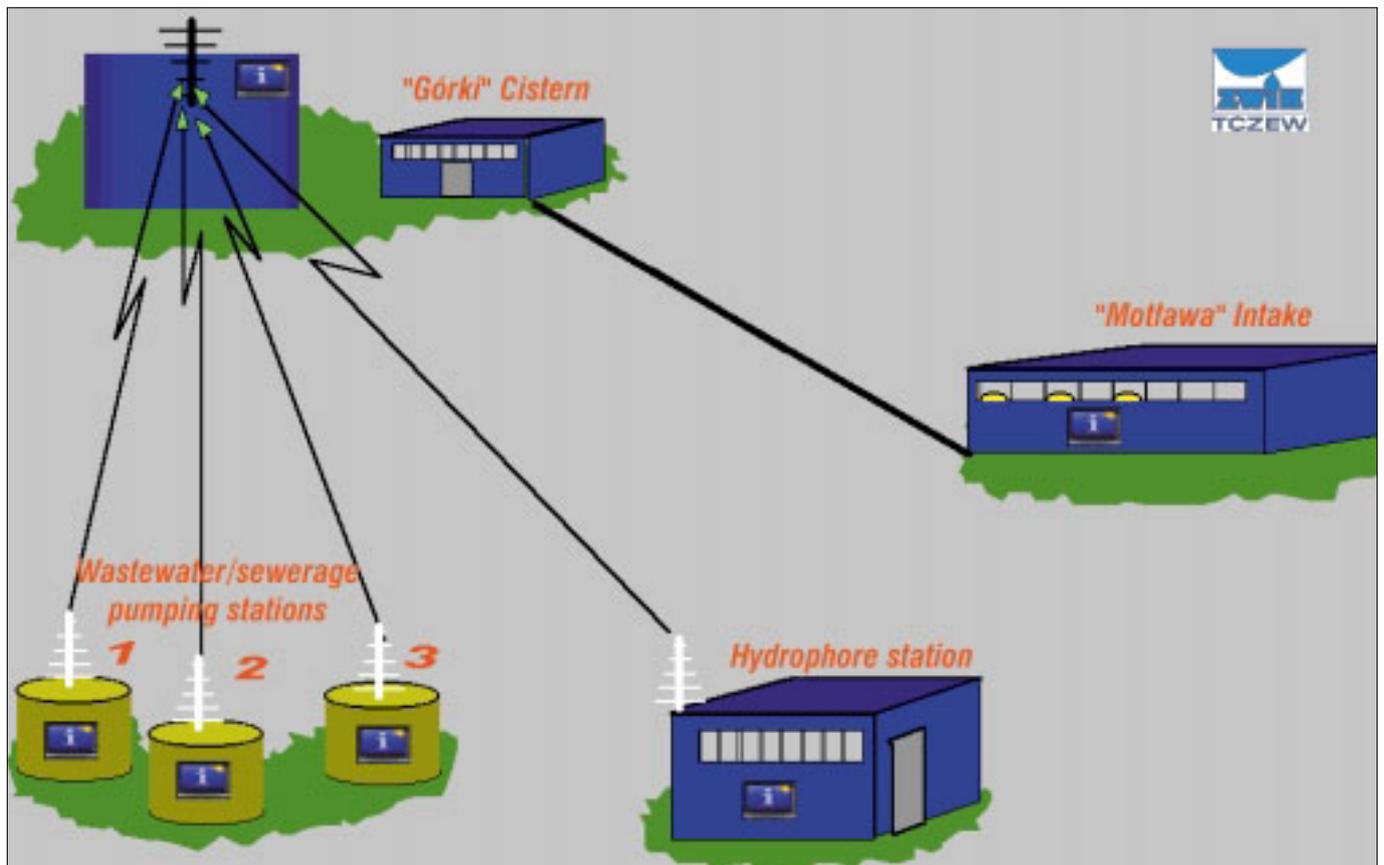




## SATELCODE/SATELNODE Equipment in Zakład Wodociągów i Kanalizacji [Water and Sewerage Plant] in Tczew

Zakład Wodociągów i Kanalizacji Sp. z o. o. in Tczew [ZWiK] manages a range of water and sewerage sites dispersed over all the area of the township. In one of the neighbourhoods, the company struggled with problems related to the supervision of the fully automated sewage pumping stations and hydrophore stations. As a solution, the direction decided to implement monitoring of the problem sites on a permanent basis. The distances between those sites (up to 2 km), and the requirement of a highly dependable system played a key role in selecting communication via radio as the most advantageous solution, both in technological and financial aspects.

The communication system was implemented using the local network installed in the Górkі neighbourhood, based on SATELCODE and SATELNODE equipment. The system operates on the frequency 168 MHz, and processes the data coming from three sewage pumping stations and one hydrophore station. SATELCODE transmitters have eight binary inputs and a RS-232 connector permitting the operator to modify the settings of the transmitter (address, number of alarm signal repetitions, etc.). The SATELNODE is a receiving device, installed at the highest point of the neighbourhood (Górkі Cistern). It is provided with three relay outputs and a



Layout of the telemetric network - locations and links

RS-232 connector, allowing connection with a controller or computer system. It is to be noted that the transmitters and receivers enable the operator to transmit and identify data using no-voltage contacts at the sewage pumping station and hydrophore station.

The signals received by SATELNODE activate the relay outputs. In this way, it is possible to send information via cable over a distance of 10 km to the 'Motława' water intake, where a programmable controller is installed. The controller is connected to an operator's station equipped with the InTouch visualization software.

At the present moment, the data sent from Górkki Cistern include:

### **Pumping stations:**

- power supply conditions at the site
- violation of the site protection system
- exceeding of the maximum admissible level
- operating conditions of individual pumps

### **Hydrophore station:**

- exceeding of output pressure alarm levels
- alarms related to individual components of equipment
- violation of the site protection system

### **Górkki Cistern:**

- violation of the site protection system.

Thanks to the SATEL products used, the direction was able to minimise the implementation and running

costs of the system, and in the same time to standardise the equipment. Small size of the equipment and simplicity of configuration of the transmission parameters constitute additional advantages. The distances in the neighbourhood are less than two kilometres. Based on the tests performed, it was concluded that an output power level of 20 mW is sufficient. The equipment can therefore operate without any permits from PAR [State Radio Communication Authority].

The Górkki local communication network described herein constitutes one of the stages of construction of telemetric communication for the entire company. ZWK is now developing a system operating in the 430 MHz band, on the basis of SATELLINE-2ASxE radio modems. Ultimately, the data sent from Górkki Cistern will be processed by a VersaMax controller and transmitted to the company headquarters via 2ASxE radio modems. The fact that a VersaMax controller is used as the device connecting the radio modems results from the necessity of including additional binary and analogue signals from the cistern. The receiving SATELLINE-2ASxE modem at the company premises will be connected directly to the communication port of the operator's station with InTouch software.

The system dedicated to monitoring waterworks and sewerage network facilities in Tczew has been designed and is being implemented by the staff of the Department of Automation of Zakład Wodociągów i Kanalizacji Sp. z o. o., ul. Czatkowska 8, 83-110 Tczew, tel. 058 531-21-82, fax 058 531-30-11.

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