



GEDLUX

ELECTRICAL SYSTEMS AUTOMATION
SINCE 2008

Substation Automation

Overview

GEDLux provides comprehensive solutions for the supervision, control and protection of medium and high voltage electrical networks encompassing electrical substations, generation, transmission and distribution.

Our projects include the supply of all control and protection units and communications.

With in-depth technical expertise across the entire electrical process and close collaboration with manufacturers.

GEDLux custom designs, engineers, supplies and integrates complete solutions tailored to each client's specific needs, as well as provide ongoing maintenance.

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Overview

GEDLux is in the enviable and unique position to be simultaneously recognised by Hitachi Energy as an authorized System Integrator and by ABB as an official Value Provider for Substation Automation.

These credentials position us uniquely to offer unparalleled products, support, and services.

Our extensive experience of the substation automation products of both these leading tech companies guarantees optimal engineering and supply of a comprehensive range of products and solutions designed to safeguard, regulate, measure, and monitor electrical systems effectively.

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The range of transmission and distribution applications includes:

- Bar Protection
- Bay Control
- Line Differential Protection
- Generator Protection
- Transformer Protection
- Line Distance Protection
- Phase Measurement Unit
- Railway System Application



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I. Innovation

Spotlight on project

EDP - EDP Renovaveis

EDP Renewables, a **global leader** in the **renewable energy sector** and the third largest wind energy producer in the world, was **required to comply** with the Polish Grid Code and **improve** wind farm **performance**.

The project comprised the **engineering, installation and commissioning** of a control and protection system for a **120 MW wind farm**, which had a common electrical substation with a second wind farm and a **single power evacuation** point for both to the electrical grid.

In addition to the project itself, the **specific challenge** was that the Polish Grid Code requires **monitoring** of the **regulation setpoints** on the evacuation line, and there is **no commercial solution** to address this.



GEDLux was tasked with developing a solution to this issue. It **custom-designed** a power regulation **algorithm** and successfully engineered and implemented it.

EDPr was able to **comply** with the **Polish Grid Code** and expand its operations. To date, GEDLux has completed **over 20 wind farm projects** in Poland and numerous others for EDPr worldwide.

GEDLux Solution

- A complete simulation environment was developed to **test** and **fine-tune** the **algorithm** prior to its commissioning.
- The algorithm was **seamlessly integrated** into the SCADA system.
- The project was **delivered on time** and within budget.

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2. Transmission

Spotlight on project

Celeo Chile

Energy Provider Celeo Chile expanded its portfolio with the acquisition of 29 transmission line assets, comprising 899 km of transmission lines and 27 transmission substations, across various locations in Chile.

The purchase necessitated the implementation of a web-based HTML5 SCADA system to control the new system.

Consequently, the Dispatch Centre's MicroSCADA PRO system, which controls the Transmission Network comprising approximately 20,000 I/Os, required an upgrade and migration to a MicroSCADA X system, which controls 65,000 I/Os.

Due to the 24x7 Dispatch Centre operation, close collaboration was essential.

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GEDLux Solution

- Personalised and unique SCADA design with advanced visual display and user interaction.
- Supply and configuration of RTU560s and 670s for new connections.
- Dedicated project team established with sole purpose of reacting and adapting engineering to real-time demands.



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3. Distribution

Spotlight on project

CIDE

The Association of Electricity Distributors comprises of 190 independent companies that serve two million people in half a million homes in rural Spain.

CIDE wished to provide its members with an economically viable solution to the new demands of EU directives on the energy sector.

Legislation demanded real-time monitoring and control of critical infrastructures and regular reporting.

CIDE contracted GEDLux to create a tailored solution for its small utility clients resulting in a centralised SCADA system for all its clients.



GEDLux Solution

- Working in close collaboration with Hitachi Energy, GEDLux jointly developed a Distribution Management System and adapted the MicroSCADA SYS600.
- Members had the option of localising the SCADA system.
- GIS import module for distribution network.
- Integrated SAIDI and SAIFI reports.
- The co-developed GEDLux/Hitachi Energy Geographical map import module was later incorporated into the official DMS600.

The centralized DMS and distributed SAS implementation became a model for best practice, demonstrating our ability to manage complex utility networks on a smaller scale.

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4. Railways

Spotlight on project

Catalan Regional Government Railways (FGC)

FGC's dispatch center overseeing Barcelona's railway network needed significant modernization, enhanced service reliability, operational efficiency, and cybersecurity.

As part of the modernization, the dispatch center's remote-control system would need an enhanced telecontrol system, with greater visual clarity, be operator friendly, and be equipped cybersecurity measures.

The entire modernization process was to be completed with zero interruption to Barcelona's railway services, and ensure continuous operations for all Metro and commuter lines, tourist-operated mountain railways, and rural train networks

GEDLux Solution

- Telecontrol system was migrated from MicroSCADA 9.3 to 9.4.
- Network topology coloring feature enhanced clarity making it easier for operators to interpret critical system data.
- Advanced display functions: zoom, panning, and de-cluttering options.
- Real-time insights and comprehensive data analytics.
- Key technologies supporting the upgrade included the latest MicroSCADA Pro SYS600C, Historian data management, and newly integrated routers.
- The upgrade also reinforced the network cybersecurity to safeguard data integrity and system functionality.

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5. Engineering, Procurement & Construction

Spotlight on project

TSK Group

In 2013, TSK began engaging GEDLux to automate the **substation control systems** for its projects, primarily in **Latin America**.

In response to the **Bolivian government's** request for assistance in **increasing** the country's current **power generation capacity** by **50%**, EPC contractor TSK enlisted the support of GEDLux.

The extensive project, which would have a **total power output** of **445 MW**, required the engineering, expansion and supply of **PRP 61850** control and protection systems to the **three 230 kV Combined Cycle Power Plants** of Termosur, Entre Rios and Warnes.



Following the **successful completion** of this pioneering project, GEDLux has enjoyed a **fruitful ongoing collaboration** with TSK, extending its reach to encompass Asia and Africa.

GEDLux Solution

Each power plant necessitated the deployment of:

- **Redundant MicroSCADA** SYS600C system
- **34 RET670 and 34 RET650** Transformer protection relays
- **Historian Data Management** system
- **Combiflex** maintenance devices,
- All operating within the **framework** of the IEC 61850 PRP architecture.

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6. International Projects 2008 - 2026



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