



Radio modems in a system of heat distribution centres monitoring

Background

In the recent years, the automation of heat distribution centres has undergone dramatic changes. Obsolete electronic regulators were replaced with digital regulators, which in turn gave way to controllers - (i.e. freely programmable regulators).

Communication with controllers also became possible, consisting as a rule in transmitting data (parameters of the distribution centres) to a workstation. The data can be visualised, recorded and archived; the operators can also set alarms and browse the data displayed in the form of trends. The components necessary to effectuate data transmission include: controller / regulator with transmission output, computer, and a suitable means of communication. The latter includes telephony network, cable or radio waves.

In Przedsiębiorstwo Komunalne THERMA [Municipal

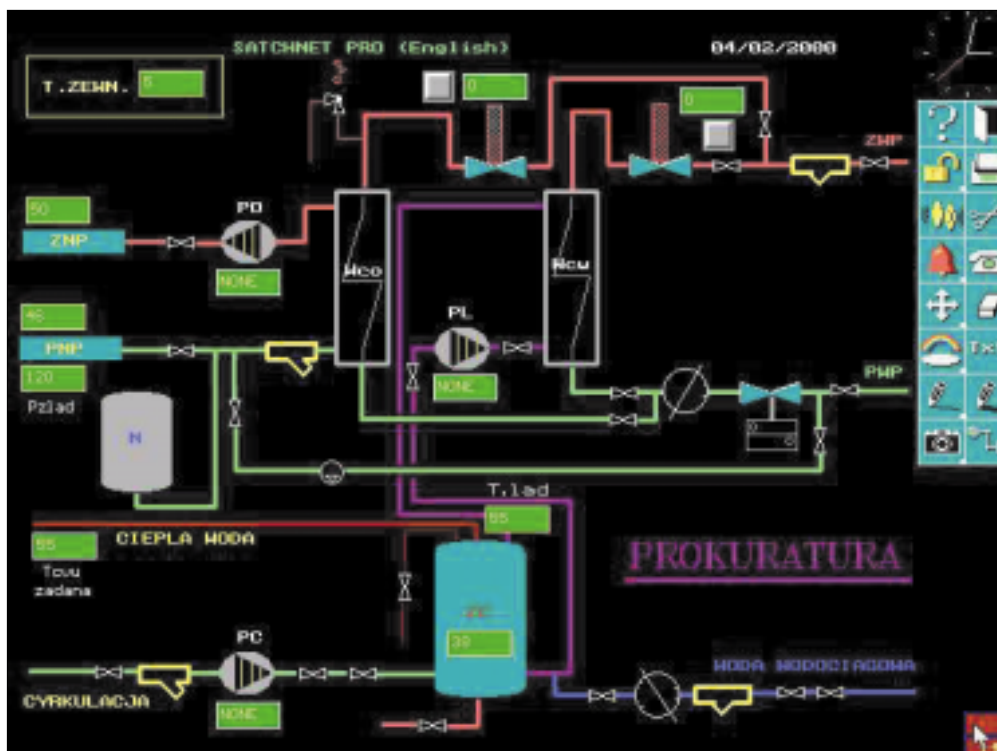
Utility Company] in Bielsko-Biała, the automation of heat distribution centres is mainly based on IAC 600, IAC 400 and IAC 420 Satchwell controllers, in combination with the Satchnet software.

Currently, the automation of sixty heat distribution centres in Bielsko-Biała is based on controllers. Almost all of those are included in the data transmission system. The communication media used by THERMA include: TP S.A. commuted telephony network, existing multipaired cables (laid several years ago, for the needs of the telemetry of that time), new cables (laid along the gradually replaced heat distribution network), and wireless transmission based on SATEL radio modems.

Radio modems provide a new alternative

All the communication means were independently designed, commissioned and implemented by the staff of THERMA. The same applies to wireless transmission, with many trials of different equipment. The ever recurring problem was connected with the rigid Satchwell Network transmission protocol between the Satchnet software and the controllers. The questioning and waiting times of the controllers are fixed, and the tested radio modems could not toggle between transmission and receiving modes as quickly as required.

