Lukoil Oil Terminal, Štip

Control and Automation of Oil Terminal

Lukoil Oil Terminal is located in Štip, North Macedonia. It consists of several tanks for storage of various products, as well as truck loading facilities.

Control and automation system delivers multiple functions:

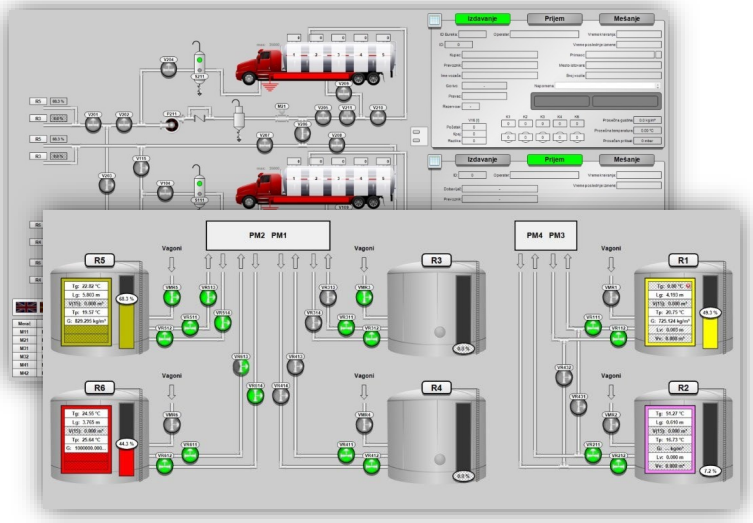
- Control and supervision of truck loading (loading bays)
- Pump control and delivery lines automation (supervision of line valves)
- Supervision of tanks (storage facilities)
- Control and supervision of loading, fuel additivation system, VRU system and other related sub-systems

Facility design and demands of TAS application

Terminal was designed to provide storage facility, together with truck loading facility with certified custody transfer measuring systems for delivery of various fuel products. In order to meet such demands it was necessary to design and install modern and all-encompassing TAS system (terminal automation system).
Main role of TAS is to provide control and supervision over truck loading facilities and also to offer support on various operations such as supervision of stock and delivery of all necessary analysis and reports. In addition, TAS would provide basis for integration of various sub-systems and prepare data for exchange with ERP systems.
TAS was based on Schneider Electric Wonderware Archestra and was specifically tailored according to customer needs.

WIG technical solution

WIG solution for TAS encompasses selection and installation of measuring and system equipment, design of automation system, design and implementation of software applications, as well as integration of sub-system from other contractors on this Terminal.
Equipment was selected to conform with all current regulations and standard for such type of facilities.
System for control and supervision provides automated operations, with options for manual control.
Software environment for TAS is completely adapted to needs of user.



Truck loading facility is based on measuring systems installed on loading bays. Such type of modern installation includes:

- 2 bays, with total of 4 CT measuring lines for delivery of fuel products
- 2 CT measuring lines for fuel products reception
- Possibility of top and bottom loading
- Automated system for additive injection
- VRU system
- Several different automated lines for both delivery and receiving (combination of 6 tanks, pumps, and multiple pipelines)

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KROHNE
AUTHORIZED
CHANNEL PARTNER

Lukoil Oil Terminal, Štip

Metering systems

Based on KROHNE PTB type approval and local obtained, WIG fully designed, tested and commissioned MID certified custody transfer metering system.

Metering systems are designed based on following equipment:
- mass flow meters KROHNE OPTIMASS 6400 S100
- Air separator Hydrocarbon GCS-65/4
- One Toptech Multiload II with 4 FCMII modules

VRU

WIG, together with its partner for VRU installations, Carbovac, delivered and installed complete VRU unit. Following equipment is used for this installation:
- Vacuum system BUSCH –NC0630 (630 m³/h @50 mbar)
- 2 x ISO2858 centrifugal pump (15 m³/h)
- 2 x KROHNE H250 rotameter
- 2 x KROHNE BM26A level meter
- ABB VFD
- S7 315 (MPLC) + S7 313 (SPLC “Watch Dog”) control system

System equipment and software

Multiload II –Division2-Flow Computer
Multiload II SMP handles single-arm, straight product loading. SMP offers ease of use, powerful stand-alone operation, seamless integration with automation systems, and an array of powerful features.

The OPTIMASS 6000 is a Coriolis mass flow sensor. Combined with the MFC 400 signal converter it forms the OPTIMASS 6400 high performance Coriolis mass flowmeter for all process applications

SMAR DFI302 platform multifunctional controller with PROFIBUS DP/High Speed Ethernet gateway capability. With one class 1 and 2 master PROFIBUS-DP channel, two 10/100 Mbps Ethernet channels and function blocks execution capability, the DF73 allows communication among PROFIBUS DP and PA field devices, in addition to Modbus communication. Additionally it has system control capability *(HOST)* for conventional I/O.

HP server workstation: **HP Proliant**, **HP ThinClient**.
Virtual system enviorment.

Operation system:
Windows 7,
System software:
Intoch,
Dream Report.

Features and benefits of specific WIG solution

Terminal was automated according to project designs. Main control over operations is remote, delivered from operator station at control room.

Manual control of main operations is possible, but envisioned only in case of catastrophic failure od automated system (remote control).

Some benefits of this type of software solution are:

- Possibility of integration of various sub-systems
- Possibility of multiple functional upgrades
- High quality system for data archiving and analysis
- Diverse and detailed repots (adapted to user)
- Possibility of connection with SAP & ERP systems

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