

VIVAVIS

Customer Reference -
HIGH-LEIT SCADA DMS System for DESFA (Greece)

Always on the Safe Side - A Smart SCADA System for Greece

Given that the security situation in Germany and Europe has considerably changed, it is more important than ever to ensure at all times the protection and cyber-security of critical infrastructures, such as gas supply systems. This requires a SCADA system that meets maximum IT security requirements, in accordance with the BDEW white paper/ISO 2700x standard: HIGH-LEIT from VIVAVIS.



desfa

About DESFA S.A.



DESFA S.A.
Head Office
Chalandri
Greece



Greek National
Natural Gas System



1,466 km pipe length
115 customers

The Greek National Natural Gas System Operator (DESFA) S.A. is responsible for the operation, management, exploitation and development of the National Natural Gas System (NNGS) and its interconnections all over Greece according to European and national legislation. DESFA S.A. was established in 2007 and owns the National Natural Gas System (NNGS), which consists of the National High Pressure Natural Gas Transmission System and the LNG Terminal on Revithoussa Island. The services provided by DESFA relate to the operation and maintenance of gas transmission networks, the operation and maintenance of LNG facilities, metering, gassing-up and cooling of LNG vessels, training, lightning and cathodic protection studies, and studies on natural gas facilities. With its extensive experience and highly qualified staff, DESFA is a reliable partner for the ongoing international energy projects in Southeast Europe.

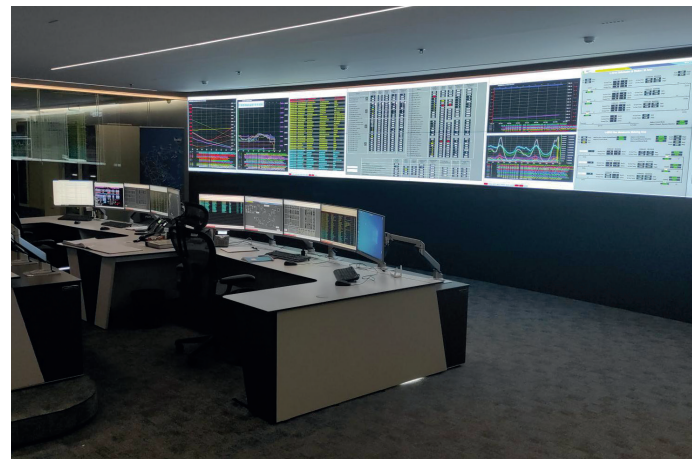
The challenges faced by owners of energy grids continually increase with the digitisation of the energy market. The goal “increased productivity” requires a SCADA system that meets the highest standards. The size of the supply area determines the increasing need for maximum reliability and IT security. DESFA S.A. is the national gas transmission network operator in Greece and ensures the gas supply for the entire country via its national gas transmission network. The NNGS (National Natural Gas System) consists of the high-pressure natural gas transmission network and the LNG terminal on the island of Revithoussa, in the Gulf of Megara. DESFA has the full and exclusive rights for the operation, management, exploitation and development of the natural gas network and its interconnection lines, in accordance with European and Greek legislation. Services include the operation and maintenance of gas transmission networks and LNG facilities, metering, gassing-up and cooling of LNG vessels, training, lightning protection and cathodic protection studies, and studies on natural gas facilities. Thanks to extensive experience and highly-skilled staff, DESFA S.A. is a reliable partner for ongoing international energy projects in south-east Europe.

“Since the old SCADA system from our previous supplier was no longer state-of-the-art and could no longer be maintained, it had to be completely replaced and modernised at two locations. Added to this, the operation and application software was no longer supported,” says Nikolaos Katsis, Asset Management Division Director at DESFA, naming these factors as the reason for a Europe-wide tender on the Tender Platform for a complete system replacement. Thus, DESFA decided to award the contract for a HIGH-LEIT SCADA system to VIVAVIS AG in 2019, following a detailed technical evaluation.

