CONTROL ENGINEERING 2014 System Integrator of the Year

INSIST AVTOMATIKA
industrial automation systems

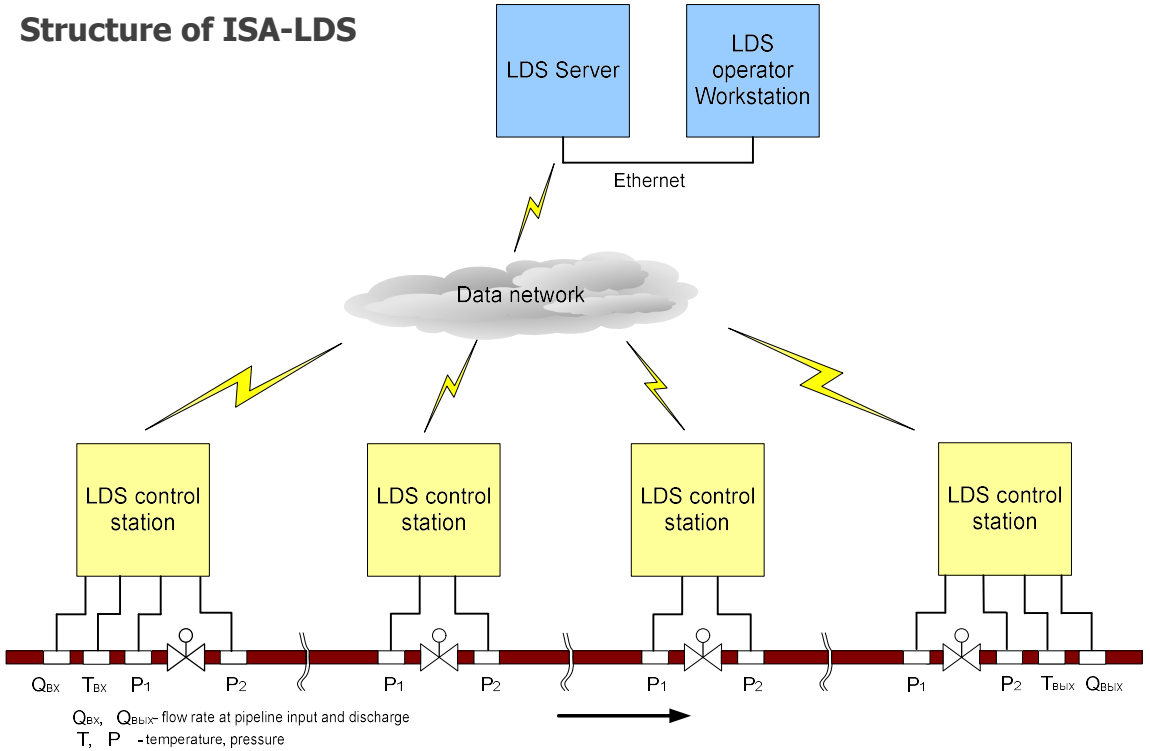
AUTOMATION ALLIANCE GROUP

Leak Detection System (ISA-LDS)

PURPOSE of ISA-LDS. CUSTOMER BENEFITS

1. ISA-LDS is designed to quickly notify about the leaks to allow the asset owner to reduce losses and damage to the environment if an attempt of theft of transported liquid occurs.
2. ISA-LDS can be used with all liquids (kerosene, oil, water, benzene, acetone, etc.)
3. ISA-LDS can be used for short pipelines (several hundred meters) as well as for long pipelines (hundreds of kilometers), for pipelines of various diameters and produced from various materials.

