VAE CONTROLS GROUP

TAMAS®

Terminal Automation, Management And Administration System

ISO 9001:2008
ISO 10006:2004
ISO 14001:2004
OHSAS 18001:2007
NATO FCC

VAE CONTROLS provide

- Engineering activities: full-scale design documentation (mechanical, civil and electrical) from study up to detail design and manufacturing design.

- Procurement and delivery of technology units and equipment, fuel terminals, pipelines, electrical devices, control systems , tailor-made solutions.

For following industries:

Oil & Gas

Water & Wastewater

Environment

VAE CONTROLS

EXPERTS IN AUTOMATION AND TECHNOLOGY FOR OIL&GAS AND WATER INDUSTRY

OUR GUIDELINE

Reliability
+
Safety
+
Accuracy
=
Customer's satisfaction

PROFESSIONAL SOLUTIONS FOR OIL&GAS AND WATER INDUSTRY

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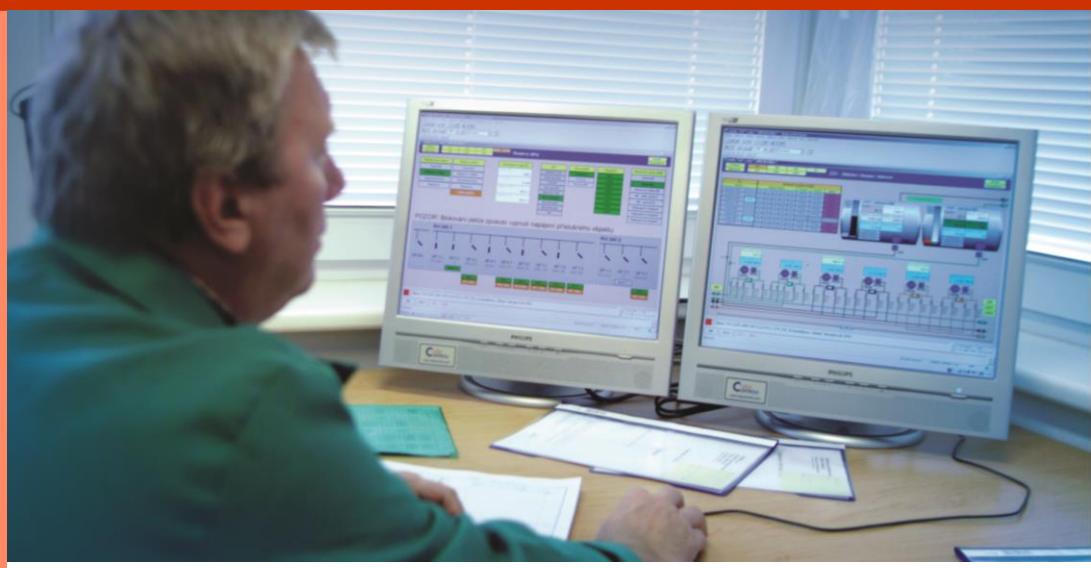


System Features

- Automated process control
- Process visualization
- Dispatching control
- Administration of loading/unloading process
- Data exchange with enterprise information systems
- Alarm and event handling
- Emergency Shut-Down
- Reporting
- Data archiving
- Self-service operation using ID cards
- Digital signature handling
- Custody transfer
- Product blending
- Pumps & valves control
- Additive dosing control
- Tank level and pressure monitoring
- Tank balancing
- Prevention of products cross-over mixing
- Leakage protection
- Environmental protection
- Pipe-lines handling, product recognition

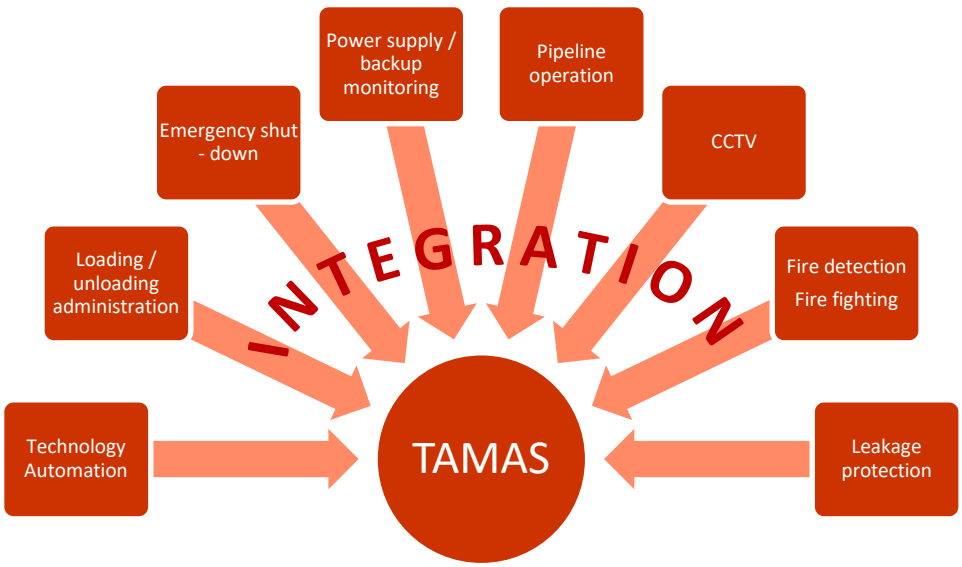
TAMAS®, what is it?

TAMAS® is a system for overall control of fuel terminals and tankfarms. The basic feature of the TAMAS® system is **modularity** that provides a solution tailored to fit for each customer and each application from very simple to most complex ones.

TAMAS® includes communication interface for many third-party intelligent field devices like presets, card readers, level gauges, valve drives etc.

In mission-critical applications TAMAS® is designed in redundant style, with autonomous ESD part. TAMAS architecrure is robust to make the operation **stable and reliable**.

TAMAS® is ready to operate as stand – alone master system of the tankfarm as well as fully integrated solution with enterprise information system and other third-party systems.



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GENERAL INFORMATION TAMAS®

Terminal Automation, Management And Administration System

TAMAS® PLC [Process Automation]

This term refers to a system of one or more PLC devices which ensure signal handling, automated control and emergency shut-down. To provide a **robust system** with easy expansion and maintenance, each technological part is operated by a separate PLC. These devices communicate mutually and with the upper SCADA system via redundant data bus, mostly made from fiber optic cables.

Typical tasks provided by PLC level are:

- Measuring of flow, mass, temperature, pressure, level, etc.
- Sensing of status of loading arms, folding stairs, floats, leak detectors, maximum/minimum level switches, grounding monitors and other devices
- Control of valves, pumps, additive dosing equipment, traffic lights etc.
- Batch-control, import of loading data (using flow computers and ID card system)
- Autonomous control of subsystems - VRU, water sewage plant etc.
- Emergency shut-down, interface with fire-fighting, CCTV and other system

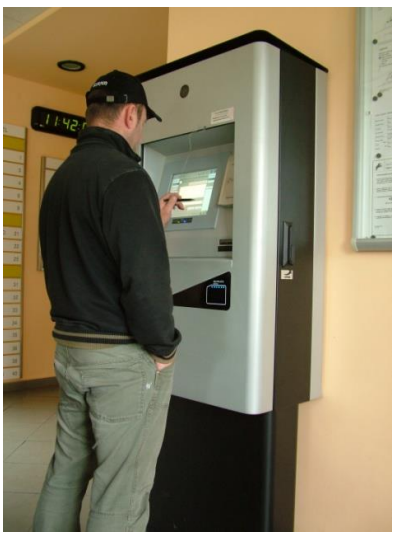
Electrical panel with PLC system

TAMAS® SCADA [Supervisory Control And Data Acquisition]

TAMAS® SCADA is designated to process visualization, high-level automation, dispatching control, event and alarm handling, report printing, and data archiving. The comfortable user interface is based on menus, configurable toolbars, dialogs, reports and hyperlinks on SCADA drawings.

