



# SYNDIS

the system of supervision,  
control and support

the system of supervision, SYNDIS is a widely-known and technologically advanced system applied for supervision, controlling and planning industrial processes, also within business and economic activities.

We are continuously expanding the scope of its usage and creating new applications.

The SYNDIS application is used as an easy-to-use tool for coordination of work of dispatch and protection staff, especially in power sector, and for supervision and control of process lines in industrial automation.

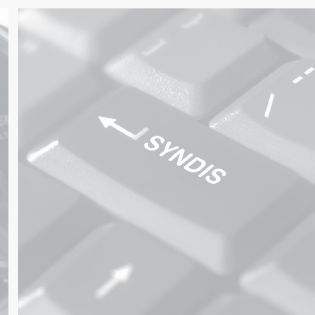
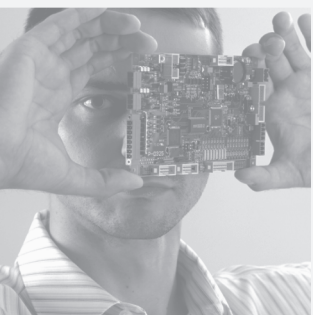
SYNDIS is equipped with features necessary for operational planning and resources management. The system can provide tools for cost planning and demand forecasting.

Process servers integrated with SYNDIS enable application of expert systems for transformer monitoring, operation of disturbance recorders, power quality assessment.

In the wide scope of our system's applications we can enumerate power economy and trade. The system supports contract portfolio management and full participation in the power trade market.

SYNDIS system is the flagship product among other products offered by Mikronika. It was designed at the beginning of 90's to support dispatch operations and protection devices service in power substations. Within a few years, SYNDIS was developed and expanded by many modules so that the scope of application went much beyond electric power industry. The initial, state-of-the-art principles give the possibility to fit system functions to the particular user's needs.

Currently the SYNDIS system is used for local Substation Automation Systems as well as for creation of central control systems, equipped with authorization delegation mechanisms.



# Application

For many years SYNDIS system proves its suitability in various sectors of economy; its advantages are already explored by:

- **power sector:** SCADA/NMS/DMS/OMS systems for transmission and distribution grids, Smart Grid systems, Automatic Meter Reading systems
- **mining industry:** control and supervision of mining process' stages, control and supervision of deep-well pumps for mine drainage
- **potable water and wastewater management companies:** SCADA/OMS systems for potable water distribution and sewerage pipeline systems
- **radio and TV broadcasting companies:** supervision over signal broadcast and operation of radio/TV signal emitting infrastructure on the territory of the entire country
- **heat engineering:** monitoring and remote control of heating network infrastructure
- **aviation:** nationwide system for supervision of radio navigation and radio location equipment and of other utilities of ground infrastructure managed by Polish Air Navigation Services. Mass information systems on airports
- **security on property:** technical security systems

SYNDIS system is constantly developed and adapted to various new applications. With a great satisfaction we watch for how many purposes it is useful.

# Solutions

SYNDIS system works in a client-server architecture. The key feature of our solution is that the real-time processes are separated from the data visualization and processing functions. The server acquires data from bay and station control units, protection devices, recorders, measurement converters. This information is collected in databases and made available for the users through the Internet or Intranet terminals. Both server and SYNDIS terminals can work under various operating systems.

Operation of the system is supported by various specialized process servers with expert databases implemented, performing extensive statistical analysis, archiving functions, comparisons and analyses.

The graphic user interface is used for the state visualization of devices, elements and the dynamic change of processes. With the use of this interface the operations on the system are performed. Data can be presented in a multi-layer schematic diagram or as a projection of real geographic layout.

The remote access to the system and execution of all maintenance functions are available through the web-site-browser terminals.

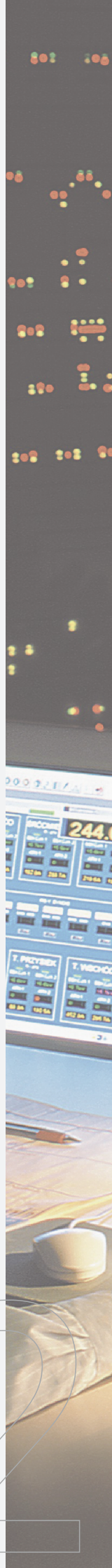
SYNDIS can be run in many language versions. Database structures and functional solutions of SYNDIS system are designed on a basis of CIM model (Common Information Model), in compliance with IEC 61970-301, -452, -453, -456, -552 and IEC 61968-4 standards. Due to CIM standard, the modelling of all types of events occurring in the power grid (e.g. power flow) was simplified and data exchange between various systems was unified.

# Future development

SYNDIS system will continue to follow the idea of being a multi-purpose software. Currently, the development works are aiming at:

- perfecting and further developing the functionality of DMS and OMS modules
- further co-operation with ENTSO-E on development and improvement of CIM model
- further development of interfaces for integration with external applications
- subsequent development of Smart Grid system

Neither scale nor specificity of faced problems pose any limitations for the System. It will remain multi-module, but integrated.



