



## Safe transfer of data in Falkenberg

Falkenbergs Vatten och Renhållning AB, FAVRAB, on the Swedish West Coast, has chosen Radius PDR to collect values and control their facilities.

**FAVRAB has chosen Radius radio communication system PDR for both their water and wastewater systems. They control their facilities, collect measured values and control the system by using radio communication.**

In Falkenberg, there are two larger water plants. From a control panel in one of the two water plants, Kenth Karlsson, electrician at FAVRAB, can survey what happens in the system and also change different values. FAVRAB communicates with all the pump stations through cable or radio.

### FROM THE PUMP TO THE TAP

Pure ground water is pumped by 11 pumps from ground water pump stations within a radius of 6.2 miles. The level in the elevated tank in Falkenberg controls how many pumps should be operating. There is a level sensor that through cable reports the water level to the operational control center at the water plant. High contents of nitrate in one of the pump stations has lead to that the water has to pass a filter facility with a filter composed of membrane. The water is gathered in two low level tanks in the water plant. There, the pH value is measured and, if needed, adjusted in a chemical way with lye. The water then flows on to the consumers through a mains network that is several miles long.



### TOTAL CONTROL VIA THE CONTROL PANEL

Through the control panel at the water plant, Karlsson can supervise and tune the system. He can see if the pumps are working, check the present flow and receive alarms, if for example a motor protection has re-deemed. To be able to protect the pumps, it is important that the water level in the wells don't get too low. There is a sensor where an alarm goes off if the level goes below five percent. Sometimes, someone is sent out to control an alarm, but most things are supervised from the control room. Karlsson is just a press of a button away from cutting or raising the engine speed of the pump. "It feels safer with the radio. There haven't been any problems whatsoever. There are much more problems with communication cables. When using long cables, overvoltage often occurs and sometimes a cable accidentally is cut off" Karlsson says, and at the same time he displays the current values of one of the pump stations. The radio system is polled and the values are continuously updated.

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**Kenth Karlsson**

### THE QUALITY OF THE WATER IS SECURED

There are many factors affecting the water and the water quality vary dependent on where you are. In Falkenberg parts of the water is pumped through a filter composed of membrane before it moves on to the low level tank at the water plant. The PDR radio mediates all the signals coming from the pump and the filter composed of membrane, to the PLC. This signals could be about the flow, how much goes through the filter and how much water that becomes wastewater.



## KEEPING THE PRESSURE UNDER CONTROL

It is important to keep the consumers' water pressure at an even level. If the pressure gets too high, security valves, in for example water heaters and furnaces, can redeem and affect the people living at the lowest level. However, if the pressure gets too low, the people living at the highest level lose their water. The pressure in the pipe is measured by the terminals and is reported through the PDR to the water plant. There are preset levels in the system. Among others there is a terminal at a pump station that raises the water pressure. When the pressure in the water mains network goes down below 3.8 bar, the pump starts working. The pump then automatically stops when the level is 4.8 bar. The levels can be changed from the control panel in the water plant.

## RECENT UPGRADE

FAVRAB has upgraded their older PackNet system into a new Radius PDR system. Kenth Karlsson programmed the units by using a terminal program on the computer, and then replaced the old units. "The transition worked great," Kenth Karlsson says. "We replaced 15 radios in one afternoon. The programming interface is flexible and logical and when we assembled them the new units fitted perfectly in the same screw holes as the old ones."

## ADDITIONAL SAFETY MEASURES

The water supply is a vital function in a society that demands additional safety measures. This is the reason why there are a

back-up system with for example two pumps and two reservoirs. The PLC gets its voltage from a battery back up and is also connected to a reserve power station to be able to handle prolonged power failures. The radio has a battery back up as well. The availability is important to Kenth Karlsson. "The main benefit using radio is that it becomes more of an isolated unit that isn't that sensitive if a thunderstorm would occur" Karlsson continues.

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## CONTROL OF THE WASTE WATER SEGMENT

FAVRAB has chosen to communicate with Radius PDR both in the water and wastewater area. "The best thing is that I can always have a PDR laying on the shelf, that I can use anywhere in the system" says Karlsson. There is an elevated point in the immediate surroundings where they have placed a repeater that is used to communicate both to the water and waste water system. The PLC at the water plant communicates with pumps and sensors, collects the values and forwards them to the operational control center. More than a thousand values come every 20 second to the operational control center at the water plant and Kenth Karlsson is pleased with the graphs he can get from the system. "I am continuously up to speed on what the equipment out in the field is doing, regardless if it is a water or waste water pump."

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