

# A proven solution for any challenge in hydropower automation

## Small Hydro Solution Sipocon-H

### Instrumentation, Controls & Electrical



#### 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

#### Control and Governor System

*As an integral element of the hydro power plant 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 hydro plant systems ensuring availability and proven performance.*

#### The Task

The hydroelectric power plant operation and its performance are largely dependent 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 hydro power 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

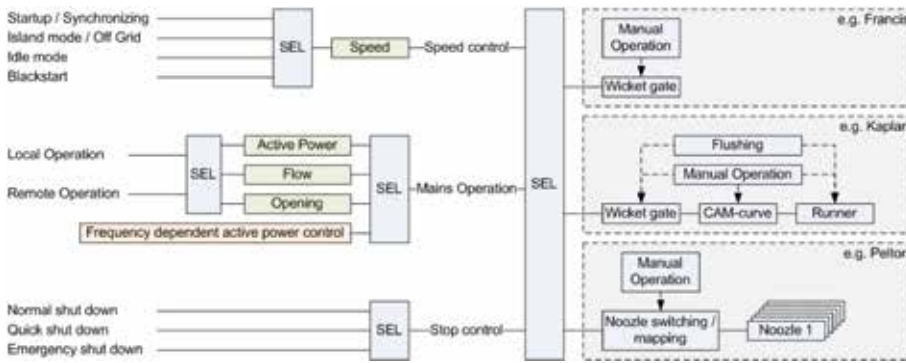
- Plant control: Optimized controller for more than one parallel energy production line
- Demand side management controller
- Primary and secondary control

#### Standard operation modes

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

#### More than 100 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 700 units installed help us to understand our customer requirements in both new and modernization plants.



Sipocon-H hydro governor control structure (Schematic Overview)



Overview of a two-nozzles pelton turbine unit with inlet valve (screenshot). All relevant set-point values, parameter values and actual values are shown and accessible. The turbine controller states are visualized, as the flow control, power control, level control, and the allowed operation modes are selectable.



Plant overview of a single unit small hydro power plant (screenshot). The relevant measured data is shown for the plant operation. The operation modes, the selection of the active controller and the unit protection state are clearly arranged and represented.

Published by  
Siemens AG 2017

Power and Gas Division  
Freyeslebenstraße 1  
91058 Erlangen

For more information, please contact  
Siemens AG  
Werner-von-Siemens-Platz 1  
5020 Salzburg, Austria  
Phone: +43 51 707 44266  
Fax: +43 51 707 55275  
(Charges depending on provider)  
E-Mail: [energy.smallhydro.at@siemens.com](mailto:energy.smallhydro.at@siemens.com)

Hydro Turbine Governor Systems Flyer\_V4  
Article-No. PGIE-B10025-00-7600  
Printed in Germany, Dispo 05401

Subject to changes and errors.  
The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.