VIVAVIS

DECODING THE FUTURE

Pipeline Automation

Safe and Economic Solutions from One Source

Uniform Solutions for Pipeline Automation
VIVAVIS is your competent and reliable partner for pipeline automation projects.

From central monitoring via powerful **SCADA systems** (SCADA = Supervisory Control Data Acquisition System) through to the related **electrical, instrumentation and control systems**, we offer uniform solutions for gas or oil pipelines.

Our scope of services and products ranges from pipeline monitoring to **complete management systems** for extensive networks with more than a thousand station controllers.

Depending on the case, we are able to offer well-proven standard solutions as well as tailor-made concepts for your application. Our automation and IT specialists are happy to discuss your requirements and to prepare **individual solutions** for you, no matter whether you wish to install a completely new system or to convert or upgrade an existing installation.

Our pipeline team includes experts for

- SCADA systems
- communication systems
- telecontrol and automation
- safety control according to SIL (Safety Integrity Level)
- instrumentation
- electrical infrastructures
- pipeline management
- Modern IT-infrastructures

Our Experience – Your Benefit
VIVAVIS offers reliable and powerful products, a comprehensive service portfolio as well as long-standing experience and process know-how.

This enables us to efficiently implement your projects and to guarantee:

- the exact implementation of your requirements
- strict adherence to cost and time frames
- quick and flexible response to changing conditions and parameters

Solutions for Pipeline Automation from VIVAVIS

Uniform and Flexible Solutions
Whether or not pipeline systems are economical depends on a multitude of factors. For one thing, they must be optimally utilized to avoid standstill periods. Thus, a continual optimization of pipeline systems is of vital importance. In addition, the requirements on the operating safety and reliability of pipeline systems are huge and increase steadily.

To support you in these challenges, we offer complete solutions for all areas of pipeline automation – from SCADA systems to suitable telecontrol and automation equipment.

Operation and Monitoring with HIGH-LEIT
Thanks to its scalability and upgradability, the VIVAVIS HIGH-LEIT SCADA system is optimally suited for pipeline applications. Apart from the standard operation and monitoring functions, HIGH-LEIT also includes transparent **alarm and signalling strategies**, extensive **logging and archiving features** as well as individually configurable **reporting functions**.

Depending on the customer's requirements, the system hardware can be configured in many different ways – from simple operator stations up to quadruple server redundancy. For a clear and user-friendly process vizualisation, we also offer **large-screen displays** for your central control room.

GIS or ERP systems can be easily connected to the HIGH-LEIT SCADA system via the ACOS X4 integration platform. ACOS X4 supports all commonly used interface standards.

The HIGH-LEIT portfolio for pipeline applications is rounded off by advanced decision-making and optimization functions. These include, for example:

- Pipeline monitoring
- Pipeline topology
- Pipeline mangement

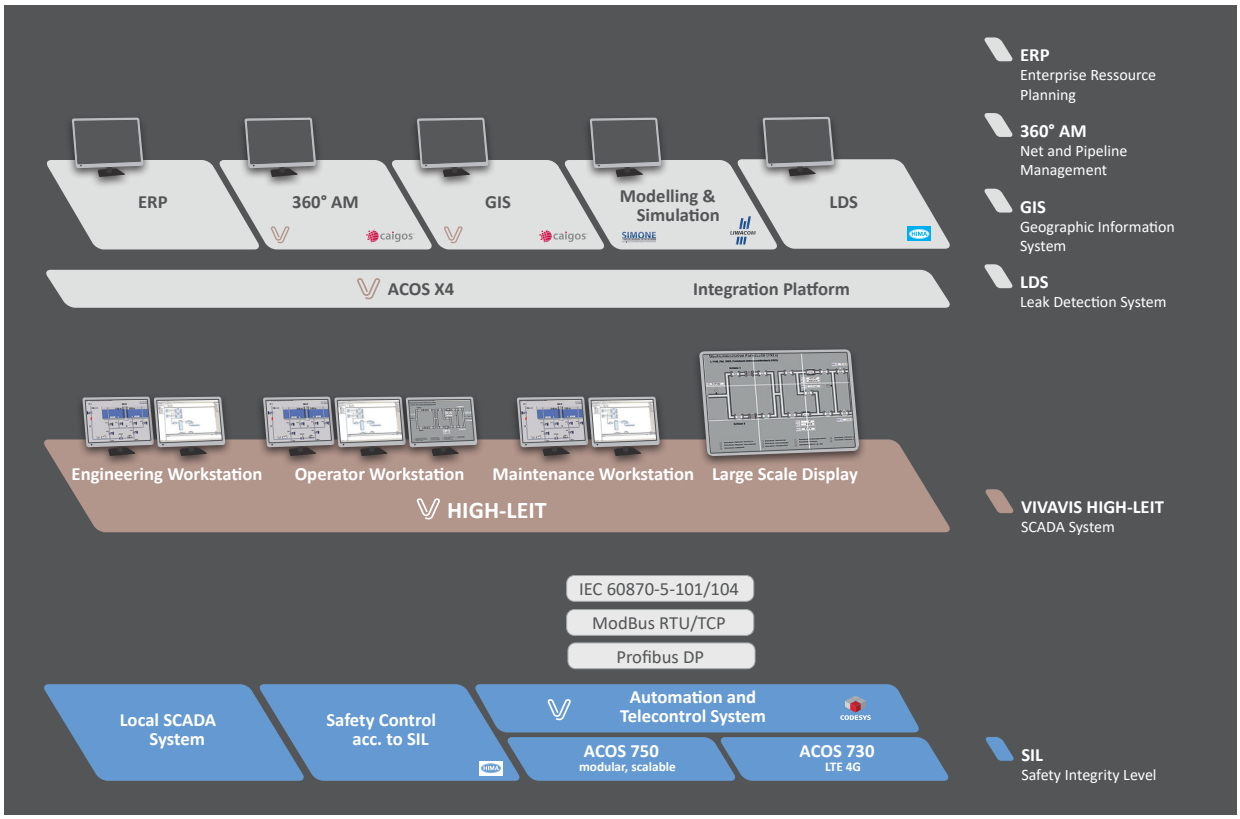
The VIVAVIS HIGH-LEIT SCADA system enables the complete **simulation, calculation and optimization** of gas networks. Both online data and archived data are transmitted. An alarm function enables the timely detection and visualization of leaks.

