WirelessHART Solution for heavy crude oil extraction
Wellhead Monitoring System, Pacific Rubiales Energy, Colombia

Customer Requirement  When Pacific Rubiales Energy were looking for a more flexible solution to monitoring yield at their wellheads, they chose WirelessHART technology as the answer.

In comparison to conventional methods, the use of WirelessHART technology has greatly reduced the wellhead installation time from 15 days down to 3 days. 400 m communication cable and associated costs were saved per head as well as 100 m³ of cable channels and a remote I/O.

Automated Procedure  For the extraction of the heavy crude oil, several boreholes – five on average – are clustered together to form a “pad”. The project involves the measurement of pressure, temperature and flow of each wellhead; WirelessHART networks communicate the values. Using wireless signal transmission, all the mobile installations and moving parts of the wells are easily and cost-effectively integrated.

Scope of Delivery  800 SWA70 WirelessHART Adapters and 43 SWG70 WirelessHART Fieldgates for equipping the Rubiales-Pirirí oil fields.

In detail, Endress+Hauser provided:
- 800 field devices, 800 WirelessHART Adapters and 43 WirelessHART Fieldgates.
- Connection to the Endress+Hauser W@M life-cycle information platform.
- Support in the selection and integration of the best field devices for the job.
- Consultancy regarding wireless technology and network design.
- Training in WirelessHART technology at Bogotá.
System Operation

Each wellhead is equipped with a pressure transmitter. The crude is piped to a manifold, which monitors the material flow from five wellheads and feeds it into a central pipeline. Each manifold is equipped with a flowmeter and a pressure transmitter, which determine the productivity of the five boreholes. All twelve instruments are equipped with WirelessHART SWA70 Adapters that communicate with a WirelessHART SWG70 Fieldgate. This transports the data collected from the network to a supervisory system. Plant Asset Management is also part of the package and is done with the aid of the web-based W@M platform.

Features and Benefits

- Economical solution due to less cabling costs and less time to startup a system.
- Projects and operations can be carried out faster and more flexibly.
- Process optimization reduces operational costs (OPEX).
- W@M helps Pacific Rubiales Energy to manage all existing assets in an effective way. In the event of shutdowns all device documentation including operating manuals, technical information, service reports, calibration reports, spare parts and product status are available online. Device data are always available 24/7.
- Excellent local support by the Endress+Hauser representative Colsein and the authorized service provider Saytec.

Visualization of measurement and communication. Showing here: One of five wellheads and a manifold for five wellheads.

Equipment of the oil fields: each wellhead equipped with a dedicated pressure and temperature transmitter.

Colombia, Rubiales-Pirirí oil fields: Pacific Rubiales Energy is drilling up to 20 new oil wells every month.

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