The architecture of the system is Server/Client based. Optional installation of the **hot-stand-by server** ensures smooth operation even during server failure, or power outage. System of individual users and passwords ensures **secure access** to data and services, various levels of user privileges as well as administration and development of the system.

The Clear SCADA / SCX system delivered with the TAMAS® system is **world-wide standard** system with **multi-language support**, which guarantees **expandability** and service of the system in future. The system can be optionally equipped with remote service line for diagnostics and configuration. This makes the service extremely quick.



Driver´s self-service terminal

TAMAS® MES [Administration]

TAMAS® MES ensures administration of tank farm processes, not limited **to fuel intake, storage balance, inventory reporting, import of orders, loading schedules, recipes, creation of product receipt documents and delivery notes, registration and identification of drivers, clients, trucks and transactions, configuration of products and additives, export of loading data** and many others.

The system is closely integrated with the other parts of TAMAS® to automate administration procedures as much as possible. The same like the SCADA system, TAMAS® MES allows for **remote service access** which allows that most software modifications can be done remotely.

Operating environment: TAMAS® MES client is a Rich Internet Application (RIA) running in web browser. The software may run on the same hardware together with the TAMAS® SCADA system. Database is typically latest RDBMS by Oracle. Following technologies are supported for data **exchange with other information systems,** namely with the ERP system: CSV text files (shared directory or FTP), data exchange on database level (ODBC, ADODB, JDBC), XML files (shared directory or FTP), web services, OPC.

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Automation of technology processes

TAMAS® ensures automation of all the technology processes of the tankfarm.
Thanks to its scalability **TAMAS® is always designed to meet all the customers requirements**:

- Level of automation in relation to applied field instruments
- Highest level of field instruments and automation in relation to investment costs and operational costs.
- Consideration of „Life cycle management“ of the tankfarm and control system
- Elimination of human errors of safety critical operations.
- Centralised or semidistributed control
- Single or redundand structure

Most typical tasks for tankfarms automation are:

- Loading / Unloading
- Tanks management
- Pumping
- Pipeline routes, valves
- Vapour recovery
- Additive dosing
- Security (CCTV, electronic security, detectors etc.)
- Fire detection and firefighting

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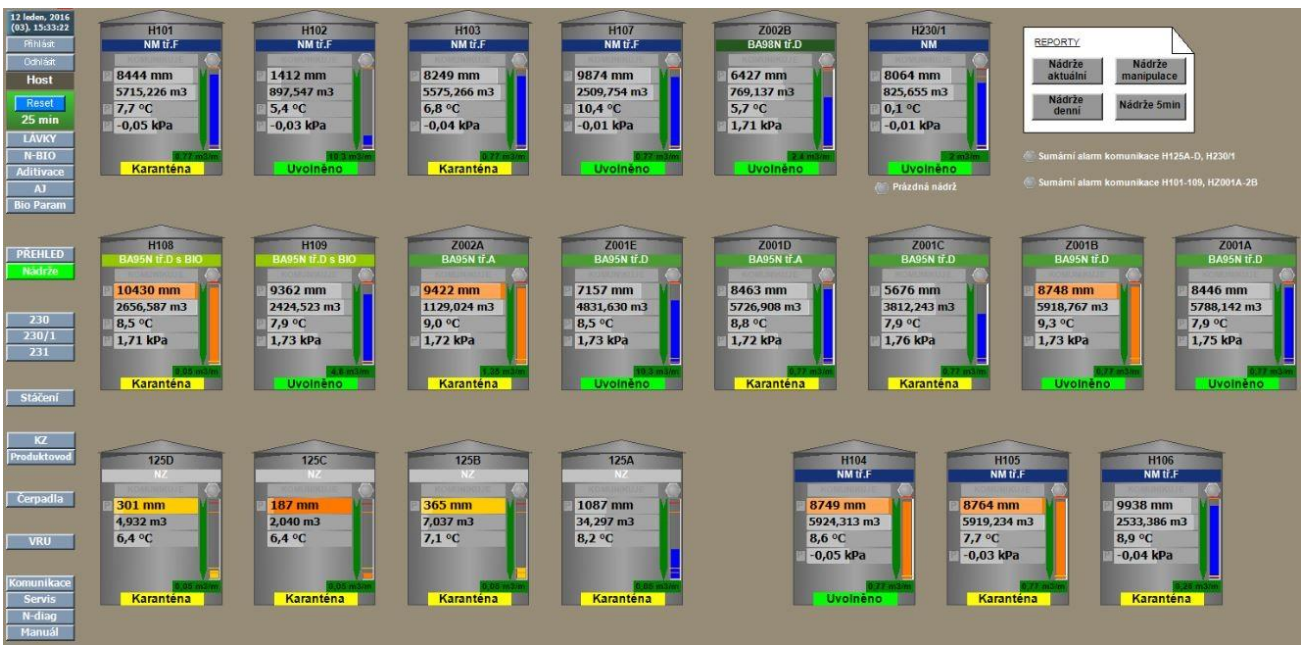
Automation of technology processes

Automation in our opinion is NOT ONLY REMOTE CONTROL but a set of hardware and software components which mitigates risk of human errors and decreases operation and staff costs.

We offer solution for:

- Interlocks for critical operations
- Algoritmisation of technology processes like pumping between tanks, product loading/unloading etc.
- Product cross-over mixing prevention
- Technology maintenance planning
- Integration with 3rd party technology-related sytems



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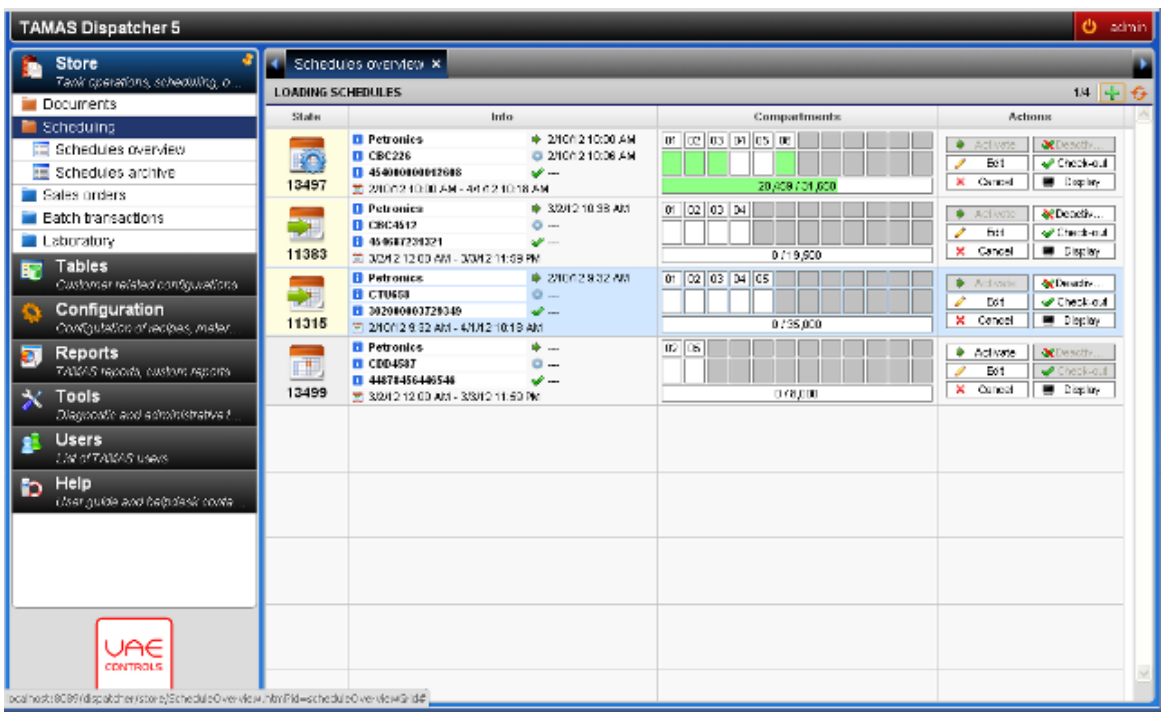
Administration of loading/unloading process „TAMAS® MES“

TAMAS® includes effective tools for administration of the processes related to:

- Road tankers loading / unloading
- Railway tankers loading / unloading
- Ship tankers loading / unloading
- Pipeline transport
- Internal operations
- Sales orders
- Scheduling
- Quality passports
- Documents print and export (Bills of loading, reports, etc.)



