

# HIPASE

The new product line by ANDRITZ HYDRO Automation

**In parallel to hydraulic and electrical energy a permanent stream of information flows through the power plant, which controls, regulates, optimizes and protects this energy conversion process. The comprehensive handling of this information flow is the task of ANDRITZ HYDRO Automation.**

For more than 30 years, automation technology has been characterized by rapid digitalization. With the newly developed platform HIPASE, ANDRITZ HYDRO Automation addresses the latest technological possibilities and unifies for the first time in one product the different device characteristics of electrical protection, voltage control and synchronization worldwide.

## HIPASE - the homogeneous platform

All hydropower plant units are electrically protected, the generator voltage is regulated and units are synchronized with the grid. For nearly a century

▼ HIPASE device



▲ HIPASE device

this was done by specialized mechanical and electromechanical devices, which have been designed in a technological very different way, by the vary nature of technology at this time.

For several decades, the entire control, regulation and automation systems have been characterized by the electronic computing evolution. Historic mechanical and electromechanical devices are now being superseded by digital electronic and software-controlled devices. Although these different devices are based on the same technology, the currently on the automation market available products are still being built today on completely different platforms, reflecting the historical independent product development.

HIPASE is a radically new approach of ANDRITZ HYDRO, representing a unified product platform for electrical protection, voltage regulation and synchronization for the first time worldwide. HIPASE is based on the latest hard- and software technology and is characterized by a uniform hardware, a uniform user interface and a unified engineering tool.

Over the last 30 years the different technical skills required have been a core competence within ANDRITZ HYDRO. With more than 500 employees involved in the automation business, ANDRITZ HYDRO Automation is the world leader in automation solutions for hydropower plants.

Additional key success factors:

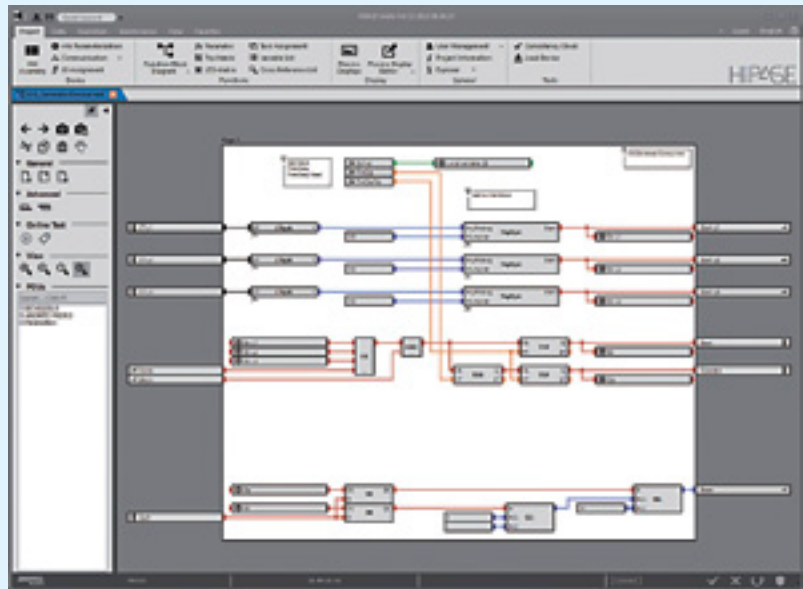
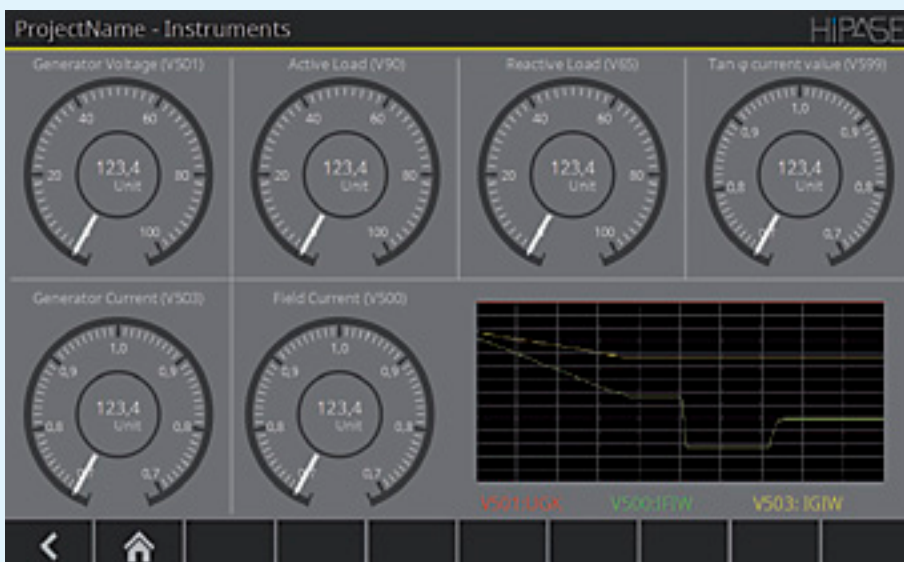
- Bundling a team of highly skilled R&D staff and experienced field engineers for hydroelectric power plant control and regulation under one roof at ANDRITZ HYDRO Automation headquarters in Vienna (Austria).
- Short communication lines and decision-making process have been essential for the unification of technical disciplines which have evolved differently over a very long time.
- Extensive and long-standing technical worldwide turbine and generator know-how as a crucial factor for the successful development of HIPASE.

