Put into operation 'Parameters Monitoring System at Borehole #59 of Svyrydivske Gas Pretreatment Plant' based on controllers ILC 150 GSM from Phoenix-Contact with data transmission via GSM and powered by solar battery using wireless sensors from Emercon at 'Regal Petroleum Corporation Ltd'
(Iakhnyky, Poltava Region, Ukraine)
April, 2014

The system is designed for data gathering about the state of the technological parameters of the wellhead and submitting it in a convenient way on monitor workstation operator. The system provides measurement at each wellhead of the following parameters:

- the gas temperature before and after the fitting;
- pipe and hole annulus pressure;
- pressure of between columns;
- pressure after the fitting;
- and the alarm messages about condition of the equipment system.

The system was designed on PCS7 software (SIEMENS) with using controllers ILC 150 GSM/GPRS with internal modem GSM/GPRS (PHOENIX CONTACT). It enables sending and receiving SMS and packet (IP) communication via GPRS. This controller have a low power consumption too.

Frequency of data transmission - 10 sec, 1 min, 5 min, 15 min, and in case of emergencies.

When connection is break, controller was stored data in a nonvolatile memory. After resumption of communication the data stored in the nonvolatile memory was restored and will be wrote to archive on operator station by special software. This software (driver WELL) created on PureBasic language and software package WinCC ODK v7.0 (Open Development Kit), which represents a set of functions in C and C++.

In the historical data have timestamp at which the data is written to an existing archive WinCC "backdating".

In the nonvolatile memory of the controller can store information about the work of the well for a period of not less than 3 days.
On some wells power supply local controllers in control cabinets execute from solar panels. For this to use a standard power supply circuit of the solar cell RAD-SOL-SET-24-200IF from Phoenix Contact is the rated power of 200 watts. Together with two additional solar panels on 50 watts, it will be 300 watts.

Rated capacity of the selected accumulator is 100 Ah.

Such capacity accumulator provides the control cabinet for about five days without direct sun rays.
Well №059 equipped with wireless sensors. For wireless data transmission from the well №059 in control cabinet mounted wireless gateway Rosemount 1410 which provides connection of self-organizing networks of WirelessHART.

List of wireless sensors:
- temperature sensor Rosemount 648DX1D1 Wireless;
- pressure sensor Rosemount 3051S2TG In-Line Pressure Transmitter;
- digital input transducer Rosemount 702 Wireless Discrete Transmitter.

The transmitters are supplied from the power supply modules 701PBKKF (EMERSON), service life - 10 years (the polling period 1 min).

Wireless Gateway 1420 provides reliable data protection, easier integration with upper level system without additional software, and continuously optimizes network performance for maximum data reliability and extend the battery life of wireless devices from the power supply.