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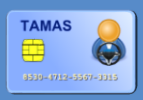
TAMAS® MES
Process schematics



1. Driver arrival and authentication

- Driver uses identification card and enters PIN on self-service kiosk or he uses card on entrance card reader.
- If there is no card reader nor self-service kiosk, authentication performs terminal staff or security staff.

2. Loading schedule

- The driver can prepare loading schedule on self-service kiosk
- If there is no self-service kiosk, the loading schedule is prepared by terminal staff.
- Loading schedule can be prepared in 3rd party system and imported into TAMAS. Then it is activated by the driver on self-sevice kiosk or by staff.

3. Loading / unloading process

- After activation of loading schedule the permissions for loading/unloading are sent to loading automats.
- The driver arrives at loading bay, connects to technological equipment and performs authentication on loading bay card reader.
- Loading / unloading process is performed.

4. Bill of loading (BOL) printing

- Transaction data are sent independently to custody transfer printer.
- This printouts can be used for audit purposes and as a backup of the electronic data.

5. Automatic saving of transaction data

- The complete set of transaction data including information about additivation and blending are automatically stored in the TAMAS database. The data are stored automatically in the database after finish of each transaction.

6. Delivery notes creation

- After loading is finished, the staff can save and print delivery notes.
- The documents can be saved and printed automatically or by staff.
- Optionaly the transaction data are exported into 3rd party systems.

7. Departure

- The driver receives the delivery notes.
- The driver performs check-out, security control and leaves the terminal.

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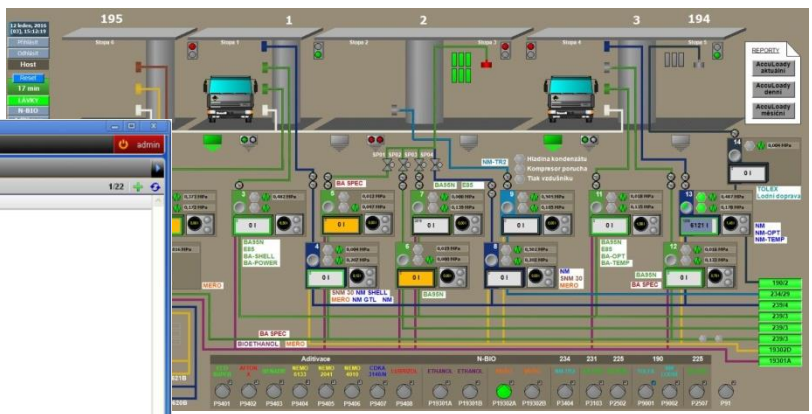
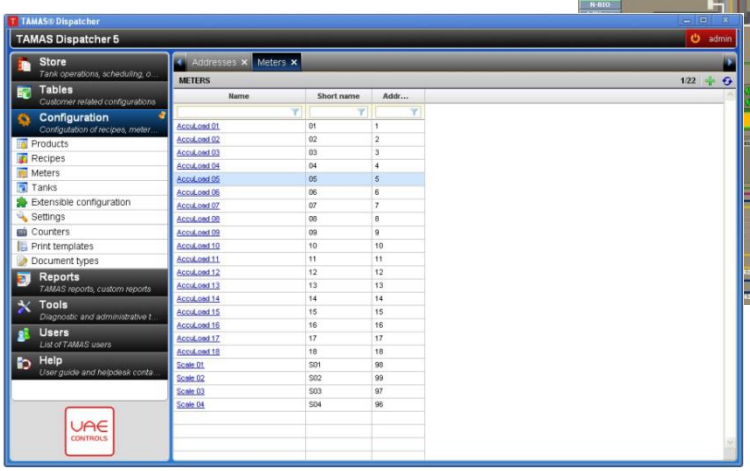
ADMINISTRATION TAMAS®

Terminal Automation, Management And Administration System

Key advantages of TAMAS® MES solution

- Tailor-made solution for each application
- User-friendly interface
- Enable fully automated loading/unloading process in relation with other TAMAS® components
- Availability of all technology data (volume, volume @ 15°C, mass, density, temperature, total counters, components and concentrations)
- Vehicles / drivers / products identification
- Transport information
- Sales orders database
- Loading / unloading planning
- Integration with flowmeters and presets
- Documents print and export
- User configuration of tanks, products, flowmeters, cards, transport companies, drivers etc.





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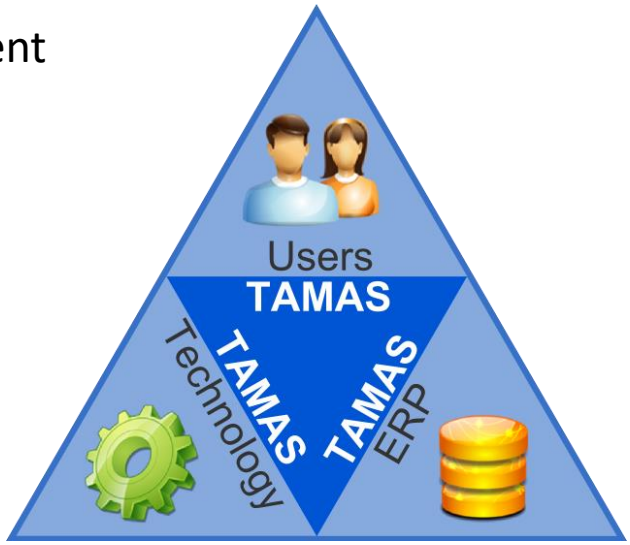
INTEGRATION & ARCHITECTURE TAMAS®

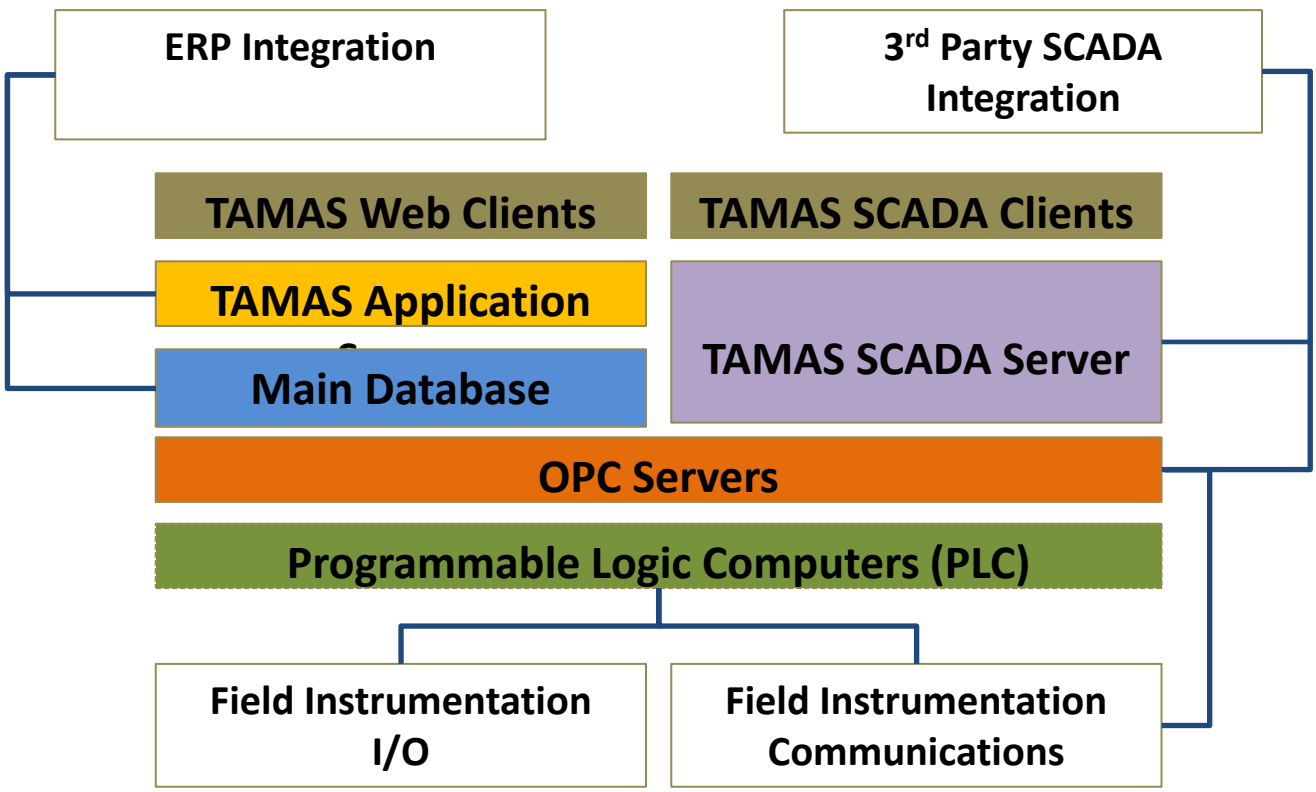
Terminal Automation, Management And Administration System