Structure of ISA-LDS



ISA-LDS CAPABILITIES

- Detection of seal failure of oil/product pipeline based on measurements of flow, pressure, and temperature values in dynamic and static operating modes within no more than **2 minutes** from the start of leak
- Calculation of anticipated leak location with accuracy of not less than ± **300 meters** (at pressure sensors polling rate not exceeding 100 msec)
- Calculation of leak rate
- Registration of leak time
- Calculation of pig location
- Detection of unreliability of measuring channels
- Archiving of current information and calculations in database
- Export of data about the leak and its characteristics to adjacent systems
- Identification of pipeline operation mode (stationary, non-stationary, static) notification of operator about change of the mode
- Minimum detected leak rate does not exceed **1%** of maximum flow

ADDITIONAL FEATURES OF ISA-LDS

Besides detecting leaks ISA-LDS carries out the following functions:

1. Calculation of oil/oil product mass in the pipeline
2. Detection of location of a batch of oil product in the pipeline, calculation of the length of mixture volume in symmetrical concentration limit
3. Identification of operating point of pump-pipeline system
4. Identification of free-flowing sections in the pipeline
5. Identification of volume/mass of oil/oil product in free-flowing sections
6. Forecasting of the time of tank emptying/filling up

REQUIREMENTS FOR FLOW AND PRESSURE MEASUREMENT INSTRUMENTATION

Requirements for flow and pressure measurement instruments used in LDS should meet the following requirements:

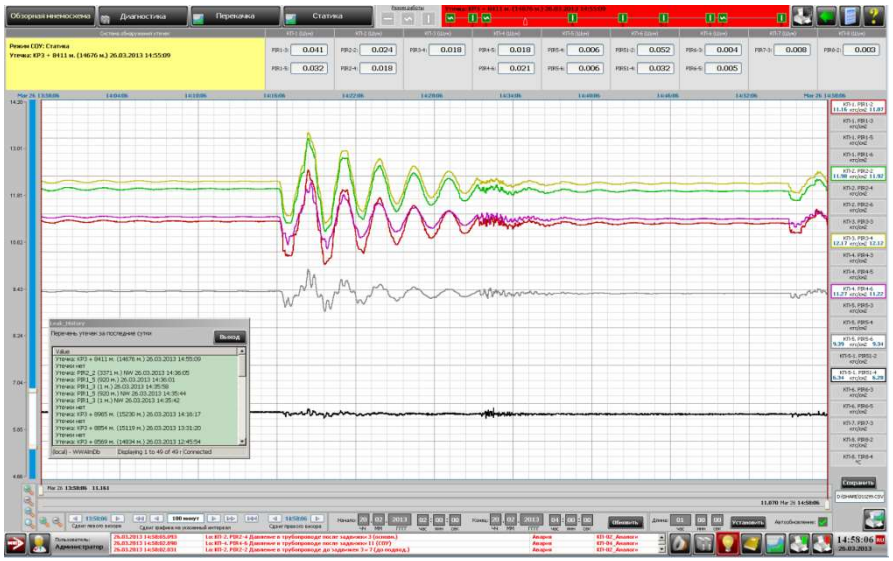
- SE Wonderware Historian, SE Wonderware InTouch
- Measurement instrumentation error should be less than 0.5%
- Distance between the flow meter should be less than 150 km
- Reduced error of pressure measurement instrumentation should be less than 0.1%, response time should be less than 0.1 sec. Total length of impulse line (based on linear distance between the inlet and outlet of the separation vessel) should be less than 4.0 meters

