

# **RTVX POWER**

COMBINED EXCITATION SYSTEM  
AND SPEED GOVERNOR

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## Combined Excitation System And Speed Governor

The RTVX POWER Integrated Regulation System is based on REIVAX's most advanced platform, designed to ensure high performance and reliability. **This solution combines speed and voltage regulation functions in a single device**, reducing panel size and spare parts costs.

RTVX POWER controls, supervises, and protects Francis, Kaplan, Pelton, or Bulb-type turbines in generators with either static or rotating exciters.



### Experience

REIVAX, founded in 1987, has supplied over 2,300 systems controlling more than 170 GW in power generation.

- **Modular and scalable design** along with highly configurable software allow for meeting the most varied requirements and characteristics of each application.
- **Certified to meet main electromagnetic compatibility standards** and designed considering the most demanding segments to operate in highly aggressive environments.
- **With performance evaluated by Kestrel Power Engineering**, the voltage regulator complies with the strictest performance and stability requirements needed to operate in North America, in accordance with NERC and IEEE standards.

#### COMMUNICATION PROTOCOLS

Modbus TCP
Modbus RTU
IEC 60870-5-104
IEC 61850 – MMS/GOOSE
DNP3.0

#### CLOCK SYNCHRONIZATION INTERFACES

IRIG - B
NTP
PTP

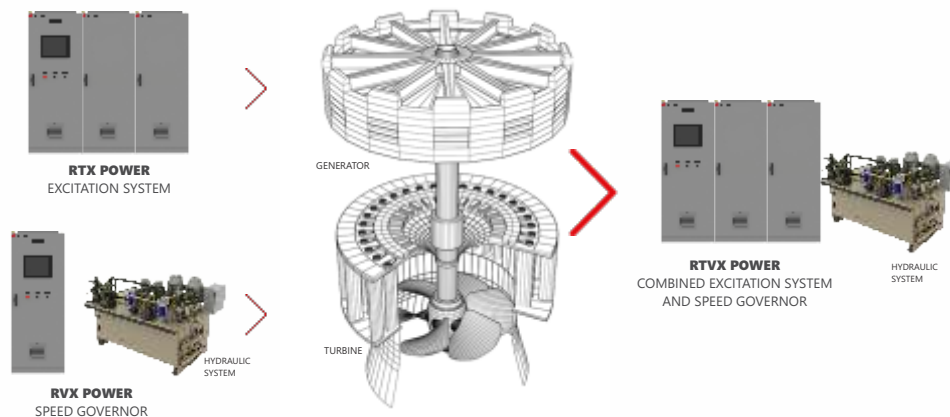
#### POWER DRIVE TECHNOLOGIES



## FLUIDPOWER LINE

The RTVX POWER system can be supplied with a new or existing hydraulic power unit. Hydraulic unit with electro-hydraulic actuator in a manifold block, using market-standard directional valves, with flow rates up to 1,500 L/min. Hydraulic unit with electro-hydraulic actuator and distributor valves with flow rates up to 10,000 L/min.

## COMBINED SYSTEM



## ARCHITECTURE

The POWER platform supports single or fully redundant controllers, increasing the availability of the synchronous machine.

Likewise, the power drive can be designed with redundancy, according to the particular requirements of each system.

### Redundancy Options

Redundancy aims to maximize the uptime of the synchronous machine, allowing repairs or replacements of components even with the unit in operation. Components that can be provided with redundancy:

- Power supply of the control system
- Control hardware
- Input and output modules
- Power rectifier
- Power rectifier ventilation system
- Pre-excitation circuit
- Position transducers
- Speed measurement
- Other options available upon request

## MAIN CONTROL FUNCTIONS

- Voltage regulator
- Compliant with IEEE 421.5
- Power factor/reactive power regulator
- Field current regulator
- Active and reactive current compensator
- Compensation for the dynamics of rotating or brushless exciters
- Maximum field current limiter
- Underexcitation limiter
- Volts/Hertz limiter
- Stator current limiter
- Tracking function for smooth transfers
- RT tuning assistant
- Current equalization between parallel rectifiers
- Open-loop firing control for testing and maintenance
- Controller adjustments and step response testing integrated into the HMI
- Soft start function with pre-excitation process supervision
- Protection and supervision functions
- Automatic frequency response test tool
- Auxiliary tuning tool for PSS

## OPTIONS FEATURES

- Field temperature calculation (IEEE 115-2009)
- Minimum field current limiter
- Power System Stabilizer PSS2B / PSS4B (IEEE 421.5)
- Voltage Matching
- Rotating diode supervision (Brushless systems)
- ANSI 64R function (rotor ground fault)
- Reactive current equalization between parallel units

## BASIC HARDWARE

- Programmable controller with digital and analog inputs and outputs, AC voltage and current measurement (VTs and Cts), three frequency measurements via inductive sensors (pickups), and four PWM-type outputs
- 2,000 V insulation class
- Optional digital I/O expansion module (used in automation logic projects)



## HUMAN-MACHINE INTERFACE

The **RTVX POWER** features a user-friendly and intuitive operating interface with multi-level password-protected access. Available in Portuguese, Spanish, and English. It enables advanced operation monitoring, including real-time visualization of the machine capability curve, showing the current operating point and limiters.



## SUPPORT AND MAINTENANCE TOOLS

The **RTVX POWER Integrated Voltage and Speed Governor** includes a comprehensive set of tools for support, maintenance, and analysis:

Programming software allowing changes or additions of new functionalities, using a graphical and intuitive environment compliant with IEC 61131-3

Visualization of analog and digital signals directly on the block diagram

Simulation tool for initial setup and performance analysis

Event log with timestamp, supporting simultaneous connections from multiple data collection clients

Signal recording with timestamp and selectable triggers

Signal log viewer systemTest mode for verifying inputs and triggering outputs

Support for verification and validation of remote communication protocols

Parameter report generator

## → TECHNICAL ASSISTANCE

Technical support including weekends and holidays.

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