TAMAS Integration

- Tank Operations Management & Dispatching
- Configuration
- Automation
- SCADA
- Reporting
- 3rd party systems
  - Field Instrumentation
  - ERP
  - 3rd party SCADA



TAMAS Architecture



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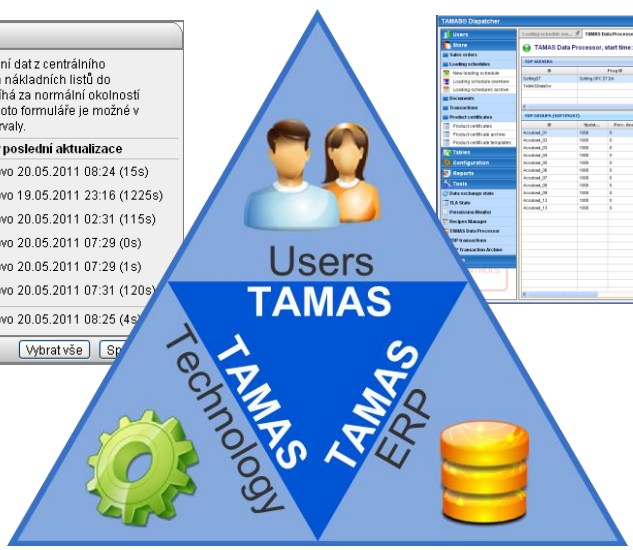
3-RD PARTY SYSTEMS

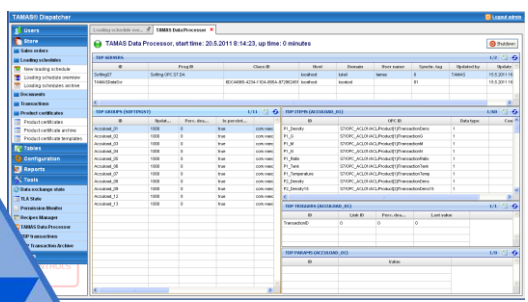
TAMAS®

Terminal Automation, Management And Administration System

TAMAS is open for communication and data exchange with 3rd party systems over standard and tailor-made interfaces:

- Client's ERP
  - Sales orders or tank operation plans
  - Tank operations data export
  - Customer related data synchronization
  - Transport related data synchronization
- Field instrumentation
  - Flow meters integration
  - Tank gauging system integration
  - ID system integration
  - Signal level integration
- 3rd party systems
  - SCADA
  - OPC servers
  - Specialized information systems





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Extensibility

Thanks to its modular design, TAMAS can be extended at any phase of operation in any direction:

- Automated control changes
- Devices connected
- Reports, printouts, visualisation
- Products, recipes
- 3-rd party systems data exchange

Security

TAMAS provides high level of operational security thanks to:

- Username / password authentication
- Optional Smart cards or USB tokens authentication
- Possibility to dedicate server
- Configurable user roles
- Optional ID System for tank operations

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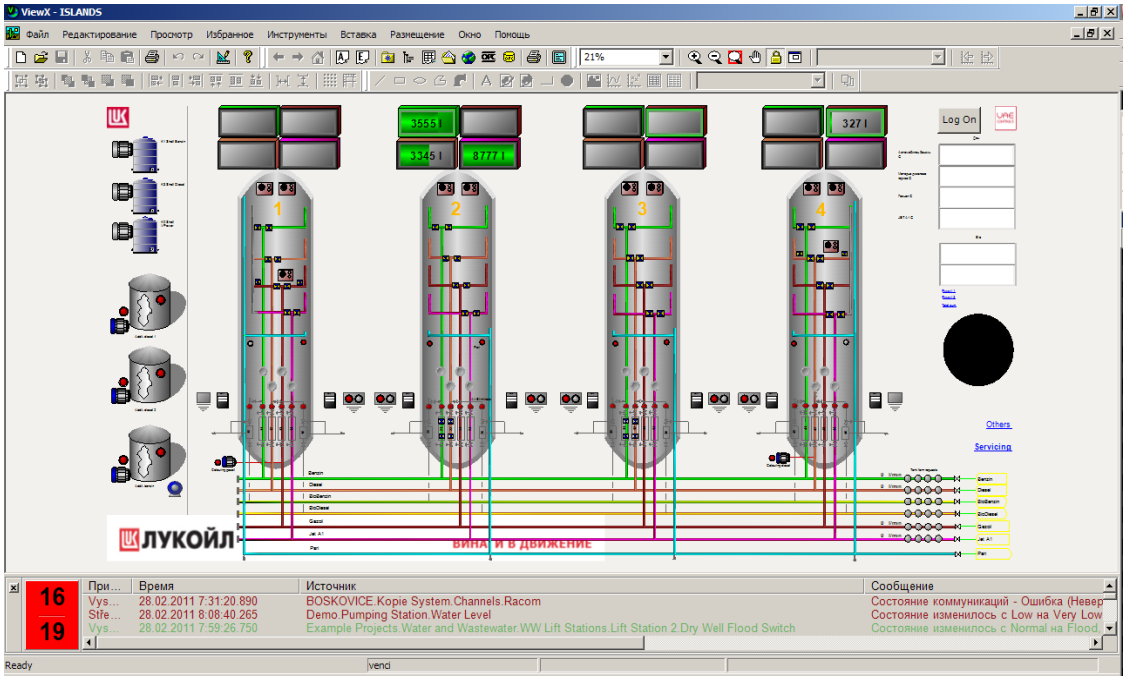
SCADA – Supervisory, Control And Data Acquisition
Main features

Using advanced solutions of SCADA systems TAMAS has extremely wide ability of:

- Visualisation and „one-click“ control of field instruments
- Advanced alarms and events handling including sending alarm messages to e-mails and over SMS
- Wide possibilities of reporting
- Graphs, charts, treds of all measured values
- Forecatsing
- Development environment included in server license
- Full clients and web clients



