

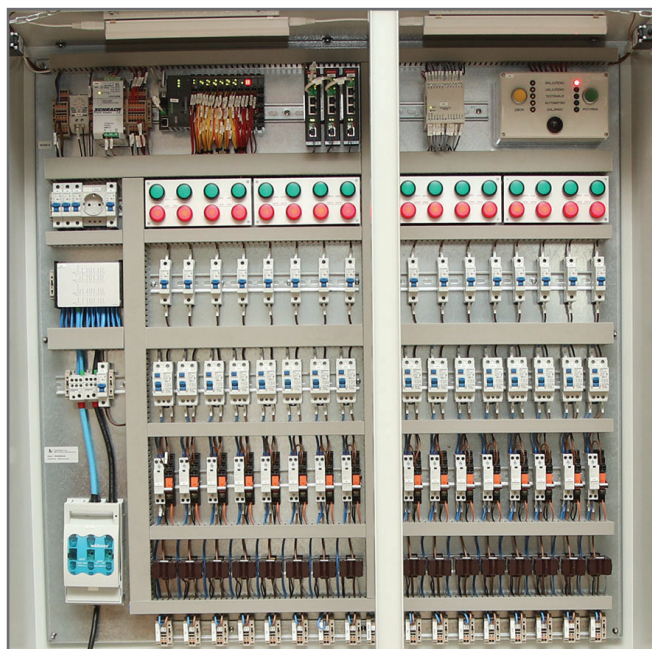
STATION POINT HEATING SYSTEM - GS20

General description

The GS20 point heating system is based on a flexible architecture and can be adapted to any design requirement and any topology. This system can be centralized, decentralized, autonomous or integrated into a centralized monitoring and control system.

GS20 System is powered from Overhead contact line by pole-mounted substations or some other alternative power source. The system itself includes HMI workstation, SCADA subsystem, distribution cabinets, connection cabinets, electric heaters and electrical cables for connection, control and signaling. It is designed for easy handling and easy fault detection.

The system is designed so that tests can be performed to check and determine the failures of individual heaters. The heaters are switched on, in normal operation, sequentially one after the other with a predetermined delay, in order to reduce the load on the electrical network.

