

Solutions for Hydro Power Plants

Automation & Controls
Power Distribution
Generator Control
Turbine Control
Dam Control & Monitoring
Auxiliary Systems
Facility Managment

Solutions in Energy!



Automation & Controls

Distributed Control System
SCADA & Telemetry

Auxiliary Systems

Dam Control & Monitoring System
Special water measurements
Pumps and Drives
Instrumentation Solutions

Power Distribution

LV and MV Power Distribution
Electrical Substations

Facility Management

Electrical Power Systems
HVAC
Security
Central plant
Facility Management System

Generator Control

Excitation (AVR),
Synchronization
Protection
Generator Monitoring

Services and Support

Turbine Control

Turbine Controller

Solutions for Hydro Power Plants

ELCOM is a **System Integrator** and our solutions for Hydro Power Plants include a full range of nonproprietary power and control solutions that meet or exceed industry requirements, and our broad services and support offerings will help keep your operations running smoothly.

We offer comprehensive operation and maintenance services including:

- Engineering
- Manufacturing
- Delivery
- Integration and tests
- Full commissioning
- Training
- Support
- Lifecycle extension

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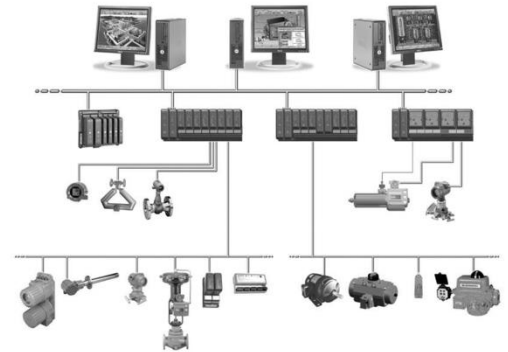
Distributed Control System (DCS)

ELCOM DCS for hydro power plants is a complete and powerful Distributed Control System designed to cover all needs during the entire power plant life-cycle.

ELCOM focus greatest attention to selection of component parts with high reliability, redundancy and diagnostic checks for all those elements and/or components which are relevant for the purposes of the safety integrity. The redundancy of the modules and of the communication bus is always provided as a basic functionality of the system. A careful audit of the operator actions and a flexible and precise management of the plant alarms, carried out by the control room operator workstations, enables customers to focus daily operations on both functional and security aspects.

Our DCS manages various type of LAN and WAN connectivity (wired and wireless) in order to link all system control nodes, all other field equipment and other interconnected systems, to higher-level systems such as remote control centers or ERP business systems, in order to convey data where they are better interpretable and usable.

Completely scalable, flexible and tailor made product suitable for various implementations and easy to adapt to customer needs and requirements both in terms of system architecture and in terms of I/O size. ELCOM DCS, as well as performing control and regulation functions, can be equipped with proper add-on to cover in a fully integrated solution specific requirements in terms of security (SIL 3, according to IEC 61508 and IEC 61511), fire detection and gas leakage detection (F&G) and fire extinguishing.



SCADA & Telemetry

Our SCADA & Telemetry system offers maximum functionality and a user-friendly user interface. With this configurable and scalable system, you have the advantage of absolute openness to both the office environment and to production. An integrated process database and Plant Intelligence, for example, ensure transparency in production. Numerous options and add-ons extend and expand the scope of performance.

We offer SCADA systems on different platforms of different manufacturers such as Siemens, ABB, Schneider-Electric...It is up to customer or us to decide which platform is the best for each specific case.





Low and Medium Voltage Systems and Solutions

ELCOM offers complete engineering, supply, manufacture, delivery to site, installation, commissioning, testing, and ensure the quality of the complete control and electrical system of your power facility is at the highest level.

We offer complete Low and Medium voltage solution compiled with IEC standards with instrumentation, control and electrical system integration for power plants. We use innovative brand name products in low and medium voltage electrical range of equipment for producing a reliable and safe system for distribution of electrical power.

Low Voltage Systems & UPS

ELCOM low voltage switchgear provides centralized control and protection of low voltage power equipment and circuits in industrial, commercial, and utility installations involving generators, motors, feeder circuits, and transmission and distribution lines. In the range of Low Voltage and UPS we offer by compiling the (IEC) standard for supply system in the range of 50–1000 V AC or 120–1500 V DC and extra low voltage for AC < 50 Vrms and DC < 120 V with turn-key solution.



