

# CASE STUDY

Applications of NPE – Built-in Industrial Computers

## Monitoring and controlling transformers

### Controlling an energy network

Modern energy networks are vast. The rising need for electricity and client demands from suppliers make the matter of supervising their efficient, effective, and stable functioning a priority. Transformers are found at large distances from each other. Utilizing conduit technology is costly and unpractical in this instance. In order to provide effective and wireless supervision based on the newest technology, we offer a monitoring and control system for transformers utilizing the **NPE 9201-GPRS** industrial computer.



### Measurements and analysis

The system is composed of 2 parts; a control station with a central computer and outlying elements. Readings take place in the latter of the two. Sensors measure the selected values, and send the results to the NPE 9201-GPRS computer. It carries out the initial processing of this data. It also has the capability of reacting and taking actions with the purpose of restoring stability in the event of an emergency or lack of connection. Data from NPE is sent through the GSM network to the control station. There, it is processed, analyzed, and presented. In the event of a problem, diagnostics are run. A message with guidelines can be sent through this same channel.



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## Monitoring station

A key element of such a system is the monitoring station, where a managing computer with SCADA software can be found. It serves to analyze and present the received data. The NPE is also located there. Thanks to the built-in GPRS module, transformers can be communicated with. The monitored object must also have a GPRS modem along with a microprocessor controller. It is an integral part of NPE. It does not require additional appliances. Information can be stored and subjected to additional analysis later. The form of presentation depends on the client's preferences.

## Communication

The TCP/IP protocol, used in the Internet, is used for communication. This is a universal solution, allowing information to be sent to consecutive computers. Data is transmitted in real-time. Using the GSM network allows for the application of this solution practically everywhere. It also guarantees the stability of transmission.

## Parameters measured and data transfer

An outlying module measures such parameters as: temperature, load, oil flow, oil level in capacitor, position of tap switches etc. The selection of measured variables depends on the client's decision. Sensors communicate with NPE using the standard RS-232 protocol. Thanks to an analog output, the industrial computer can independently regulate the work parameters of the transformer and intervene in the case of a problem.

## Remote operated commands

Commands may be given by remote operation, thanks to the computer in the control station. By utilizing GSM technology, it is possible to send messages from the transformer directly to cell phones of a predefined group of persons by text messaging. In this way, commands may be given to the system controlling the transformer.

### Our system makes it possible to:

- ✓ Monitor the parameters of the transformer's functioning and its surroundings
- ✓ Ensure the quick reaction of the supervising team
- ✓ Send information about problems through the GSM network
- ✓ Provide precise diagnostics of an emergency
- ✓ Give remote operated and automatic commands to the transformer

### Our solution distinguishes itself with:

- ✓ The application of the newest technological solutions
- ✓ Utilizing the GSM network as a channel for communication
- ✓ The ability to communicate with devices through text messaging
- ✓ Very high reliability
- ✓ Flexibility in the system's realization, depending on the client's needs

*Do you want to learn more? We invite you to visit our Internet site: [www.a2s.pl](http://www.a2s.pl). Please send any questions, suggestions and concerns to the following address [info@a2s.pl](mailto:info@a2s.pl), or call us at: +48 58 345 39 22 or 23. Our experts will gladly and thoroughly answer your questions.*