AMICO Group

SADCO

Measurement Systems & Automation

About AMICO

President of the AMICO Group:
Doctor of Technical Sciences,
Professor, Laureate
of Ukrainian State Prize
on Science and Technology -
Yuriy ZHUKOV.

AMICO Group is one of the advanced and quickly developing manufacturers of information-measuring systems for enterprises in the oil and gas industry, automated control systems for technological processes, automated control and monitoring systems for floating dock ballast operations and ship cargo operations. An optimal range of sensors and systems, designed and manufactured by AMICO Group since many years, offers customers the choice of a range of our high quality products. AMICO Group provides solutions and services that help our customers to increase their profitability and competitiveness and maintain ecological and economic safety.

AMICO Group successfully works in such countries as Ukraine, Russia, China, Uzbekistan, Qatar, etc. Our solutions successfully work at more than 70 objects. Among our clients there are the leaders in various branches of industry (oil, gas, shipbuilding and other), such as Lukoil, Synthes-Oil, Fergana Refinery, Transbunker, Naftogaz of Ukraine, Damen Shipyards, Aker Yards, etc.

AMICO Group is located in Mykolayiv city, - the major shipbuilding centre of Ukraine. The city is situated in the South of Ukraine not far from the Black Sea. The majority of the company staff consists of professional, experienced specialists. This personnel pro vides customers with optimal systems in terms of design, qualty,

performance, and service. Our experienced workers carefully test all produced sensors and systems to satisfy technological compliance in normal and harsh conditions.

At AMICO we have also our own young, highly educated and gifted research and development team. The team is focused on the development of microelectronic components, information and measurement solutions. All the research trends are based on the axiomatic polymetrics paradigm using the correlations between the science subfields. Young scientists have made great progress in creating new digital, high-accuracy, multifunctional sensors for measurement of all relevant stored product parameters regardless of reservoir shape and liquid type. This development gives the possibility to obtain complete monitoring with quality and quantity assurance of the stored products. Our innovative developers combined new generation sensors and measurement techniques in one system, in order to achieve the highest possible efficiency.

In accordance with our corporate philosophy our employees are inspired to develop and grow throughout their career. They have constant possibilities of life-long learning and self-perfection within the company. By combining the unique talents and qualities of each specialist, the companies capabilities increase continiously.

The most important part of our marketing strategy is to grow with our partners. AMICO Group, with our professional products and technical advantages, and the partners, with their customer relationship and sales channels, increase market share together. There are three main ways of cooperation with us: 1) joint production of our products for third parties; 2) distribution of our solutions through partner sales channels; 3) manufacture and distribution of our systems under license.

Of course, we are glad to consider any forms of cooperation.

We always strive to meet and exceed the expectations of customers and business partners. Our mission is to give our customers high quality solutions and excellent services in time.

SADCO Systems

SADCO systems provide on-line real-time monitoring and control of storage parameters (level, separation levels, temperature, weight, quality parameters, etc.) of liquid products and dry bulk (gasoline, diesel fuel, fuel oil, crude oil, liquefied gases, water solutions, acids and bases, grain, etc.)

Systems general structure

The universal principle of measuring (polymetric method) allows to use SADCO systems in various industries.The SADCO systems have the typical structure as reflected below:

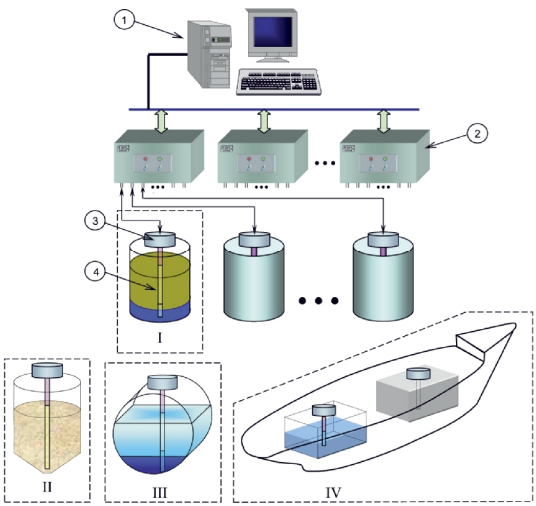
This diagram shows typical structure of the SADCO system for the storage facilities of liquid and dry bulk products.