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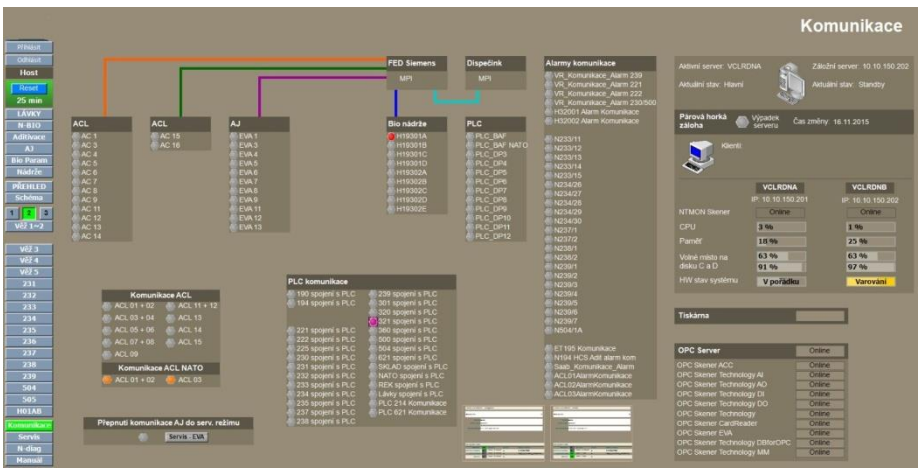
HUMAN – MACHINE INTERFACE TAMAS®

Terminal Automation, Management And Administration System

SCADA – Supervisory, Control And Data Acquisition
Technical characteristics

TAMAS® SCADA uses latest technology to ensure highest possible level of stability, reliability and security:

- High level of security thanks to username / password access protection
- Multiple levels of user rights for different operations
- Integrated logging functionality
- Client – Server architecture
- Optional hot-standby servers
- Support for RAID harddisc clusters
- Support for centralised data archiving systems
- Support for servers virtualisation
- Local or remote clients
- OPC support
- Remote diagnostics and modifications for minimum service costs)



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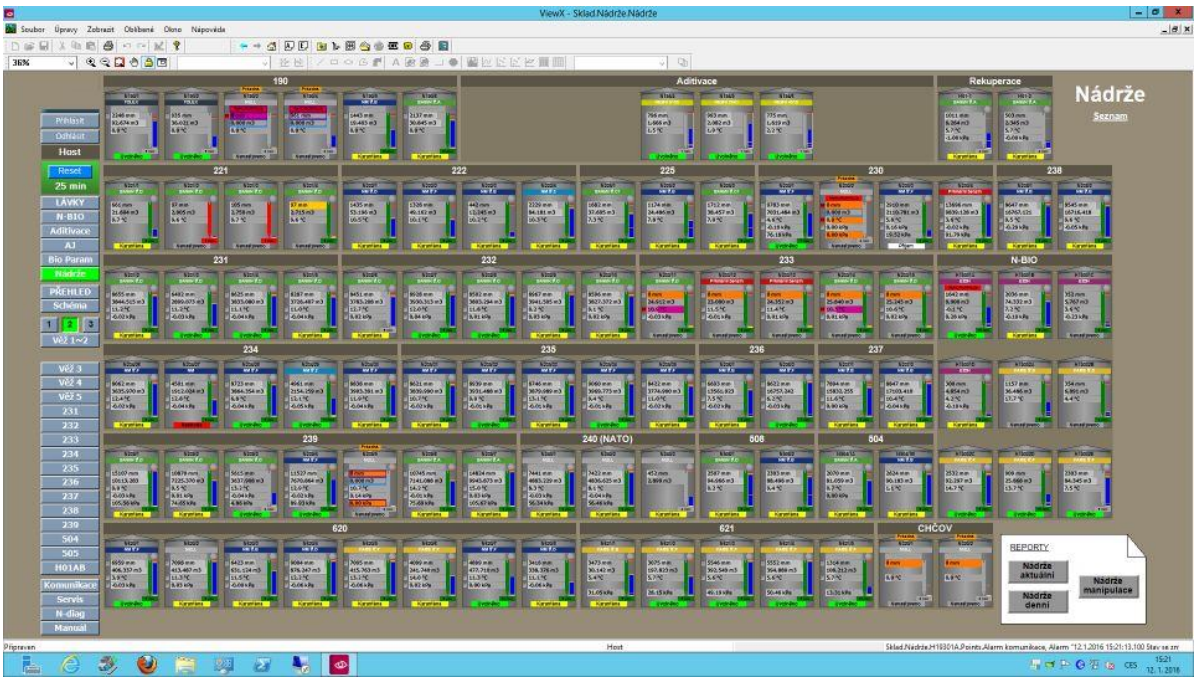
HUMAN – MACHINE INTERFACE TAMAS®

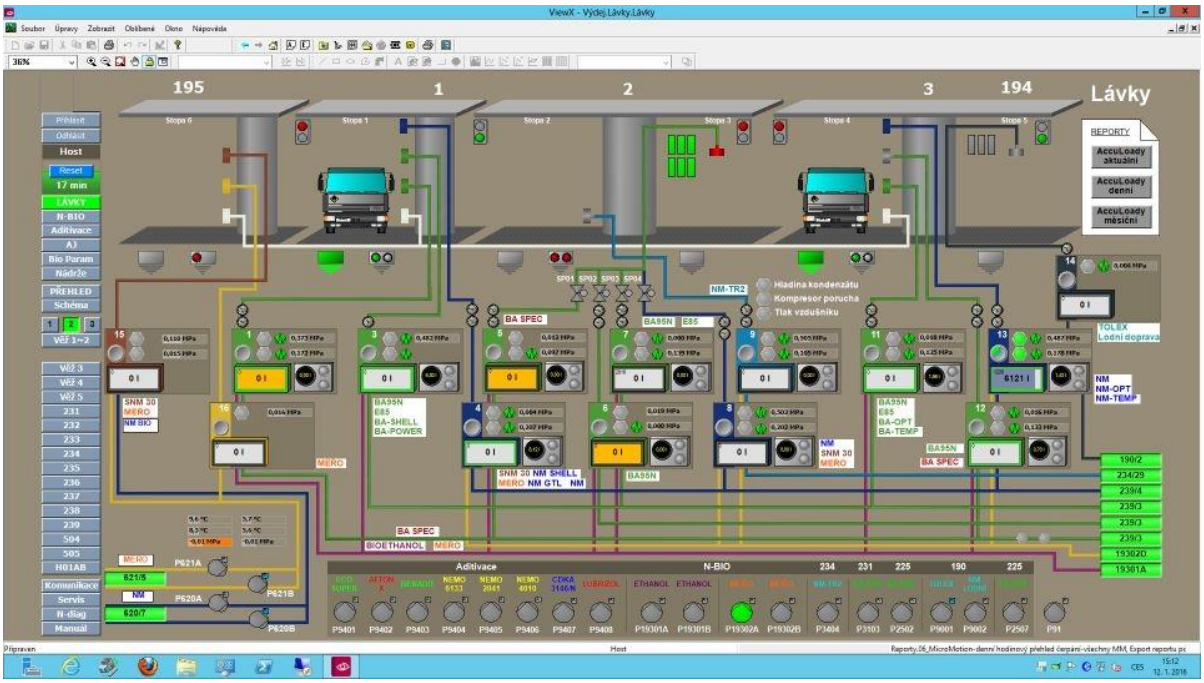
Terminal Automation, Management And Administration System