### HIPASE - unified hardware

The hardware of HIPASE is uniformly constructed - each HIPASE device consists of the same rack, the same touch panel, the same power supply, the same central processing and communications unit, as well as common components for digital and analogue in- and outputs. The data acquisition and specific signal outputs for electrical protection, voltage control and synchronization are being realized on dedicated application boards.

For simplified signal and functional requirements previously separated individual devices can now be merged into one HIPASE combination device with multiple application boards.

▼ HIPASE Local operation with touchpanel



▲ HIPASE Functional diagram

### HIPASE - uniform local device operation

Each HIPASE device has a full graphic color touch display for local unit operation. The look and feel of the electrical protection, voltage regulation and synchronization is similar to each other.

Via the HIPASE touch display a simple parameterization can be realized and at the same time the touch display is used as elementary process visualization device.

### HIPASE - simple and unified engineering

The HIPASE Engineering-Tool is a unified and comprehensive tool for the whole engineering process. All applica-

tions for electrical protection, voltage regulation and synchronization are configured, parameterized and documented with the same tool.

The Engineering-Tool impresses by a simple design according to the latest ergonomic perceptions of the user interface. The menu structure is consistently organized according to the workflow of the engineering process. The simple and intuitive, self-explanatory look & feel is the main key feature.

In a company's all phases of the engineering process - besides the hardware configuration and parameterization it assists the project-specific adaptation of functionalities. Additionally the project-specific graphic design of the touch panel and, the entire procedure of commissioning and documentation of the system is handled by one tool.