Medium Voltage Systems

Medium voltage systems are custom engineered for distribution over wide range of medium voltage switchgear as for starting, synchronizing and paralleling power sources and motor control. Compact and quiet modular design assures easy application for any needs. Our systems are available for Medium Voltage applications from 1 KV up to 35 KV.



Substations with Automation & Control

Our prefabricated substations and automation system ensures grid stability and protects and controls substations with IEC 61850 protocol. We use brand name protection relays and measurement devices for integration into complete substation Power Control System (PCS).



ELCOM solutions for **Electrical Systems** and **Power Distribution** are precisely tailored to your requirements. We offer individual services and complete range of Power Management Solutions for LV and MV distribution systems.

To find more about our references visit:
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Excitation (AVR), Synchronization and Protection Systems

ELCOM offers Generator Control solution which features a standardized modular combination of the generator systems excitation (AVR), protection and synchronization. Generator Control is highly modular and can be easily adapted to meet various customer requirements.



Excitation System (AVR)

- Voltage regulator
- Power factor (cos) regulator
- Reactive power regulator
- Manual control (excl. current):
- Wide input power supply range
- All required software features
- Standard reference applications
- International certifications
- Variety of functions – limiters for excitation current, V / Hz, reactive current, stator voltage and stator current, etc

Synchronization System

It includes the functions of generator synchronization control, automatically synchronizing and paralleling synchronous generators with transmission lines and bus bars and bringing automatically the speed and voltage of the generator into a preset tolerance range before connecting safely both systems.

Protection System

Our Protection System with fast detection capabilities make it ideal for generator differential protection applications.

The detection parameters can be adjusted to create intelligent, application-specific functions that enhance the protection system and meet very specific requirements. Users will greatly value the savings achievable made possible by the common hardware platform.

Generator monitoring

Our generator monitoring is a fully automated temperature monitoring system. The system collects, archives, and analyzes the data for the operator, and generates reports defined by the operator. Hardware, software, and data configurations are tailored for each specific case.

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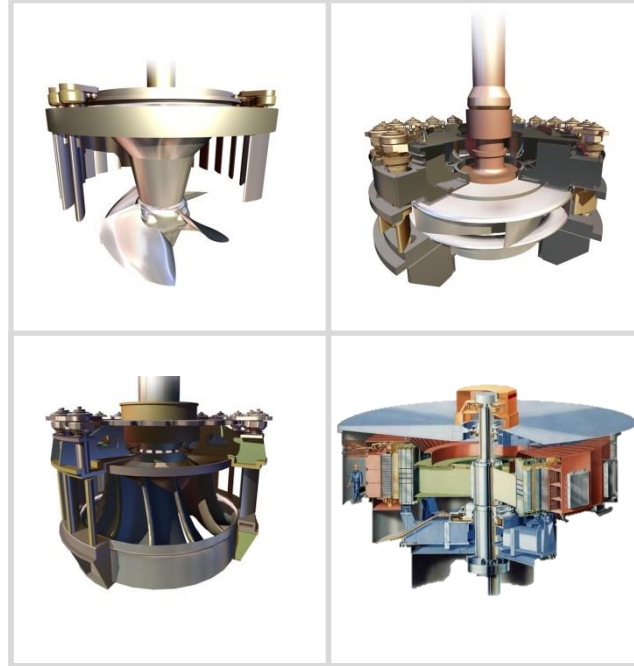
Turbine Controller

There are two main types of hydro turbines: impulse and reaction. The type of hydropower turbine selected for a project is based on the height of standing water—referred to the flow, or volume of water, at the site.

ELCOM offers control for different types of hydro turbines such as Impuls turbines (Pelton) or Reaction turbines (Francis, Kaplan). Our Distributed Control System is capable of performing a large number of additional functions compared to standard systems in order to optimize plant operating, increase safety and simplify maintenance.