I - oil products (diesel, gasoline, kerosene etc.);

II - grains, coal, cement, ore, sand and other loose cargoes;

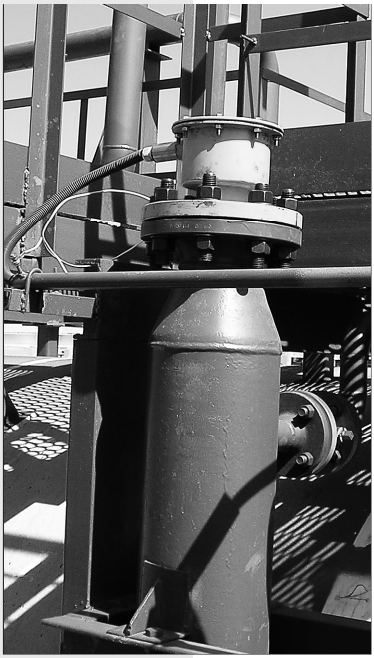
III - liquefied under a high pressure petroleum or natural gases (the prosir, butane and others);

IV - drinking and ballast waters, spirits, acids, alkalis, other aggressive solutions



A computer [1] is installed in the operator's room and displays all the measured information and controls the operation processes. Base blocks [2] are connected to the computer and provide the measuring part of the system. Blocks of generators [3] are connected to the base block via cable lines. The block of generators generates short pulses which are sounded into the special waveguide [4]. Waveguides as a parts of the polymetric sensor are installed at the controllable objects (reservoirs, tanks, etc.). Sensors are connected to the base electronic block of the system via the single cable of ordinary type.

Technical specifications



- guaranteed explosion and spark safety;
- external influence stability (temperature fluctuations, foam presence, etc.).
- possibility of operating in agressive conditions (high temperatures and pressures, acid or radioactive products, etc.);
- use of one ordinary cabel for power and signals;
- overflow and leak warnings and alarms;
- high accuracy of measurements (up to 0.025 % in level measurements; up to 0.5 ºC in temperature measurements; up to 0.35 % in mass calculations);
- overall sensor length - up to 30 m;
- distance from PC to reservoir - up to 1000 m;
- maximum number of measuring channels per block - 255;
- operating temperature range: from -30 to +60 °C;
- consuming power - up to 10 Wt per channel.

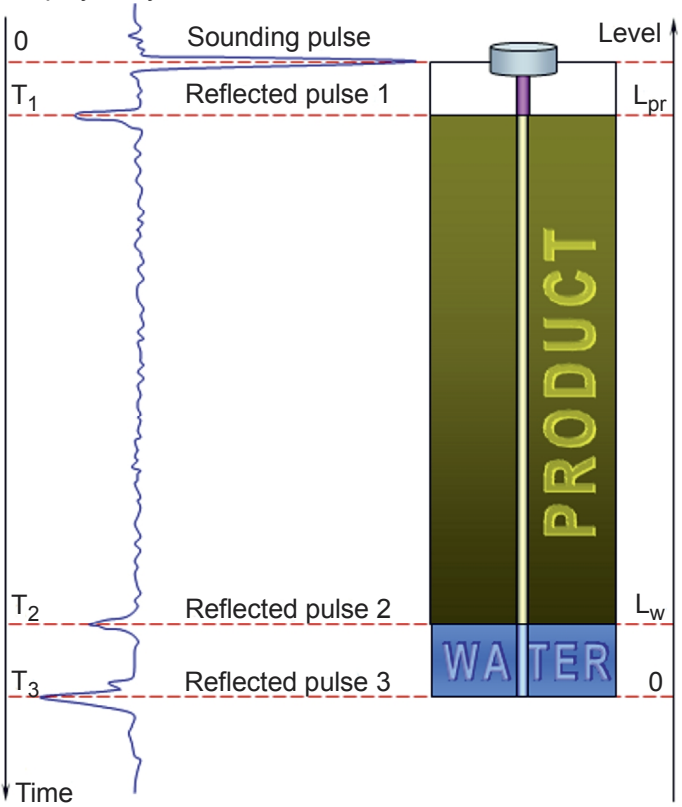
Quality standards

SADCO systems are patented.

The State Standard of Ukraine, the Russian Maritime Register of Shipping, Donetsk explosion safety testing certification center have certified and attested the system. Germanischer Lloyd have certified our company for compliance with ISO 9001:2000 quality system.

Operating principle

Operating principle of the SADCO systems is based on the impulse polymetry method.



■ A superbroadband signal in the form of a supershort voltage impulse (amplitude – 1V, duration - 0.1..1 ns) is generated and-sounded into a special measuring line (waveguide). The reflected polymetric signal contains the necessary information, which after decoding can be used for operative estimation of the controllable parameters of storage by specialized software.

■ Reflected polymetric signal comes back to the computer through the same cable line and is processed by computer software. The return time of the reflected signal is a level function. System is insensitive to temperature drops, foam presence, etc.