VISUALISATION EXAMPLES

Tankfarm main data overview



Loading islands overview



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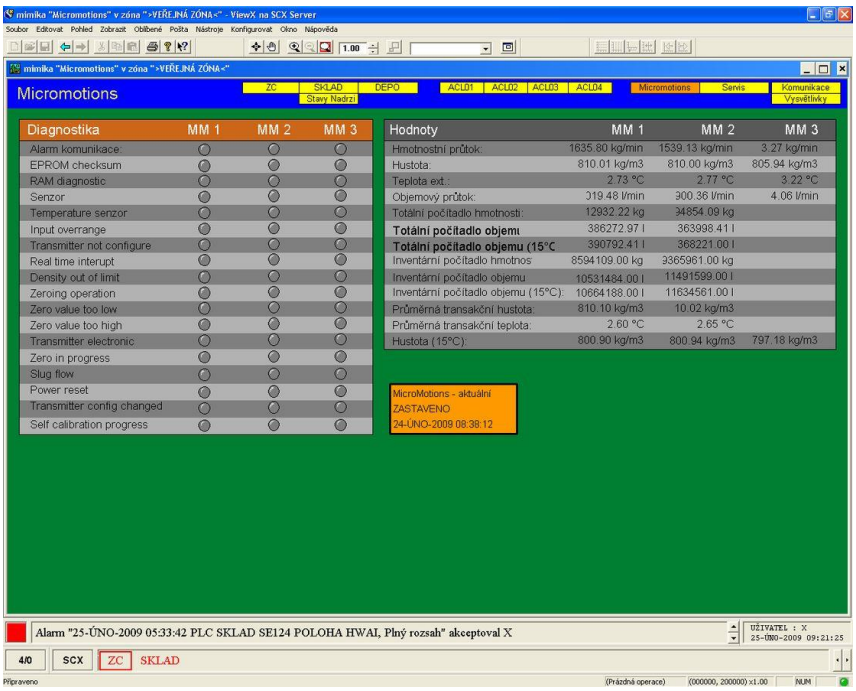
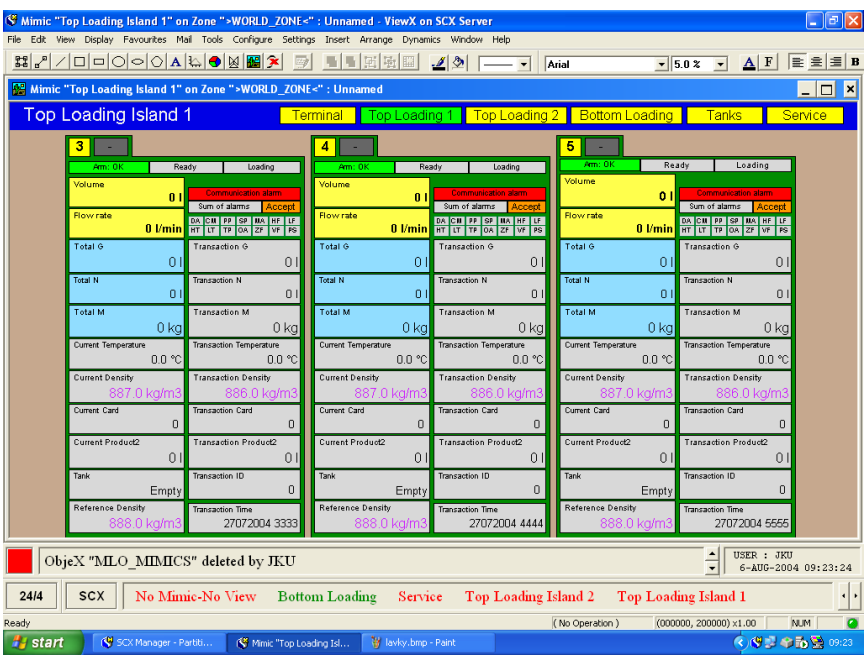
VISUALISATION EXAMPLES – CHART VIEW

Flowmeters data and diagnostics



Loading islands main data overview



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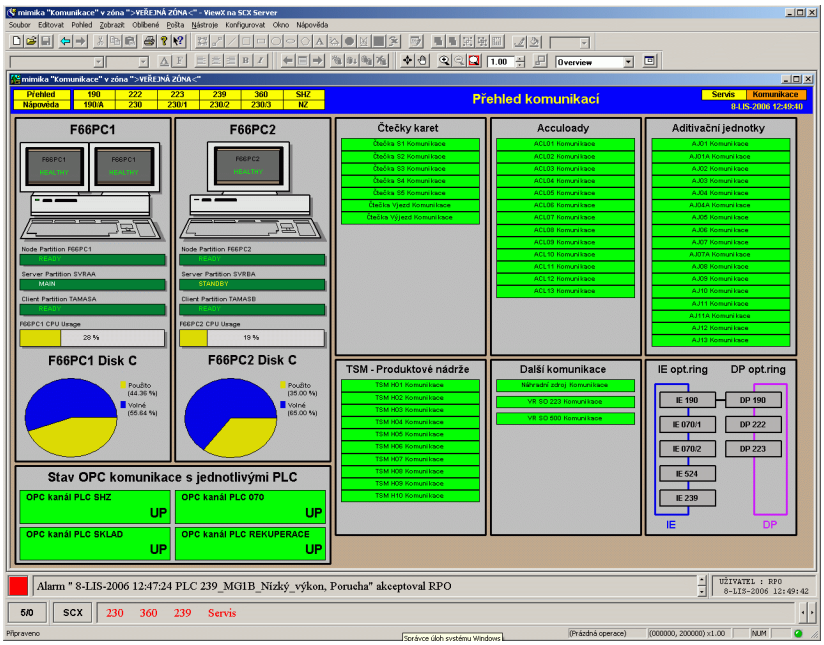
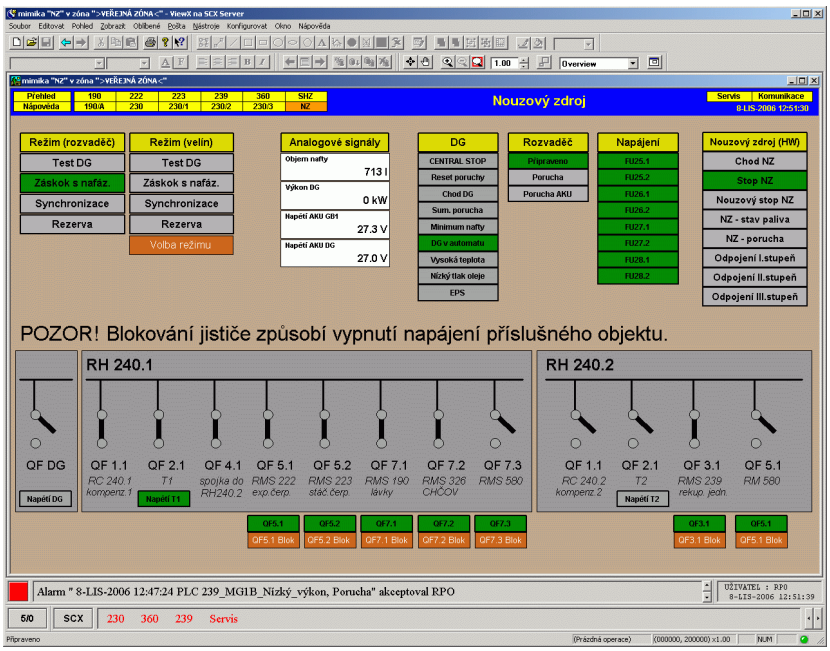
VISUALISATION EXAMPLES - DIAGNOSTICS

Field instrumetation, communication and HMI status



Emergency power supply system status



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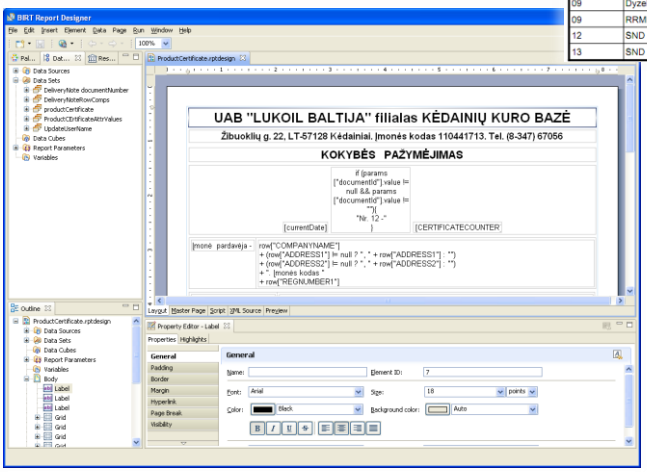
TAMAS has highly advanced possibilities for reporting :