The trials of SATEL radio modems were successful and no problem arose of the nature described above. The switch-over times are so short that the SATEL radio modems



Satchnet visualisation of the District Prosecutor's Office centre connected with the Old Town via cable

operating between the computer and the controllers could be compared to a transmission cable. Their simple configuration is an additional advantage; no special software is needed, an ordinary terminal suffices. Thus, the radio modems, after careful configuration of the transmission speed and length of sign, are ready to operate immediately after incorporation into the existing transmission system.

Currently, three SATEL radio modems are used in THERMA, one of them with an omnidirectional antenna at the district dispatch room in Karpackie neighbourhood. A computer installed in that site facilitates online monitoring of several distribution centres via telemetric cables and - via radio modem - of the SW110 group distribution centre on Golezowska street (crow-fly distance ca. 1 km from the dispatch room) and six centres in Starówka [Old Town] (crow-fly distance ca. 2 km). The group distribution centre is equipped with a radio modem with a directional antenna; the centres in Starówka are interconnected with a transmission cable, connected to one radio modem with the same kind of antenna. The transmission quality is excellent - the admissible margin of error remains within the range 2 - 3 % of transmitted data, in spite of compact settlement and uneven land.

The future is increasingly wireless

The earlier connections to the specified sites consisted in 'offline' transmission (commuted telephone network). The advantages of the new online methodology are self-evident: easier access to and better control of individual parameters, better organisation of the alarm system, possibility of registering and analysing parameters on one terminal, facile operation and enhanced transparency of the entire system, and lower failure rate compared to rather high rates with telecommunication lines and telephone modems.

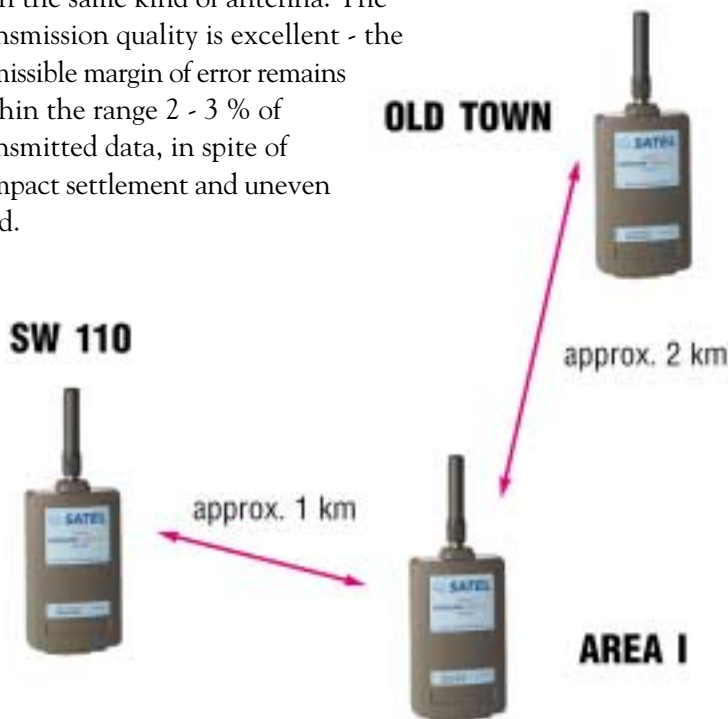
Despite higher costs of the radio-based technology compared to telecommunication lines, the benefits quoted above constitute a strong argument for a continued use of SATEL modems. In all the areas where the cables are yet to be laid, and such enterprise were to prove impossible or too costly, radio modems are the best choice. Thanks to them, the entire system can be standardised. In the future also major heating plants could be automated and monitored, as online wireless communication with them would be a must.

The installation described above was designed, commissioned and implemented by employees of **Przedsiębiorstwo Komunalne THERMA Sp. z o. o.**, 43-300 Bielsko-Biała, ul. Grażyńskiego 108, tel. 033 812-20-21, fax 033 812-20-24.

Cezary Grabowski, Wojciech Zdunek (THERMA Bielsko-Biała)



Electricity cabinet in the SW 110 group centre Golezowska street



Location of the stations equipped with SATEL radio modems



Manufacturer:

Satel Oy, Meriniitynkatu 17, P.O.Box 142, FIN-24101 Salo
 Tel. +358 02 777 7800, fax +358 02 777 7810, E-mail info@satel.fi
 www.satel.fi