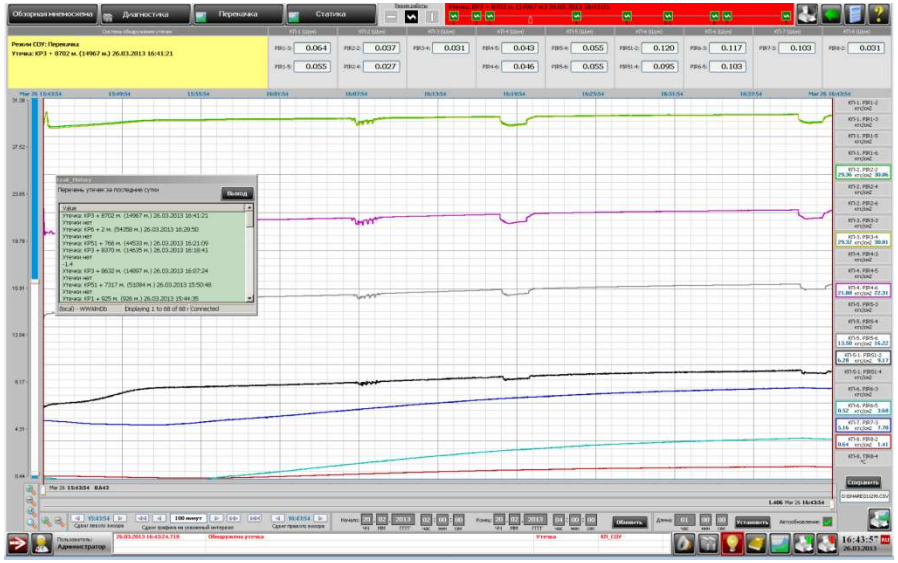
ISA-LDS STANDARDS AND TESTS

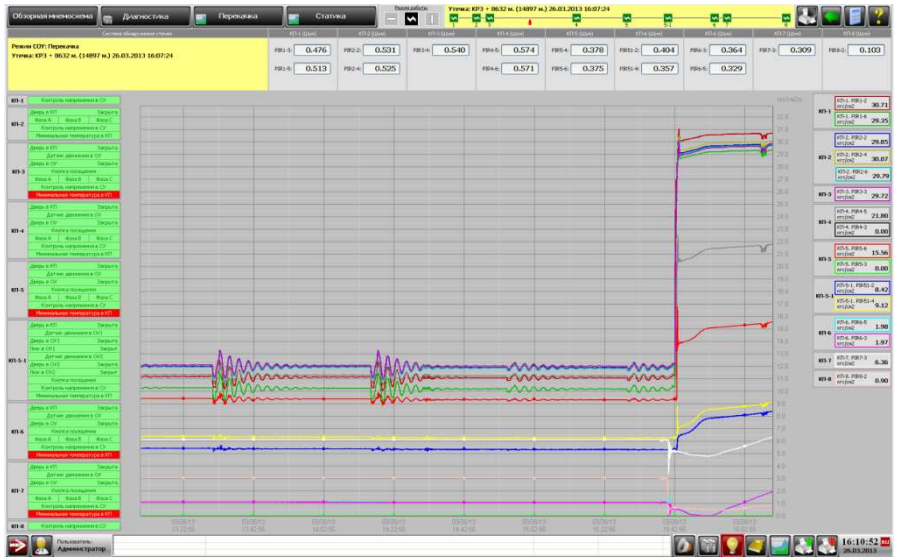
Leak detection systems meets the requirements of the following international documents:

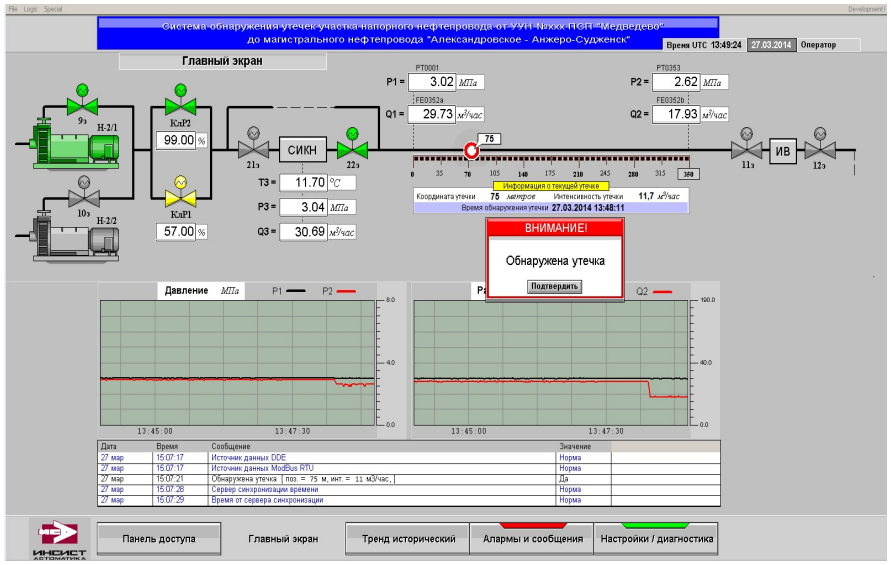
1. **API 1130** «Computational Pipeline Monitoring for Liquids», First Edition, September 2007
2. **TRFL** «Technische Regel fur Fernleitungsanlagen», (Technical Rule for Pipeline Systems), 2002, Germany

