and / or remote visualization systems. These systems provide long-term data storage and related reporting features, for continuous analysis and evaluation.

Due to its modular architecture and the standardized interfaces, the turbine governor Sipocon-H can be extended to a complete plant automation system.

Additionally, the system supports a comprehensive range of communication solutions such as Profinet, Profibus DP, Modbus TCP, OPC, IEC 60870 and IEC 61850 amongst others.

Standard controller functions and features

- Speed control
- Power control
- Flow control
- Level control
- Open control

Typical additional applications

- Plant control: Optimized controller for more than one parallel energy production line
- Demand side management controller
- Primary and secondary control

Standard operation modes

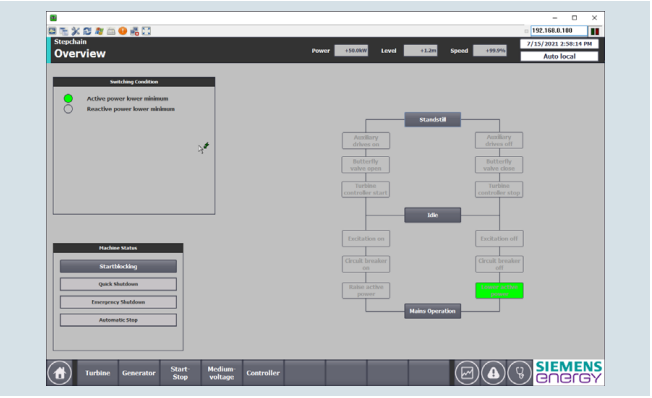
- Manual operation
- Automatic operation
- Remote operation
- Island mode

Your Benefits:

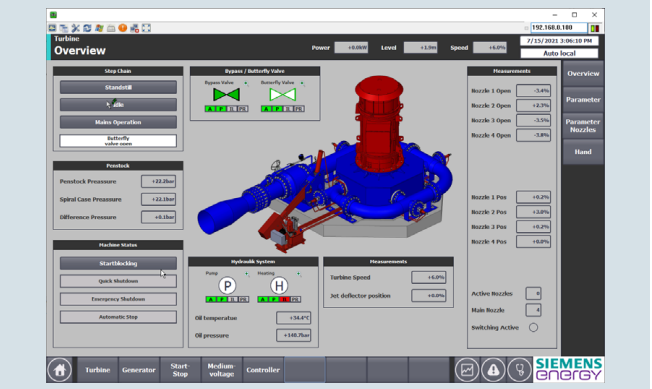
- Modular governor architecture for tailor-made plant design
- Easy parameterizing without engineering tools
- Standardized interfaces, communication and arbitrary redundancy concepts for a smooth integration
- Expandable to a complete plant automation system and scalable to all different unit sizes and unit combinations
- Meets all relevant international standards for a global use
- Performance and process optimization based on improvement modules

More than 140 years experience

The hydro-specific functions, operation and diagnostic tools are always individually tailored for different turbine types and systems. Our extensive experience and more than 1,000 units installed help us to understand our customer requirements in both new and modernization plants.



Sipocon-H hydro governor control structure (Stepchain Overview)



Overview of a four-nozzles pelton turbine unit with inlet valve (screenshot). All relevant set-point values, parameter values and actual values are shown and accessible.



Example of an operator overview screen (screenshot) showing

- visualized and selectable controllers of this power plant. In this particulare hydropower plant, power control or level control are possible to use – but also flow-control and other modes are possible to be programmed.
- measured values (e. g. speed, level,power and reactive power) with actual values and operating curves
- actual machine status
- and actual machine conditions.

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