■ Software provides processing, storage and indication of the current information. The operator has a possibility to observe the object status in a dialogue mode and operatively react in case of an emergency situation.

Experts choose SADCO

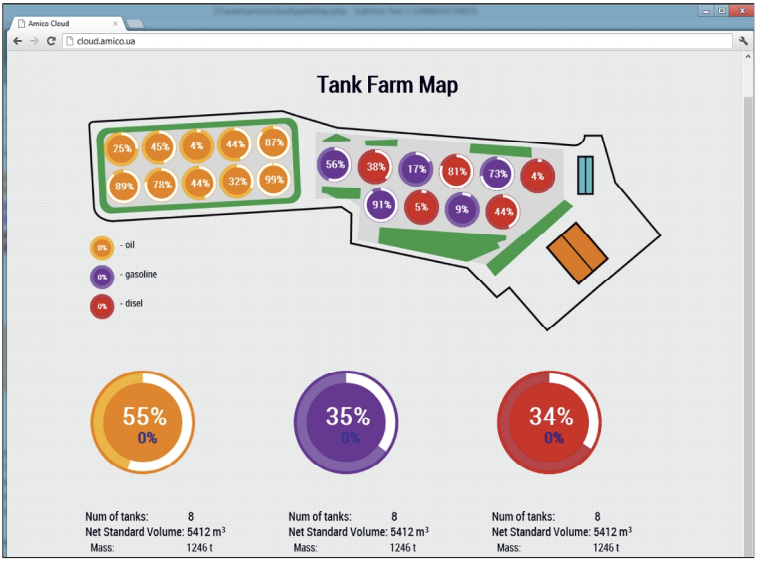
SADCO systems favourably differ from foreign analogues in cost, technical and technological parameters, reliability, convenience in operation and simplicity of maintenance.

Basic benefits

- complete automation of control of technological parameters of processes , transportation, storage and distribution of oil products (level of oil product and level of water under product in tanks, temperature, density, etc.);
- simplicity and reliability of elements and the system in general;
- possibility of automatic control (regulation) of technological equipment (pumps, shutters, valves, the fire-prevention equipment, etc.);
- higher metrological characteristics in comparison with domestic and world analogues;
- favourable difference from foreign analogues in cost, technical and technological parameters, simplicity of maintenance;
- possibility of individual program and hardware design, according to the specific properties of object of automation and features of its operation;

SADCO AUTOMATION

Automated control systems for technological processes



Example of the operator interface for the SADCO automated systems

After long successful operation of the SADCO systems as a separate facility at enterprises of agro-industrial, chemical, oil and gas industries (reservoir parks for oil products, liquefied under a high pressure petroleum gases, vegetable and mineral oils, aggressive solutions) they were simply integrated with automated control systems for technological processes (ACS TP), which are intended for monitoring and control of parameters of technological processes at the same enterprises.

ACS TP is designed as a two-level hierarchical system. The upper level is intended for remote automated control of reservoir park's technological processes. The lower level gathers primary measuring data, performs its processing and produces control signals to the actuators. The “pulse control” principle is used to perform current monitoring and control of the technological equipment.

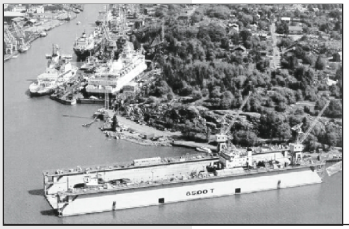
Centralized monitoring of the states of mechanisms and devices, process control and alarm management are realized from the computer, which is located in the operator station.

SADCO DOCK

Computer control and monitoring system for dock ballast system (CCS DBS) is intended to control docking operations in manual remote or automatic remote modes.

The ballast system is one of the most critical systems on the floating dock. Operation of this system must be finely adjusted with the requirements of the marine industry. AMICO Group offers high-tech solution to support safe control and monitoring of the entire dock ballast system. This solution provides safe and reliable operations of dock facilities in real life harsh conditions, reduces risks for vessels and generates both operational and financial benefits to customers. CCS DBS provides:

- Manual, automated or automatic remote control of docking operations;
- On-line monitoring of level, volume and mass of the ballast water; Monitoring and control of the list and trim, draft line, bending and sagging lines;
- Monitoring of vessel position during the docking;
- Indication of ship-on-keelblock touchdown;
- Level indication and alarm of all monitored tanks;
- Remote control of the dock valves and pumps according to the programmed conditions; feeding of control signals to actuators, valves and pumps;
- Monitoring of hermetic dryness;
- Audible and visual warning about dock process parameters deviation from stipulated values;
- Registration and storage retrospective information on the dock process parameters, equipment state and operator actions;
- Comprehensive database management;
- Testing and diagnostics of equipment, computers and controllers operability.