We are offering:

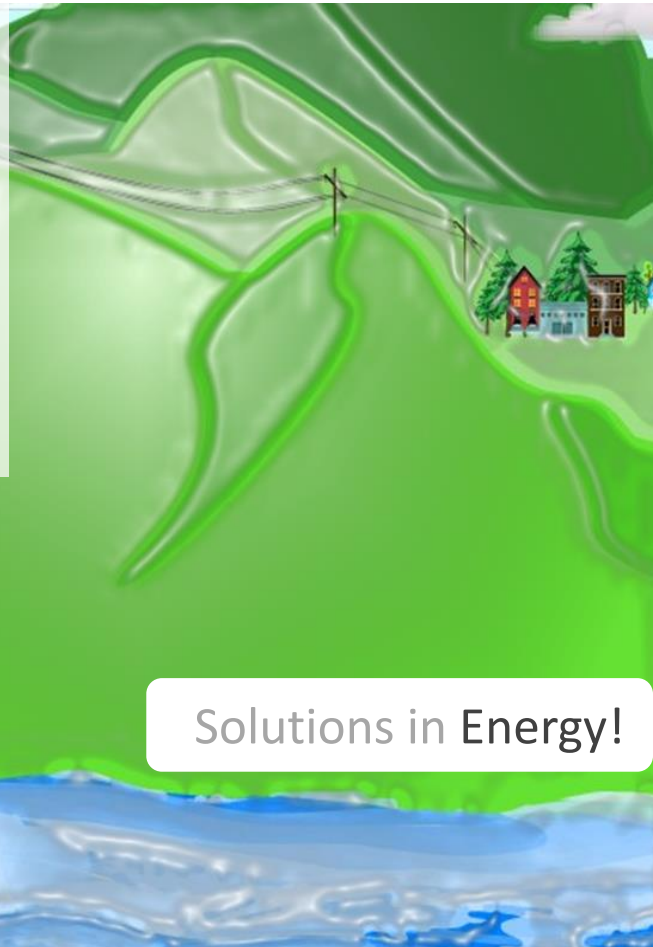
- Turbine controller (Closed and Open Loop Control, sequencer)
- Protection system
- Monitoring system (Turbine Supervisory, Instrumentation, Operating Data Counters)
- Intuitive and user friendly web based Human Machine Interface (HMI).



Hydroelectric Power Generation

Hydroelectric power is one of the oldest methods of power generation and remains a critical contributor to the world's electricity supply.

The ability to reliably, quickly and consistently generate power in the face of unpredictable variations in demand is an ongoing – and potentially costly – challenge.



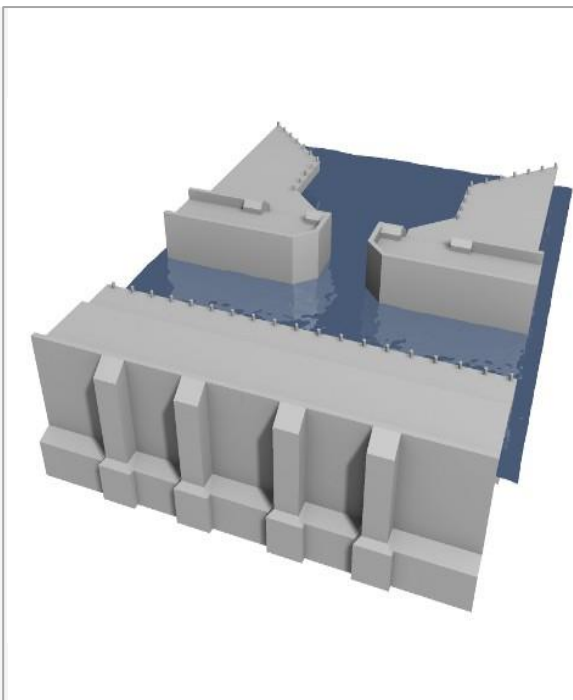
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Dam Control & Monitoring System

Rather than waiting for an earthquake, infrastructure deterioration or other natural or man-induced event to take place, consider the advantages of ELCOM structural monitoring system! Our systems will track the dam's structural behavior and rate of change over time based on several parameters set during the installation process. Our data-acquisition systems are built to be as unique as the dams they monitor. They measure water pressure, flow and turbidity, soil movement, tilt, displacement, strain, load, vibration, overburden, generated power, machine status, and many other parameters to determine the dam's structural health.