HIGH-LEIT is also suitable for **leakage detection and localisation (LDS)** in pipelines for liquid hazardous substances. The system fulfils all requirements of the Technical Rules for Pipelines (TRFL) and API11130, respectively, concerning leakage monitoring for steady and transient pipeline operating states. Furthermore, a special module enables **batch tracking** in multi-product pipelines.

A thorough and comprehensive analysis of historical data enables forecasts of the transmission behaviour of gas pipelines as well as the optimization of gas purchase quantities. Based on these data, it is possible to create forecast models with neural networks and multi-linear regression.

Apart from schematic displays, HIGH-LEIT also enables **geodata-based visualization**. Visualization of geographic information is based on imports from public-domain map data.

Geodata-based visualization not only supports users in the monitoring of their networks but also in targeted troubleshooting and fault elimination. For the protection of vulnerable infrastructures against manipulations or attacks we also offer a wide range of **IT security measures** in accordance with ISO 27001/27019, including system hardening, patch management and secure maintenance access.



Asset Management with 360° AM

VIVAVIS also offers a solution for maintenance processes. The 360° AM network management suite can be used in different configurations, offering standardized modules for:

- asset inventories and management
- cyclic and event-oriented maintenance management
- outage management and documentation
- job order and workforce management
- company-wide integration of IT systems (ERP, GIS, SCADA etc.)

These features enable you to organize and document all data of your pipeline system via a platform. Thanks to the bidirectional data exchange with the HIGH-LEIT SCADA system, you can automatically initiate the necessary maintenance measures and inform your staff about maintenance activities.

Telecontrol and Automation with the ACOS 7 Series
The ACOS 7 series from VIVAVIS is optimally suited for pipeline automation because it combines telecontrol and station automation capabilities in one device, in the form of an IEC 61131-compatible PLC.

We offer suitable systems to match all your requirements: For one thing, there is the **ACOS 750 RTU** which enables the implementation of complex automation and programming tasks for medium- and large-scale applications. Then we have the compact and adaptable **ACOS 730** operation and monitoring device; it is also suitable for pipeline network and is sturdy, compact (in accordance with DIN 43880) and flexible: It can be expanded by adding further I/O modules and communication modules for 2/4G mobile communications, depending on your requirements.

The ACOS 7 series supports the following standard com-munication protocols:

- IEC 60870-5-101/-104
- Modbus RTU/TCP
- NTP time synchronization
- Profibus DP

It also enables easy and trouble-free connection of other systems including, for instance, filling level monitoring systems, bus-compatible drives, flow computers and/or frequency converters.

Engineering with ACOS ET
Engineering of the SCADA system and the station controllers is done via the common configuration and parameterization tool ACOS ET. Parameterization and diagnostics of ACOS 750 can be done both locally, via USB or network interface, and remotely via a data transmission infrastructure.

Programming of the integrated PLC is possible by using CoDeSys® V3. All parameterizations can be easily stored on a microSD card.

IT Security First
To ensure the necessary degree of IT security, a variety of security functions according to the respective specifications of the BDEW whitepaper on secure control and communication systems are implemented in the ACOS 7 series; these include

- secure access for parameterization and servicing
- integrity check of the device parameterization
- authentication via username and password support of different user roles and rights
- dynamic firewall
- encrypted transmission acc. to IEC 62351-3 (TLS), Open VPN or IPsec using certificate-based authentication
- port authentification IEEE 802.1X
- logging (Syslog)

ACOS 730: ACOS 730 – compact, adaptable and safe

Planning, Design and Implementation
We from VIVAVIS support you in the **planning** of your system, prepare **concepts** and make **surveys of existing installations**. If required, our project managers carry out the entire project organization, including the monitoring of secondary works carried out by subcontractors.

The implementation of projects through VIVAVIS includes

- detailed planning,
- procurement of materials,
- coordination of system installation,
- comprehensive system checks,
- preparation of the complete documentation and
- organization of installation and commissioning.

On an international level, we cooperate with local partners who are experts both on local conditions and our products and processes.

All our partners and staff have long-standing job experience, attend training courses on a regular basis and have the necessary certificates, e.g. on explosion protection and functional safety according to IEC 61508/11 (SIL).

Service around the Clock
Once your project is concluded we are able to offer you our comprehensive after-sales service. Our hotline staff is available 24/7 all year round. If a reported error can not be eliminated via phone, our Service Centre at Ettlingen supports you via remote diagnostics and service. If required we also offer on-site support within a specified timeframe.

Training Courses
If necessary, we offer practical training courses on our products and applications for your employees, which are conducted by our expert instructors. The courses are held either at our headquarters in Ettlingen or at your premises; courses are available in German, English or French.

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