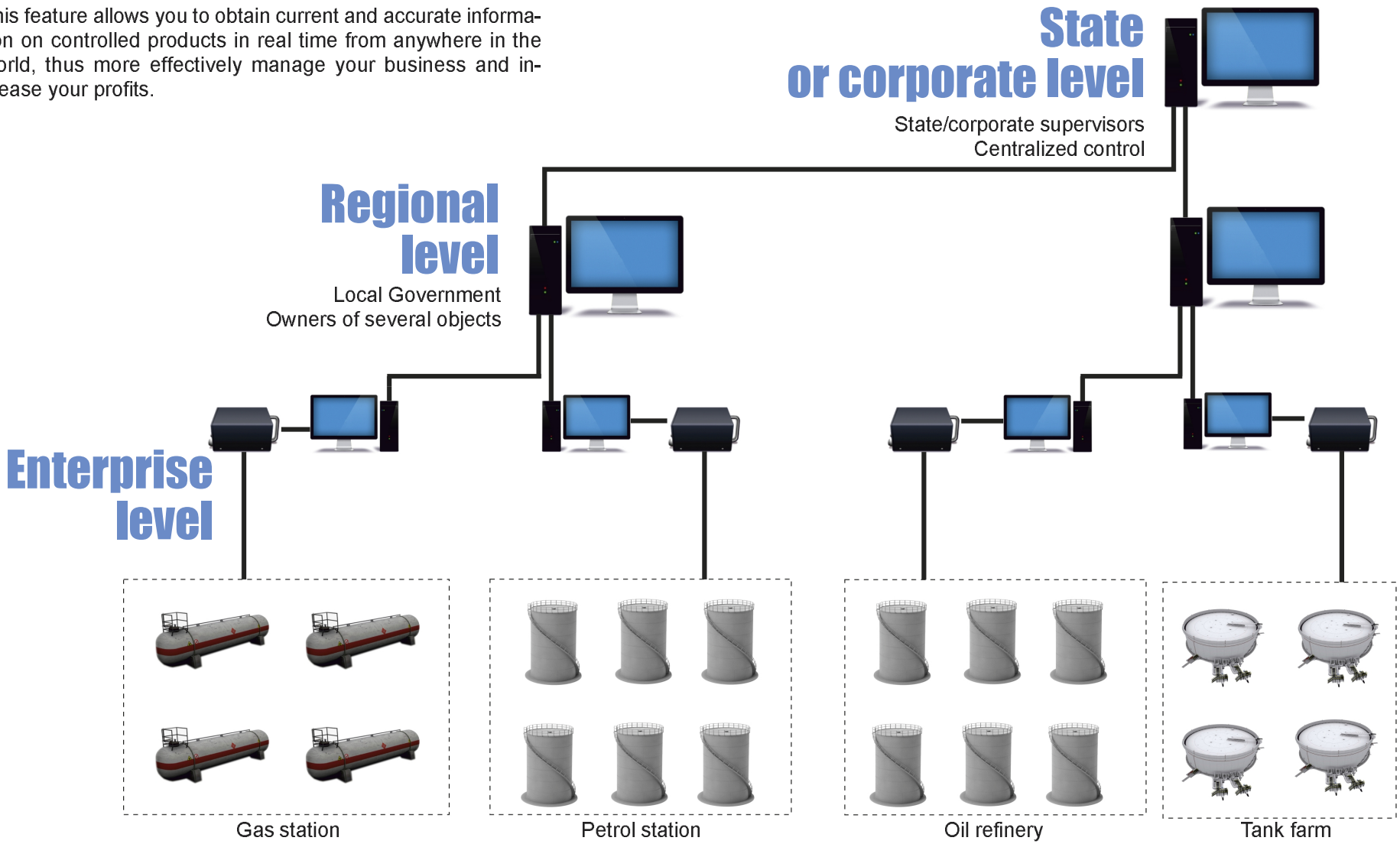
CCS DBS can be customized according to the project specific requirements.

Integration scheme

SADCO systems can be easily integrated with each other or with systems of other manufacturers. This feature allows to build scalable solutions for various enterprises and organisations.

This feature allows you to obtain current and accurate information on controlled products in real time from anywhere in the world, thus more effectively manage your business and increase your profits.

Hierarchical levels



1, Spasska St.
54030, Mykolayiv, Ukraine
Tel. +38 (0512) 37-78-39,
Fax +38 (0512) 37-78-11,
E-mail: info@amico.ua