



# *SCADA MIKRODISPEČINK*

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## **USER DESCRIPTION OF THE SYSTEM**

VERSION 2.3

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# User description of the system

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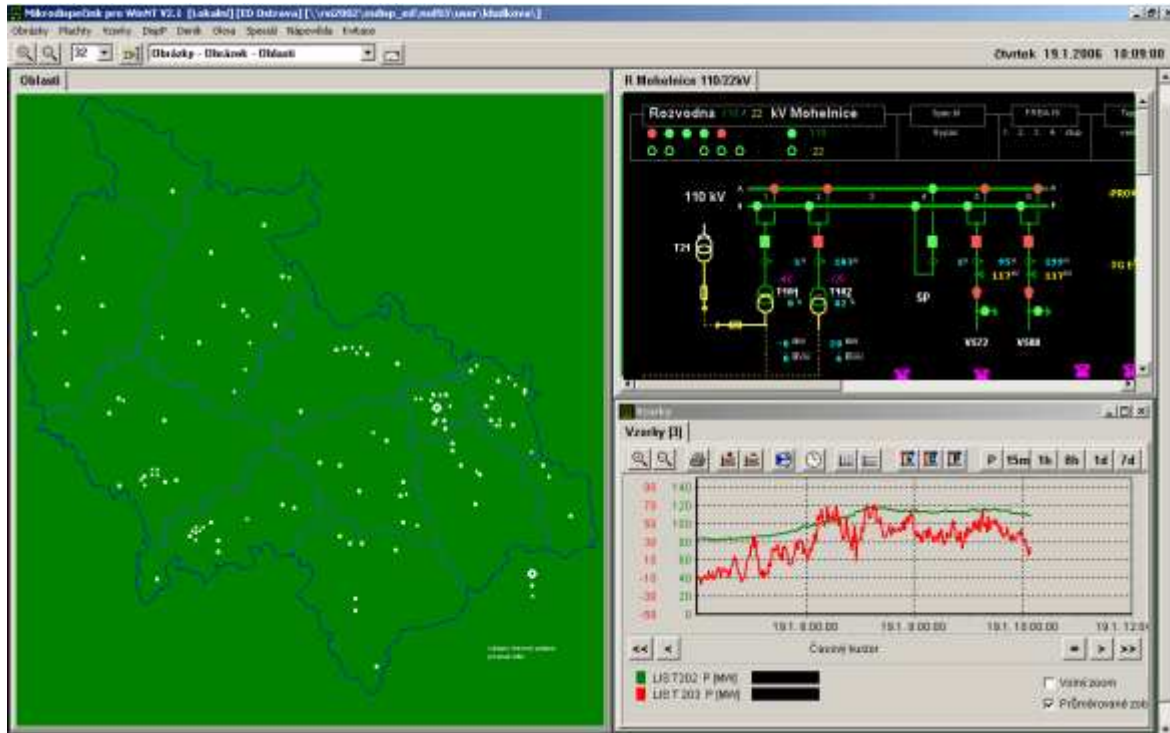
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# 1. INTRODUCTION

The electric station control system and very high, high and low voltage consists of the set of SW and HW. It enables safe and effective control of technology in the control room, integrates the control systems in the electric stations and networks in one unit, provides an actual image of the controlled technology, historical data and possible predicted data. It represents the support for the preparation, operating control and consequent evaluation of the operation.



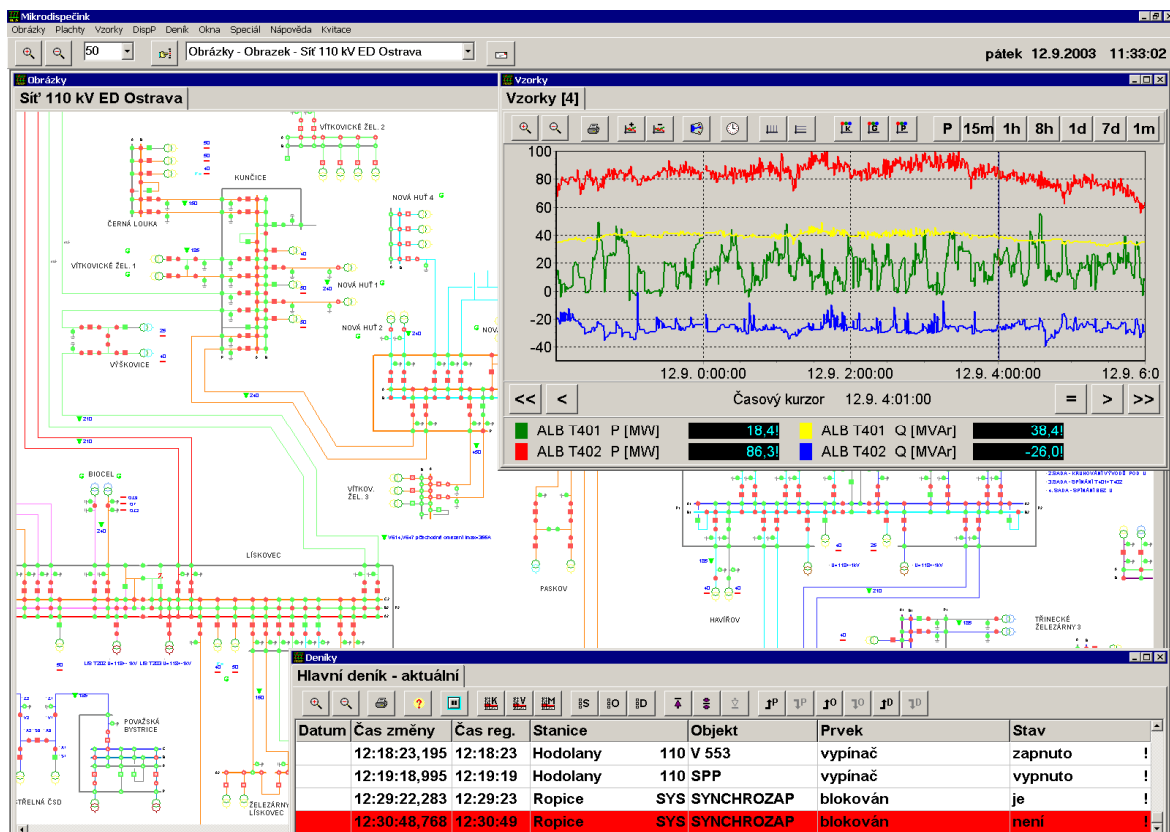
The control system is designed on the basis of the Mikrodispečník system. It is a control computer system for the monitoring, control and evaluation of processes in real time which is particularly recommended for the control of electric networks of very high, high and low voltage for applications in electric stations and dispatch centres. For many years this product has been successfully and efficiently applied in dispatching centres and in electric stations and is regularly updated and developed. Mikrodispečník is operated in numerous substations in the territory of ČEZ in the Czech Republic; other applications are running or are in the process of preparation. Applications in other companies are also important, as well as in numerous electric stations and several dispatching centres.