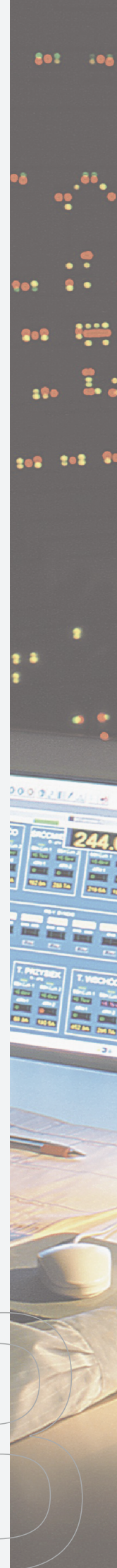
## Features

- **reliability:** quality assured by the test methodology and uncompromising compliance with technology rules and a high quality of components
- **universality:** system modules and their functional scope can be selected according to the particular needs of the application
- **scalability:** the system is scalable and can be used for small and large projects
- **economics:** with a much lower purchase price and lower working expenses, the functionality of our system is compliant with the famous world known manufacturers
- **multi-operation:** each workstation can have the authorized access to the selected modules, especially through the web browser
- **integration:** SYNDIS is an open system. It is our goal to make the acquired information available. We also collect them from systems and devices of other manufacturers
- **clarity and legibility:** network structure and process visualization is defined by the user in dependence on the required scope, region and detail level of information
- **independence:** because of the technological solutions, the system is independent from the software and hardware platform
- **security:** the system has the authorized access. Each activity is registered. A confirmation from the human is required to avoid routine errors
- **modular structure:** SYNDIS is a modular software and can be configured in dependence on the application

## SYNDIS software modules

SYNDIS is the integrated software of NMS-class intended to supervise network and all types of substations. SCADA modules of that software ensure the connection to the objects and the performance of measuring, control and supervision. DMS/EMS/OMS modules adjust SYNDIS to the specific processes of distribution, transmission and power generation.:

- **SCADA:** that layer of our system supervises, makes measurements and controls the devices in a real time, through the remote or local dispatch centers. The archiving and the event log functions are also performed. SYNDIS SCADA system cooperates with bay control units, data concentrators and any other telemetric devices. Visualization and supervision of secondary station circuits of any types or automatic circuits, protections, disturbance recorders is ensured. Different types of protocols of these devices are supported, e.g. IEC 60870, IEC 61850, DNP 3.0 and other.
- **NMS/DMS:** includes functions and mechanisms for the dispatcher dialogue with the supervised and controlled objects, technology-process lines and devices. It analyses the object data in order to identify and estimate their states and the operation correctness of joining and protection devices. The DMS module helps to organize the running job of the maintenance crew, management of assets, maintenance planning and cost-analysis. It supports the reporting of on-going jobs, minutes from examination, inspections, measurements, protection settings and other. Those modules combine also network management with system business functions such as planned and unplanned switching schedules, energy quality evaluation, providing data for Energy Market.
- **OMS:** intended for distribution network operators for support of power restoration after planned and unplanned interruptions of power supply and for customer service.
- **EMS:** the functions required for effective management of current energy flow are offered by modules of EMS. It is essential for their efficiency that the measurement data used in balancing and invoicing is constantly archived. The load flow calculation and the optimal association with energy resources support the Energy Market participation.
- **GMS:** the functions necessary for the efficient energy generation are available in these modules. The main goal of GMS is to support online control of devices, load forecasting and optimal association with production resources.
- **Process servers:** servers with an expert's knowledge database, analysis, and statistical assessment of data, extended mechanisms for archiving and presentation of results.



# Products

Taking into consideration the size and the class of objects and their kind of activities we offer the following system solutions:

- **SYNDIS RV:** SCADA/NMS/DMS/OMS system with the complete communication functions - applied in large-area and in local dispatch centers. SYNDIS RV performs all network operations within the power system. The basic tasks are to supervise the station systems, remote control, measurement acquisition, topology analysis.
- **SYNDIS SO-5:** the distributed system of SCADA type, together with a specialized set of equipment - designed for substations of all voltage levels. The core of the system is based on the integrated software which cooperates with control units, data concentrators, protection relays and other telemetry devices, creating comprehensive Substation Automation System.
- **SYNDIS ENERGIA:** AMR-type system, essentially aimed for balancing and accounting of electric media. The system is designed for data acquisition from devices used to record energy, flow meters, belt weights and from impulse and digital meters and pulse recorders of various manufacturers. The customer is able to configure the system due to his needs, to create necessary balances, to add new devices and analytic modules, to design the presentation layouts of object states.
- **SYNDIS ES:** DMS-type system, equipped with expert knowledge database, destined for monitoring of transformers of various power level and destination, e.g. used on power generation plants or on substations.
- **SYNDIS PQ:** DMS-type system serving for power quality assessment based on local and international standards; it is equipped with relevant mechanisms for statistical analysis, extensive report module and presentation layout.
- **SYNDIS ARGUS:** the system for supervision and visualization of utility technical security systems.

Of course we are at the customer's disposal at every stage of implementation and development of the system.