EXAMPLES OF IMPLEMENTED ISA-LDS PROJECTS









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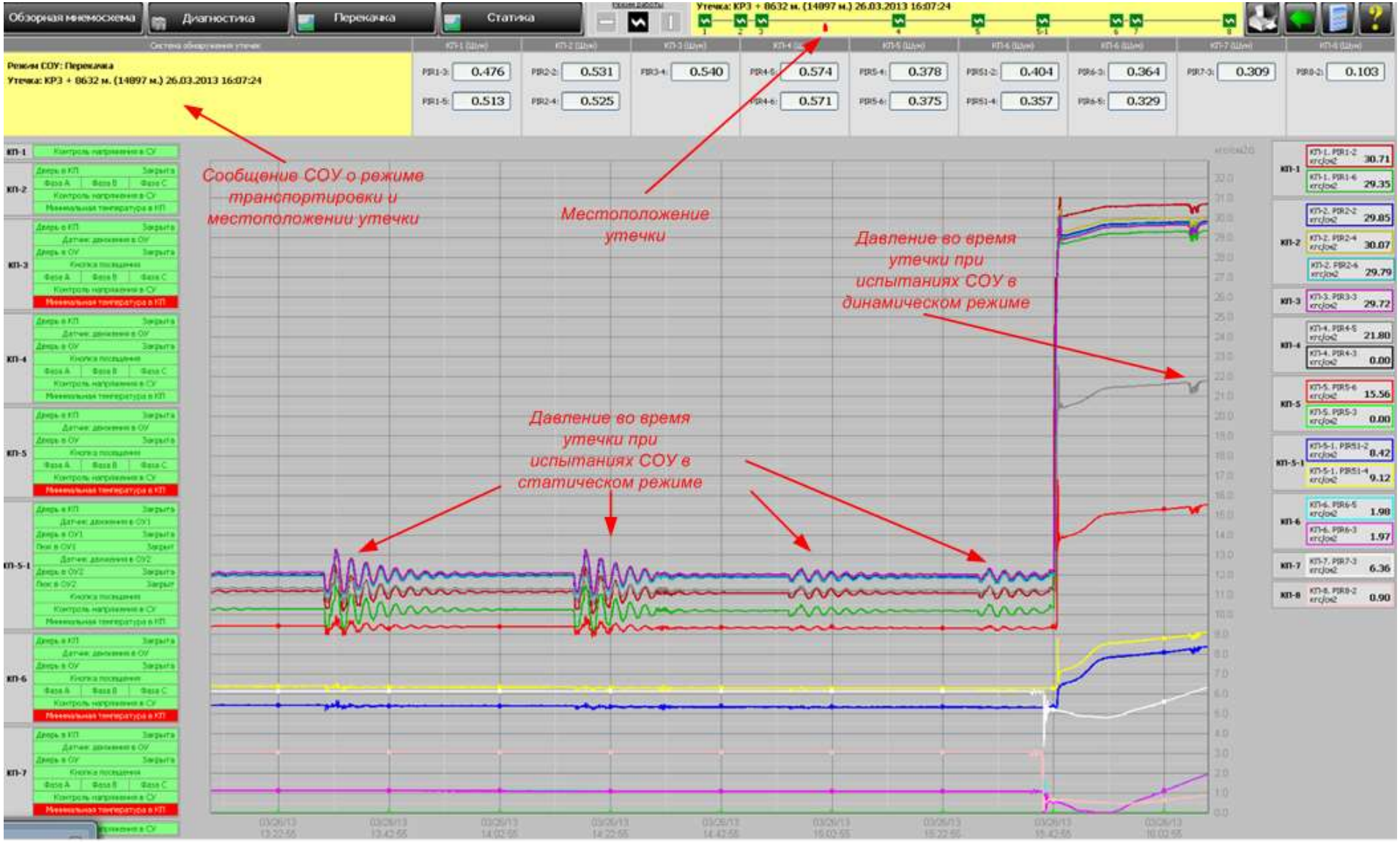
The company is recognized by RS

ISA-LDS SUPERVISOR WORKSTATION



ISA-LDS SUPERVISOR WORKSTATION (2)