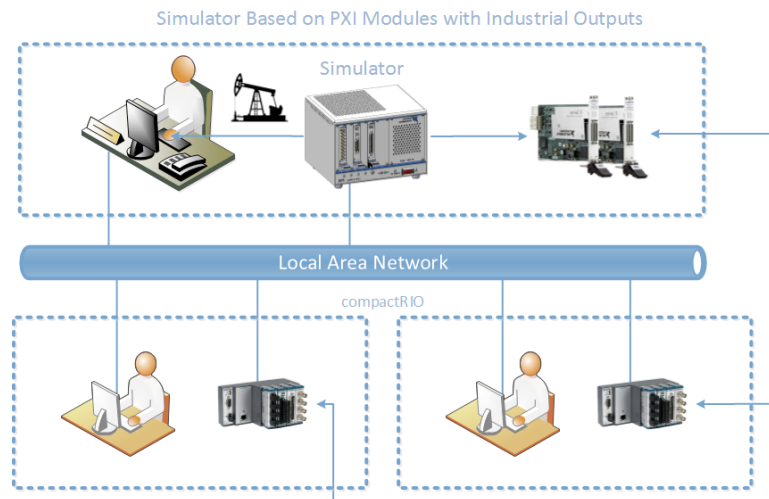


Principles of Modern SCADA Systems: Oil Well Pump



Overview

The laboratory bench is designed to study the design principles of modern SCADA systems, the operation of automation system of typical objects of oil and gas industry and emulation of sensors that serve to monitor and control the objects. The stand is based on the object mathematical model, which helps to simulate various situations of its work under the control of SCADA system.

List of Labs

- Principles of modern SCADA systems
- Connecting process variable sensors to measure signals (acceleration, load) and set data acquisition configuration
- Organization of analog parameters acquisition and processing
- Organization of digital signal acquisition and processing
- Real-time visualization of process parameters through tables and graphs
- Data selection and reading from archive, observation of trend charts
- Configuration of sensor parameters: setpoints, etc.
- Implementation of emergency shutdown with timestamp and all parameters registration at the time of emergency stop
- Setting auto and manual control modes
- Variable frequency drive control

National Instruments Hardware

- NI PXI-8101 High-Value PXI Embedded Controller for Windows
- NI PXI-1031 4-Slot 3U PXI Chassis with Universal AC
- NI PXI-6220 16-Bit, 250 kS/s, 16 Analog Inputs
- NI PXI-6723 Static and Waveform Analog Output -13-Bit, 32 Channels
- NI cRIO-9075 Integrated 400 MHz Real-Time Controller and LX25 FPGA
- NI 9201 ± 10 V, Analog Input, 500 kS/s, 8 Ch Module
- NI 9263 ± 10 V, Analog Output, 100 kS/s, 4 Ch Module
- NI 9401 5 V/TTL, Bidirectional Digital I/O, 8 Ch Module

Software

- Windows 7
- LabVIEW Run-Time Engine 2013
- Adobe Reader 9,5 and later
- Microsoft Word 2013 and later
- Microsoft Excel 2013 and later