Water Quality

ELCOM offers different water quality measuring solutions and remote monitoring stations with simple sensors which measure only one or two parameters while the more complex sensors are capable of measuring 10 or more parameters simultaneously. Measuring Systems can be fitted with telemetry options which are with real-time or data logging acquisition.



Pumps and Drives

We deliver Pumping Solutions for Water Applications from brand name manufacturers. Based on our experience, we help you to transport and treat water and wastewater according to most stringent requirements. Pumping solutions for water transport and supply, desalination, water reuse and waste water treatment. Everywhere where large drives and electric actuators are required in industry and infrastructure, ELCOM offers the ideal solution with precise calculations and experience that are combined to offer an optimal drives system.



Instrumentation Solutions

ELCOM offers wide portfolio of measurements, including standalone instruments, smart sensors and integrated measuring and analyzing systems from brand name manufacturers.

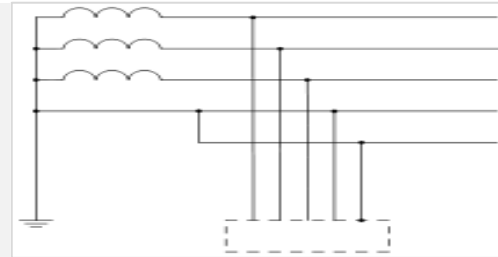
Analytical Instruments and Sensors, Field Instruments Configuration Tools and Accessories, Flow Meters, Pressure Transmitters, Process Level Sensors Recorders and Data Acquisition, Temperature Transmitters & Sensors.



Facility Management is a system designed to monitor and control the Electrical Power Systems, security, fire and flood safety, lighting (especially emergency lighting), HVAC control and ventilation systems in a facility.

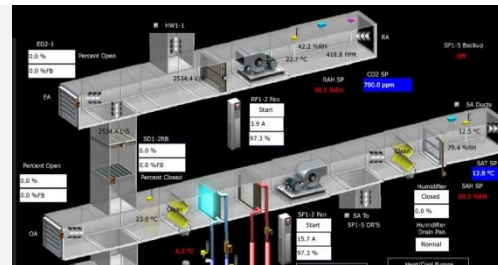
Electrical Power Systems

Power Distribution in Facility
Lighting
Cable and cable trays
Communication and telephones
Barging and loudspeakers



HVAC

HVAC Units
Air handlers
Constant volume air-handling units
Variable volume air-handling units
VAV hybrid systems



Security

Video surveillance
Access control
Security alarms
Fire safety system



Central plant

Chilled water system
Condenser water system
Hot water system



Facility Management System

Centralized control center
for management of the facility



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Services

Our scope extends across the entire chain. It begins with base and detailed design, engineering, project management, installation and commissioning. This incorporates all the electrical, control and instrumentation equipment, from the electrical balance of plant to the substation and grid connection, and from the instrumentation and field devices to the distributed control system. Our unique engineering combines the understanding of process properties with a detailed knowledge of materials and equipment. These services help our clients minimize costs, improve efficiency, meet safety standards, and ensure that installations conform to operational and design parameters. We have carried out a wide range of projects, building large scale systems and using the best brands and the latest equipment for the Power Generation Industries.

We offer complete **Turn-Key System Solutions** with advanced and integrated technical solutions in the field of electrical, hydraulic, pneumatic and mechanical drive systems and controls.

One of the specialties of ELCOM is engineering and realization of complete process control systems.

ELCOM expertise and system products are offered in next segments:

- Automation & Controls
- Power Distribution
- Generator Control
- Turbine Control
- Dam Control & Monitoring
- Auxiliary Systems
- Facility Management

We offer comprehensive operation and maintenance services including:

- Engineering
- Manufacturing
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Support

All of our support services can be combined into a tailor-made contract with a fixed-fee to help you meet your specific budget and service requirements.

We ensure the support you need when you need it.

Online support

- 24/7/365 Phone intervention for guidance and technical information.
- Remote desktop connection for urgent actions.

On-site support

With our On-site Services, ELCOM engineers can assist your maintenance staff with preventative and reactive tasks. Our team of ELCOMs is available as needed, regularly scheduled, or on a full-time basis to meet your specific needs and maintenance strategy.



Power Automation & System Engineering

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