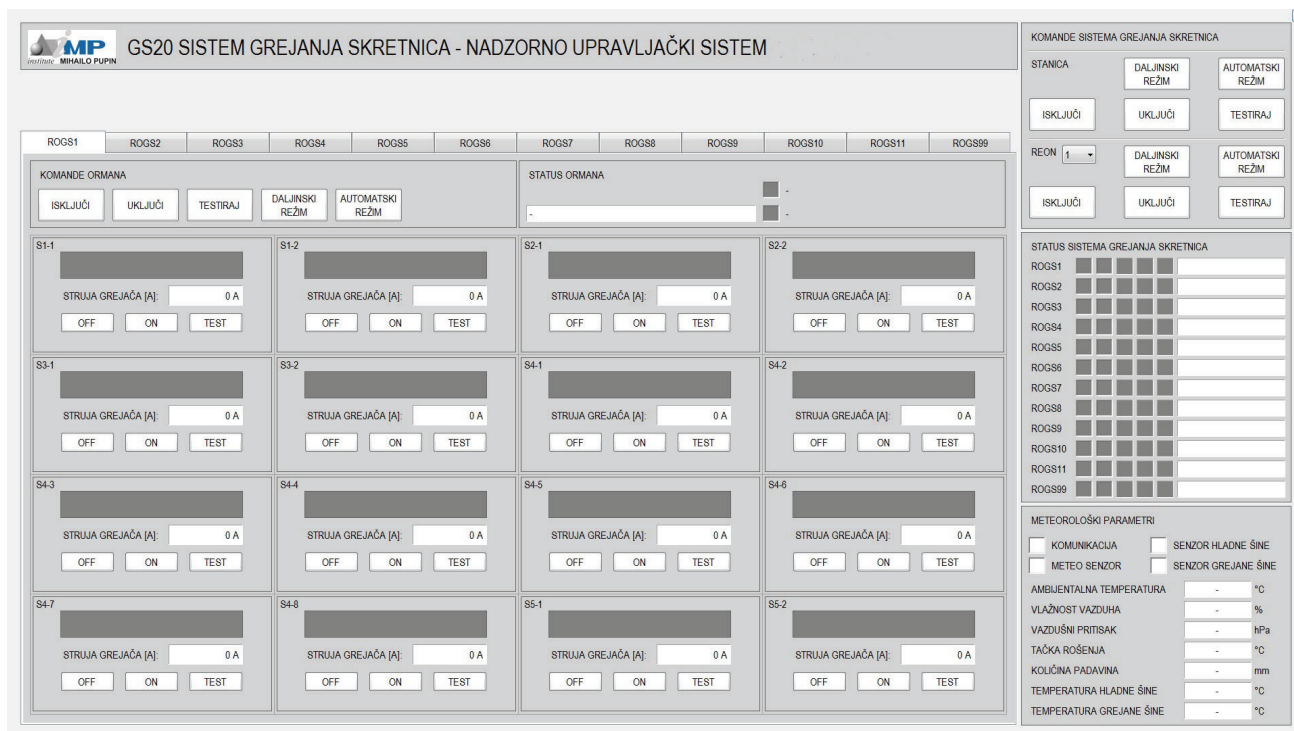


Basic function

Point heaters are automatically activated based on pre-set parameters on the HMI workstation. These parameters are a function of current weather conditions. Measurements are performed at a weather station set up at the appropriate location. Temperature, humidity and precipitation detectors send information to the monitoring and control system. It is realized in the form of a SCADA system that controls the operation of the device - regulates the activation of each switch and monitors potential failures of individual heaters, sensor damage, unauthorized intervention on devices, etc. The current state of the system can be monitored at the HMI workstation in the traffic office of the train dispatcher, and any irregularities are further highlighted. PLC controllers installed in each distribution cabinet communicate with the control system. The heater is switched on according to the relay command principle in order to reduce electric shocks and network load.

Technical characteristics

- Power supply:
 - o main power supply – 230V AC
 - o internal logic power supply – 24V DC
 - Heater length, power and number of heaters are defined by the project task individually for each point
 - The temperature range of the equipment is from -40 °C to 70 °C
 - EN60870-2-1 - resistance to impulse overvoltages up to 5 kV
 - EN60068-2-6 – vibration resistance up to 5 g
 - IP54 EN60529 – degree of the box protection
 - IP65 EN60529 – degree of external equipment protection
 - CENELEC EN 50121-4 – immunity to electromagnetic influences of communication and SCADA system
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Subsystem description

Point heater distribution cabinet (PHDC)

The PHDC contains PLC controllers that control and monitor the associated parts of the point heating system. They can be hierarchically organized, depending on the station topology and project requirements. The control is based on the possibility of individually switching on the heater for each point.

Switching on is done successively. Control consists of detecting possible interruptions or failures of the heater, access to the main cabinet and measuring the intensity of current at the entrance to the cabinet. In addition to the PLC controller, the main cabinet also contains switches for switching on the heater, earth fault protection, as well as overcurrent protection.

Heaters

The heaters are placed next to the point and are activated manually or automatically under certain weather conditions. The system is designed so that it can work with different types of heaters, power from 200W to 2000 W, regardless of the point configuration. The heaters are mounted on points by simply mounting and fastening them with elastic clamping elements that enable easy assembly and disassembly.

HMI workstation

Work station allows the operator to access to the system monitoring, control and testing over the user interface.

Connection cabinet

The connection cabinet is located next to the point and a heater is connected with the main cabinet in it. All cabinets must be resistant to shocks, vibrations and damage.



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