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AUTOMATED WATER SUPPLY SYSTEM USING WIRELESS COMMUNICATION

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Total number of pumping stations in the system can reach 100 developed configuration allows to connect the new pump stations to the system with little or norework software hubs and dispatch.

Exchange of information between control stations and stations over the air in the frequency range 39MHz. The exchange of information takes place as follows. Controller CCP (central control point) via communications equipment consistently communicates with the SPS, with the WPS and the controller DCW (dispatch center wastewater). DPWS controller (control towerwater supply) is only in promiscuous mode, and does not transmit any information. DCW generates control commands and settings for CCP, WPS - for SPS. To improve the quality of the channel and there fore increasing the transmission rate planned transition to use modems in the range of 160MHz and a few radio channels. In the future we plan to expand the system by connecting the new WPS and SPS.

For communication between the subsystems of automation control systemof water supply will be required (see Figure 1):

- equipment for the implementation of a wireless connection;
- contract number from your mobile operator a teach nodeof the system;
- operator work station(PC)operating systemWindows;
- server hardware to manage groups of pumps ands pecialized software (produced by Softlist"), which implements all the functions of control and management of the water supply system.
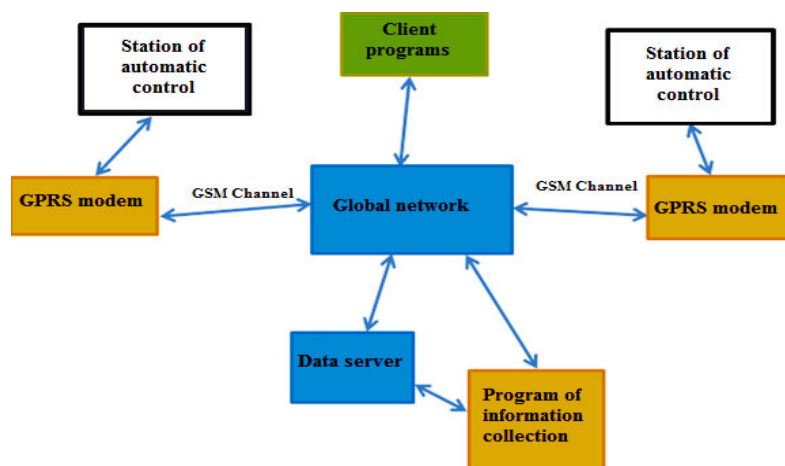

Figure 1 - The scheme of wireless interaction between water supply subsystems

Consider a project of building a geographically distributed wireless access standard 802.11b. The project involved the development of a radio network, providing the following services:

- connection corporate clients to the Internet;
- association of local networks of customers;
- organization of channels with guaranteed band with to support voice services and video conferencing.

With the help of sector 90° cross-polarized antennas and eight radiobridges Cisco Aironet BR350-A-K9, placed on radio tower, multi-sector base station is formed with a circular coverage area subscribers (zone-of-sight) within a radius of 2-3 km, with a total bandwidth 40 Mbit / s or 5 Mbit/s per sector. The base station can build gradually, starting from one of the bridge and increasing the omnidirectional antenna as required by bridges, respectively, the sectors.

With an increasing number of sectors and decreases the width of the bridges sector and increases the radius of the coverage area. In the extreme case, each sector is served by its bridge, the whole capacity of which is given to the antenna without division. To "cut" a specific bandwidth to clients and provide QoS, the base station is connected to the main channel through the switch in the third level or multi-service router.

On the customer's premises, located in the line of sight of the base station, the subscriber unit is installed. Reception is on the directional polarized antenna placed on the tower or mast. Used to increase the range of the antenna with high gain. Depending on the tasks subscriber units can be constructed in various ways. For example, for easy access to the Internet, you can do a knot at the base of PC-client server PCI-adapter Cisco AIR-PCI352. To transfer a convergent customer traffic unit can be built on the basis of the bridge for Workgroups Cisco AIR-WGB352R and multiservice router - for example, Cisco 831.

Consider the example of data transfer service bore holes using a wireless network (Figure 2). In the artesian wells installed submersible pumps, which pump water into the tank swith 100-meter depth. The pavilion each well automated system works under the control of the controller OWENPLK150 with operator panel ARIESIP320. The system controls:
- borehole pumps;
- heating and cooling control cabinet;
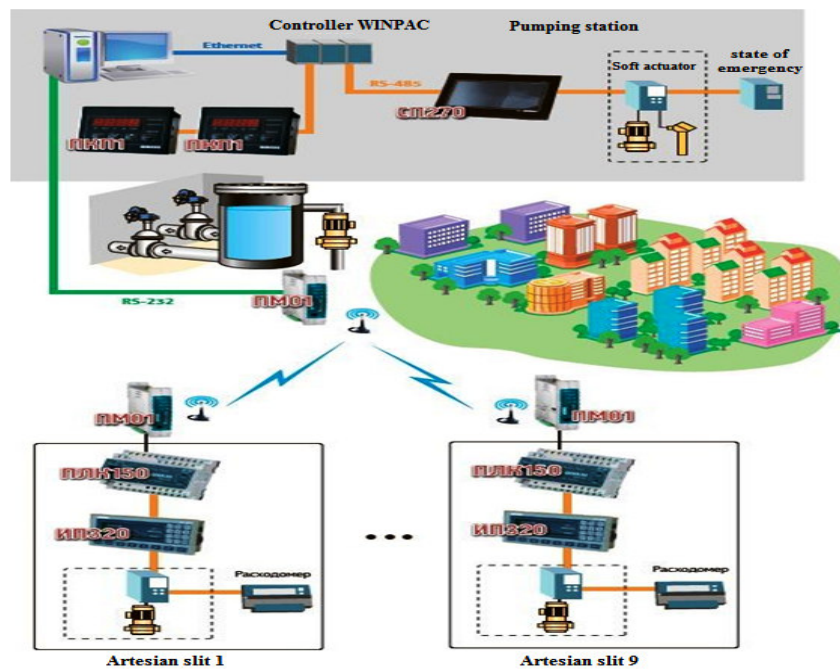- heating the on shore pressure pipe.

Figure 2 - The example of wireless communication in a water supply systems

The system has two main modes-local and remote. Local includes a manual mode - start with the operator panel IP320 and operation of the timer, the operator sets the panel on/offthe pump. Remote mode - a mode of automatic control from the control center. The system monitors:
- the pump pressures (ARIES PD100);
- water flow (flowmeter PROSEM-222);
- the current state of the pump (starter EMOTRON MSF);
- temperature in the pavilion (ARIES TPA125);
- the presence of voltage in the network;
- opening the front door.

All current information displayed on the operator panel and, just as in the case of the dictating points is transmitted to the control station via modems PM01 by CSD-compound.