Mikrodispečník is functional on computers with the Windows NT/2000/XP/7 operating systems, or Sun cluster with OS Solaris (Unix). Standard available HW and SW is used; no special HW or SW is required. Creation and maintenance of SW SCADA Mikrodispečník is usually completed within the development environment of Borland Delphi. The program for the Mikrodispečník control system is designed with maximum modularity and open character. The basic interface for access to data is at the level of DLL, COM/DCOM, UDP/IP and TCP/IP.

System generation is by recording data into configuration tables and drawing diagrams in a graphic editor. Important attributes of the system are reliability, easy application, preparation for linking to systems of other suppliers, effective maintenance, user orientation. The system is designed on a module basis, is sufficiently adaptive, expandable and enables problem-free connection to other systems. It ensures the maximum availability of data from individually integrated monitoring and control systems.

Electric stations and dispatch centre control systems are integrated into LAN and WAN SCADA. In the dispatch centre the standard system is designed with a certain HW redundancy. In the case of breakdown this redundancy ensures for one or more elements the availability of functions and data, minimum or no restriction for users. Remote service or user access into the system is possible, including access through via intranet (Internet). The system enables to backup, including dispatch control, from another workplace or from another locality. It enables an operative change of the range of the area controlled from individual workplaces. For ensuring the effective and safe administration of the system, individual data and user outputs, the orientation to the uniform central model of the whole controlled electric network is important. In one dispatch controlled system there is actual telemetric or a manually typed image of all controlled 110 kV networks, high-voltage and low-voltage networks. The maximum availability of data from individual integrated monitoring systems is ensured. If the master system is not accessible, which is usually a system in the dispatching centre, the work is with local data. At this time the restriction is only in the fact that in subordinated systems it is not possible to create or edit shared data; telemetric data remains actual.

During communication solutions with other systems, a standard input/output communication interface is used. Mikrodispečink can also function as intermediate units between mutually directly incompatible systems which cannot easily be linked. It can also be operated as one data concentrator, simple or network communication server. Various types of point-point and point-multipoint communications are used, including communications through GSM CSD and GPRS. Mikrodispečink has the implemented support of the communication TG 800 Master and Slave (point-point, transit, line emulation), IEC 870-5-x, MDXL including network version, MCS, CVM Modbus, DMS, DO100, SAIA S-Bus and others. Great attention is focused on data security, in particular during control, when blocking conditions can also be evaluated. In the case of a request to link Mikrodispečink with other systems, it is possible to use already supported series communications, including COM/DCOM network interface, or it is possible to include a further type of interface or communication into the system.



From the viewpoint of the user there is the following brief list of functions:

- **Images** – diagrams of electric stations and networks with the actual statuses and values of measurement, with the option to place brands and commentaries, with control, with possible change of the scale of display and switching into further diagrams.
- **Diary** – protocol on changes and alarm messages with wide ranging options for the filtration for the display, confirmation of changes, insertion of comments, consequent processing of archived data.
- **DispP** – the module automatically evaluates the actual and planned values of loading, supports trade dispatching control in real time.
- **Sheets** – actual and archive summaries of measurements of hourly sections, maximum, minimum and mean values of loading, including archiving and possible consequent off-line processing.
- **Samples** – module for sampling and archiving the measurements of all changes of values, measurement with on-line and off-line processing of the courses of the values in graphs.
- **Change calculations** – this function enables to perform effective, fast and secure generation and maintenance of the control system and automatic outputs for display, supports the transparency of the system from the viewpoint of the user during the accumulation of changes.
- **Simulation of connection** – the user can set the required configuration, model, networks with the consequent automatic recalculation of the topology and evaluation (colouring, etc.), part of the network and consumers without voltage, during downtime.
- **Colouring of diagrams** – according to various criteria it is possible to colour the diagrams of the electric stations and networks, e.g. according to sources, i.e. with the indication of the connection to the defined supply node, etc.
- **Sending SMS and e-mails** – using GSM and Intranet it is possible to automatically send information about changes of specified signals or user-typed text messages.
- **Access through WEB** – the pages use the advantages of web technologies. Necessary components are downloaded automatically to the users PC. The access of SCADA data is possible through the intranet (Internet), including the option of mobile access through GSM.
- **Display of information TIS/GIS/CIS** (ortophotomap, clients, ...) to the selected object in the control system (to DTS, line section, ...).