The HIGH-LEIT SCADA System is designed for applications in energy and water supply, in the fields of wastewater and environmental protection as well as for industrial applications. HIGH-LEIT is an open and fully-virtualised SCADA system with a Client-Server architecture, offering functionalities around operation and monitoring, as well as archiving and reporting. Moreover, HIGH-LEIT also includes utility-specific functions such as topology for pipe networks, topology for electricity and fault localisation, power grid and short-circuit calculation or the training HIGH-LEIT Operator Training Simulator.

“Given that DESFA’s old data model had been implemented by local system integrators in various different approaches, it was heterogeneous, which made the installation of HIGH-LEIT initially very difficult. Another challenge was the sheer dimension of the system - we are talking about 135 RTUs with 40,000 to 50,000 process information elements,” says Andreas Müßig, Project Manager International & Pipelines at VIVAVIS AG. Nevertheless, the transfer of data from the old system was mainly fully automatic, which saved DESFA and VIVAVIS considerable effort during the tests of the information elements. Furthermore, the displays of the old system were replicated 1:1 on HIGH-LIGHT via automatic replication, in accordance with the customer’s requirements.

„The national gas transmission network in Greece is also a critical infrastructure that requires maximum IT security“ continues Andreas Müßig. Direct access to the SCADA system from outside must be prevented and are permitted only via dedicated database and terminal servers that are installed in one of the two demilitarised zones (DMS). For this reason, the entire system design is primarily based on IT security considerations. This includes - as stipulated by DESFA - a “2+1” redundancy concept for the SCADA system at two locations: the main location near Athens, and the backup control centre near Thessaloniki.





The gas quantity and quality data of the receiving gas metering and control stations are visualised in a Gas Metering Data Management Application (Gas App); they are automatically checked and - if necessary - corrected or completed. The purpose of the Gas App is the quick validation and processing of gas volume data for the operation, as well as the monthly validation and processing of gas quantity and quality data for transmission to billing systems that enable the invoicing of DESFA customers and authorities. The Gas App is based on field data which are transmitted from the gas metering and control stations to the HIGH-LEIT SCADA system in a largely pre-processed form. These field data are transmitted to the external and redundant (2+1) PostgreSQL database in the DMZ, where the Gas App, including the associated user interface, was realised on the basis of embedded Python. Furthermore, there are external OPC DA interfaces with the simulation module and OPC UA interfaces with the gas demand forecast module.

Remote Implementation and Installation in Times of Covid

“However, the biggest challenge for everyone involved was the Covid virus”, says Dimitrios Sarris, Operations Department Manager at DESFA in retrospect. “From March 2020 until end of May 2021, the project had to be implemented completely remote under Covid restrictions, including the Factory Acceptance Test (FAT) and the Site Acceptance Test (SAT)” – this is how Andreas Müßig, Project Manager International & Pipelines at VIVAVIS, describes an extremely difficult situation. Communication during this period took place exclusively via on-line meetings. “After that phase of the Covid pandemic was over, an expert from VIVAVIS was on site in Greece for six months to support us, which was particularly important where rapid response during the commissioning of the system was required,” Mr Katsis is pleased to report. “Full marks to VIVAVIS AG for their dedicated and efficient work.”

DESFA and VIVAVIS will continue their cooperation in the future: VIVAVIS provides support for the implementation of new RTUs and the upgrade of existing RTUs. “DESFA is very eager to benefit from the continuous support from VIVAVIS as part of a service and maintenance agreement, as well as regular updates of the system software in order to permanently maintain the IT security level,” says Nikolaos Katsis. Furthermore, DESFA - as a member of the European Hydrogen Backbone (EHB) initiative - is committed to accelerate Europe’s path to carbon neutrality, by defining the role of the hydrogen infrastructure on the basis of existing and new pipelines for the development of a common European market for renewable and low-carbon energy sources, and thereby enable the transition to a new era of clean energy. Peter Fritz, Director International Sales at VIVAVIS, sums it up as follows: “We at VIVAVIS are proud that we’ve been able to cover another part of the EU market with our smart SCADA solution for DESFA in Greece, and that we have achieved a favourable market position with HIGH-LEIT.”

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