- TAMAS Dispatcher reports
  - Build-in reports
    - Loading / unloading transactions
    - Loading / unloading summary with data from total counters
    - Bio and additives reports
    - Documents inventory reports
  - Client-defined reports
    - 3rd party clients reports
    - Shift turnover report
    - List of operations per period
    - …
- SCADA reports
  - •Tanks
  - •Meters
  - •Customer reports

Transactions summary

Period May 17, 2011 12:00 AM - May 20, 2011 11:59 PM

Meter	Product	Volume		Mass	Total volume				Total volume 15			
								Divergence				Divergence
01	Dyzelinas	17,123	17,095	14,384	34,798,268	34,815,391	17,123	0	35,015,909	35,033,005	17,096	-1
01	RRME	883	881	778	276,978	277,879	901	-18	277,171	278,071	900	-19
02							0	0			0	0
03	Dyzelinas	35,077	35,050	29,427	294,043,734	294,078,812	35,078	-1	294,987,302	295,022,351	35,049	1
03	RRME	1,816	1,820	1,608	9,150,850	9,152,668	1,818	-2	9,152,434	9,154,254	1,820	0
04							0	0			0	0
05	Dyzelinas	30,513	30,527	25,522	244,241,311	244,271,825	30,514	-1	244,878,716	244,909,243	30,527	0
05	RRME	1,572	1,575	1,390	7,060,415	7,061,988	1,573	-1	7,064,618	7,066,193	1,575	0
06	Benzinas	1,903	1,915	1,423	293,368,080	293,369,984	1,904	-1	295,381,789	295,383,704	1,915	0
06	Etanolis	98	98	78	2,034,280	2,034,378	98	0	2,051,627	2,051,725	98	0
07							0	0			0	0
08							0	0			0	0
09	Dyzelinas	62,171	62,120	52,146	229,164,529	229,226,702	62,173	-2	230,184,859	230,246,980	62,121	-1
09	RRME	2,979	2,982	2,635	8,077,198	8,080,181	2,983	-4	8,081,192	8,084,176	2,984	-2
12	SND	73,273	74,063	38,854	36,080,695	36,153,970	73,275	-2	36,547,897	36,621,961	74,064	-1
13	SND	37,934	38,050	20,208	35,274,736	35,312,669	37,933	1	35,787,884	35,825,934	38,050	0



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ČEPRO (CZ)

- Group of 16 tank farms
  - 12 automated tank farms
  - 2 tank farms without automation
  - 2 virtual tank farms
  - dedicated headquater in Prague
- Railway tankers loading/unloading
- Road tankers loading
- Tank gauging systém
- Additivation and blending support
- Pipeline transport
- Pump station
- VRU

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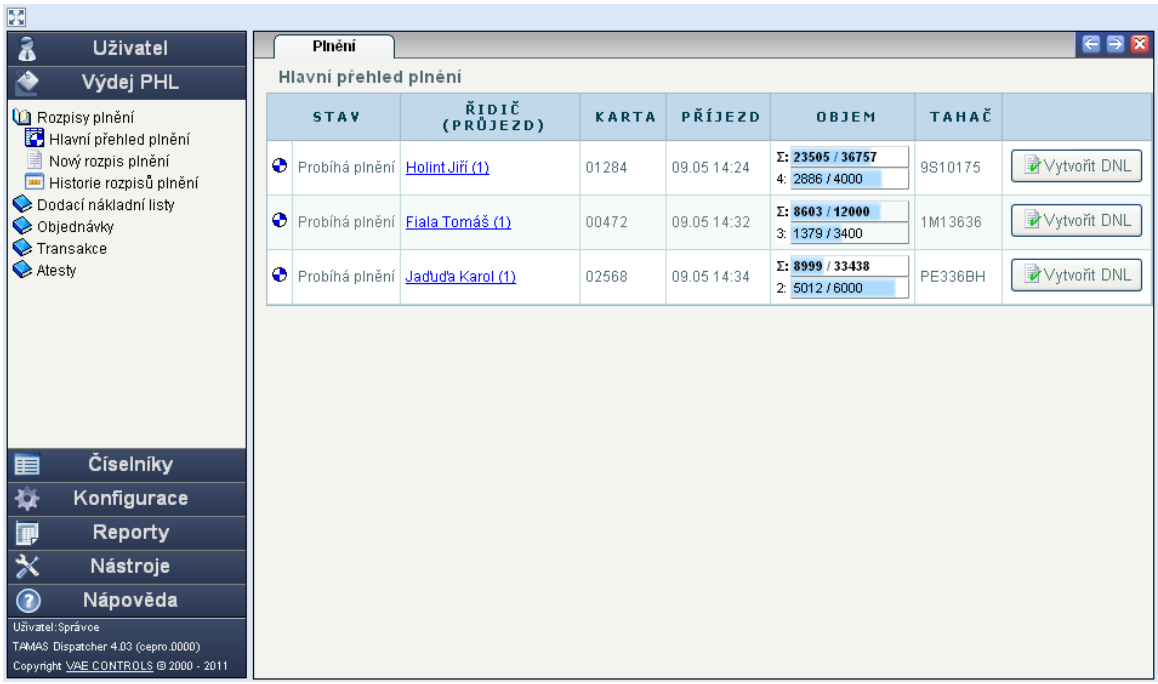
ČEPRO (CZ)

- TAMAS dispatching with possibillity of manual inputs
- TAMAS SCADA
- PLC automation
- Self-service kiosks for drivers
- Smart card drivers authentication
- Integration with S.A.P.
- Integration with central ordering system M.A.R.S.
- Tank reporting
- Loading/unloading reporting
- Inventory reporting



VAE CONTROLS, s.r.o., nam. J. Gagarina 233/1, 710 00 Ostrava , Czech Republic, e-mail: info@vaecontrols.cz, www.vaecontrols.com

INA Rijeka (HR)

- Tank truck terminal for lihgt and heavy products
- Complete administration of tanktrucks movement inside terminal
- Self – service kiosks for drivers
- Weighting
- Visualisation
- Data exchange with SAP
- Additives and blending support
- LPG (weighting)

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LUKOIL Baltija (LT)

- Automated tank farm
- Road tankers terminal
- Not automated railway terminal
- Additives and blending support
- LPG

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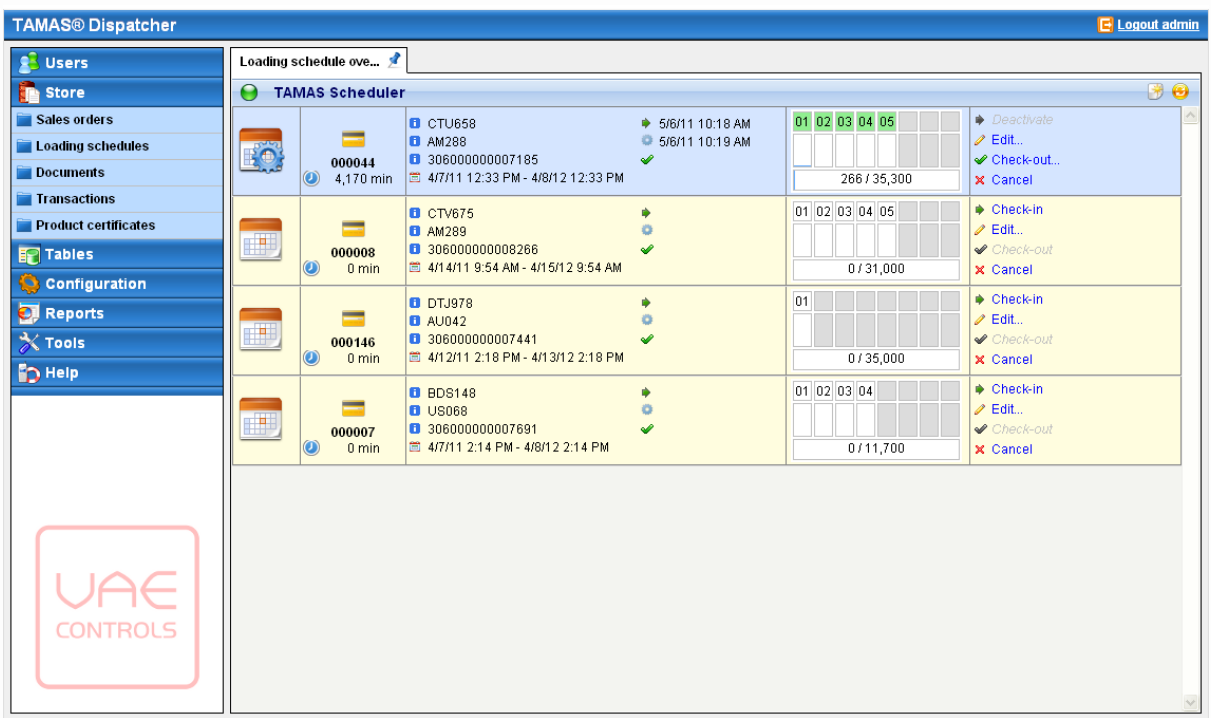
LUKOIL Baltija (LT)