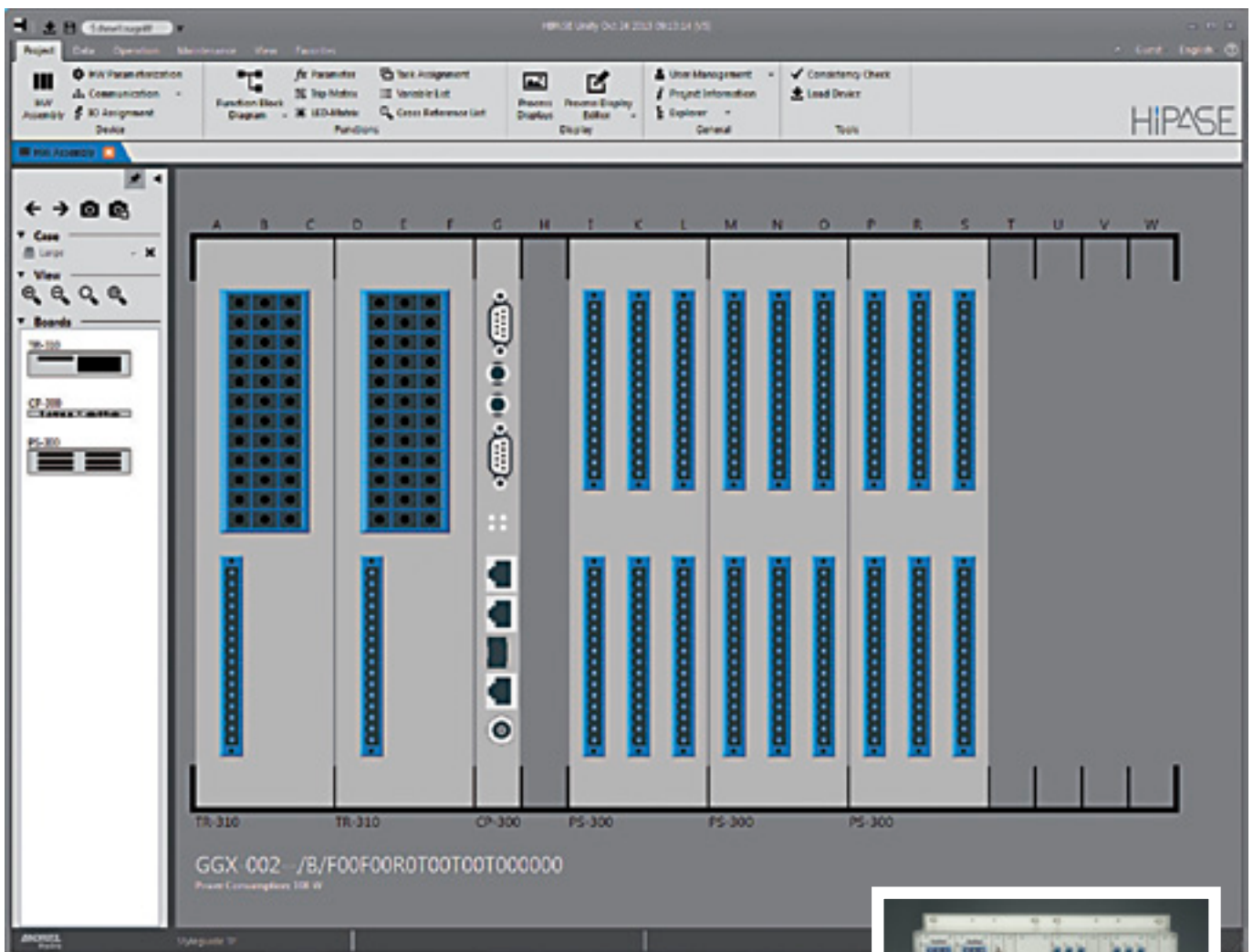
The user interface is designed to be multilingual for international use. It is not limited to specific languages and can be adapted to any desired language.

### HIPASE - standardized communication

HIPASE supports communication via standard protocols, including Modbus TCP/IP, IEC 60870-5-103, IEC 60870-5-104 and IEC 61850 Ed2.

### HIPASE - functional safety

The long-term experience of ANDRITZ HYDRO Automation on electrical protection systems is naturally part of



▲ HIPASE Engineering-Tool - Hardware configuration



the safety architecture of HIPASE. Moreover the safety architecture and the whole development process of HIPASE are based on the requirements of IEC 61508 “functional safety of electronic safety-related systems”.

For functional safety or very high security requirements all signals are being collected twice, calculated twice with decoupled hardware and put out twice. HIPASE is constantly designed in a two-channel architecture. For non-functional safety applications HIPASE can also be used as a single-channel system whereby the second channel is used to double the signals received.

### HIPASE - cyber security

Due to the complex network infrastructure of the entire electrical energy production and distribution grid “Cyber Security” is a matter of increasing importance. This significance is highlighted in several documents from major

energy organizations worldwide (e.g. a white paper from Germany’s BDEW and the North American NERC CIP standard). HIPASE is protected against cyber-attacks through comprehensive and integrated security architecture. The security measures in HIPASE are realized by hardware -, as each device is equipped with a TPM (Trusted Platform Module) chip.

### HIPASE - prepared for the future

HIPASE, the new unified product platform from ANDRITZ HYDRO, represents the latest technological possibilities with a highly innovative product approach.

It is especially designed for the specific process requirements of a hydropower plant. With the pioneering HIPASE system architecture, ANDRITZ HYDRO Automation is well prepared for new challenges - nowadays and in the future.

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▼ HIPASE Engineering-Tool - Trip Matrix