- TAMAS dispatching
- TAMAS SCADA
- PLC automation
- Tank operations management
- ID card driver authentication
- Integration with local accounting systems
- Integration with WinDMS
- Inventory reporting
- Fuel accounting reporting



VAE CONTROLS, s.r.o., nam. J. Gagarina 233/1, 710 00 Ostrava , Czech Republic, e-mail: info@vaecontrols.cz, www.vaecontrols.com

ZSSK Cargo (SK)

- Wide-EU railway transfer terminal for dangerous liquid cargo
- 2 wide tracks and 2 EU tracks
- Simultaneous loading/unloading of 8 railway tankers

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ZSSK Cargo (SK)

- TAMAS Dispatching
  - Transfer planning with recalculation from source tankers to target tankers
- TAMAS SCADA
- PLC automation
- Integration with railway scales
- Integration with ERP

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Vaclav Havel Airport Prague (CZ)

- Tank farm for JET-A1
- Railway unloding terminal
- Runway tanktruck loading terminal

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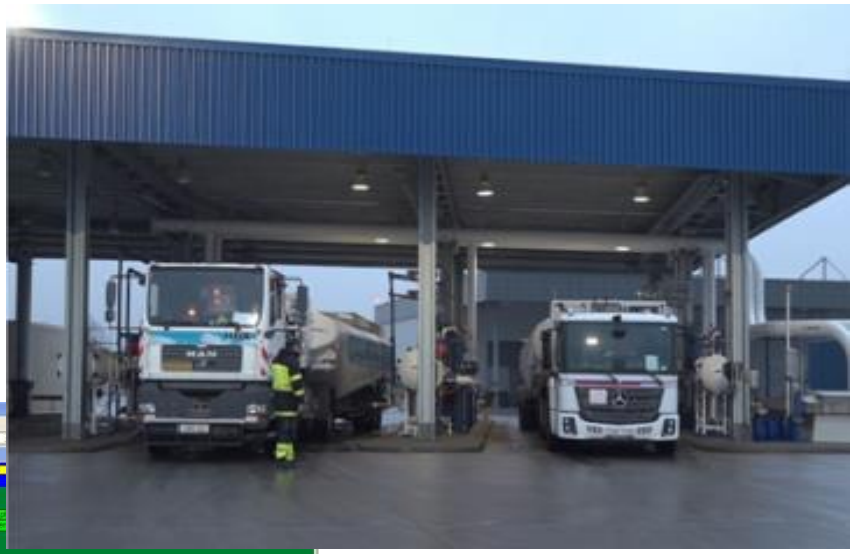
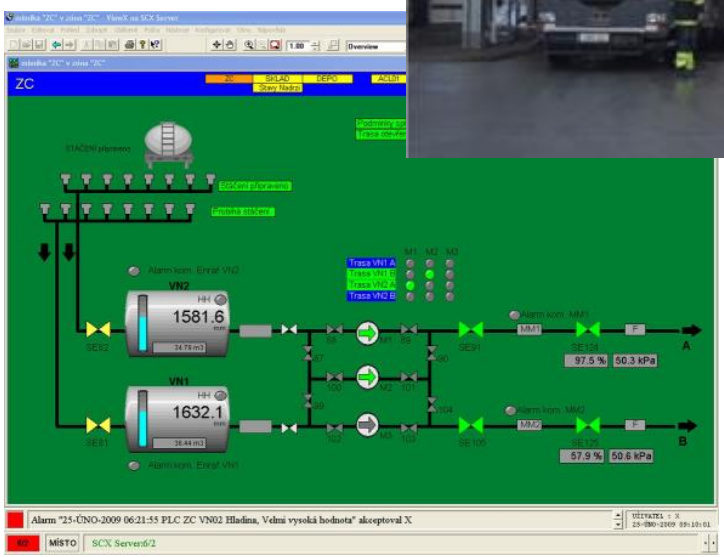
Vaclav Havel Airport Prague (CZ)

- Fully automated loading into runway road tankers incl. delivery notes printing
- Fully automated unloading from railway tankers incl. intake document printing
- Inventory reports for product owners
- SCADA





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Certificates

- ISO 9001:2015 - Quality management
- ISO 10006:2004 - Project management
- ISO 14001:2015 - Environmental management
- ISO 18001:2007 - Occupational health and safety management
- ISO 27001: 2013 – Information security management
- Confidential security clearance


CQS - Czech Association for Quality Certification
Pod Lisem 129, 171 02 Praha 8 - Troja
Czech Republic
CQS
CERTIFICATE
No.: CQS 2165/2010
VAE CONTROLS, s.r.o.
Nám.J.Gagarina 233/1, 710 00 Ostrava, Czech Republic
EN ISO 9001 : 2008
• Engineering, SW design/development, design, supply and maintenance of electrical equipment, control systems and technological equipment, elaboration/application of SW products
F-Net


CQS - Czech Association for Quality Certification
Pod Lisem 129, 171 02 Praha 8 - Troja
Czech Republic
CQS
CERTIFICATE
No.: CQS 107/2010
VAE CONTROLS, s.r.o.
Nám.J.Gagarina 233/1, 710 00 Ostrava, Czech Republic
EN ISO 14001: 2004
• Engineering, SW design/development, design, supply and maintenance of electrical equipment, control systems and technological equipment, elaboration/application of SW products
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ATTESTATION
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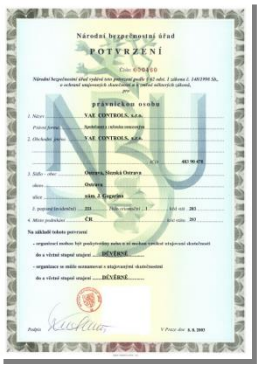
FACILITY SECURITY CLEARANCE CERTIFICATE
(CERTIFIKÁT BEZPEČNOSTNÍ ZPŮSOBILOSTI)
NÁVRH / ČÍSLO:
THE NATIONAL SECURITY AUTHORITY OF THE CZECH REPUBLIC
(NÁRODNÍ BEZPEČNOSTNÍ ÚŘAD ČESKÉ REPUBLIKY)
VAE CONTROLS, s.r.o.
Ostrava, Slezská Ostrava, nám. J. Gagarina 233/1


Národní bezpečnostní úřad
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Číslo:
VAE CONTROLS, s.r.o.
Ostrava
nám. J. Gagarina
CR
DŮVĚRNÉ
DŮVĚRNÉ

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Web: www.vaecontrols.com