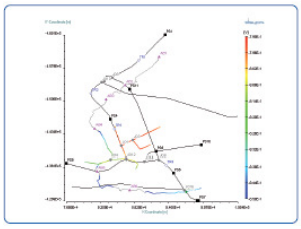
Pipeline Cathodic Protection Engineering Solutions

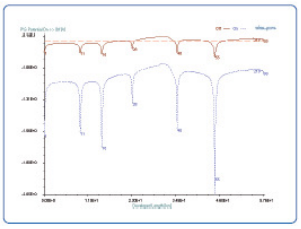
Elsyca's unique and comprehensive platform for expert modeling and simulation of the cathodic protection of pipeline networks provides all tools to predict how a particular system will perform even for the most complex situations. It can provide quantitative information on the CP levels achieved and the lifetime of the system, thus reducing the risk of systems not meeting the design goals and enabling future management of assets to be planned effectively.

Assuring safety & reliability, reducing costs over the service life of the pipeline and increasing insight in CP engineering, the Elsyca CP engineering solutions, including site survey services as well as design, validation & optimization services, ensure maximum pipeline integrity.

The use of the Elsyca technology helps identifying and mitigating conceptual mistakes before any actual CP installation, by designing different set-ups using accurate, inexpensive, harmless and fast simulations. It creates a safe and cost effective on-screen virtual test environment, eliminating expensive trial and error experiments in the field. Codes of best practices, backed by Elsyca's fundamental research technology, can be developed resulting in optimizing pipeline integrity surveys.

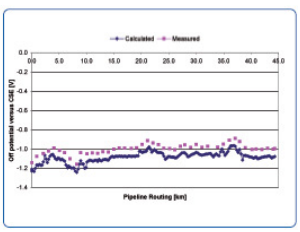
The example below illustrates the study of the influence of neighboring DC-traction systems on the CP of a pipeline network.





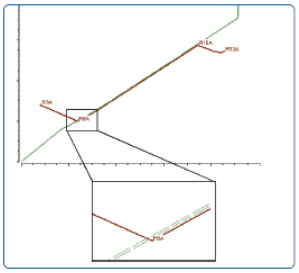
With the Elsyca technology, influences of rectifier current, local coating defects, grounding of power lines, and DC-traction were investigated. Influence zones of rectifiers have been determined and a rectifier shortcut was detected based upon the simulations.

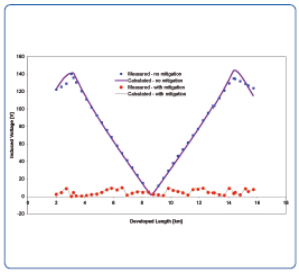
A second example demonstrates the field survey data of an existing pipeline and the cathodic protection design results.



With a correlation of > 85% between actual and calculated values, current distributions could be predicted over the complete pipeline length of 40 km with great accuracy, indicating & validating minimal construction damage.
The design of the optimal CP system with the Elsyca technology resulted in better protection of the pipeline and at lower cost. The customer saved in total more than 250 k€ in material, installation and labor.

The unique Elsyca technology also enables to determine how the HVAC interference on neighboring pipelines can be reduced.
The effect of the phase current order and switching on the induced pipeline voltage were studied, resulting in an optimal phase current configuration and reducing the induced pipeline voltage with a factor of 10.





The reliable, accurate and prompt AC interference simulations save weeks of work on complex geometries, and include:

- Geometries from Excel, DXF, GPS
- Multiple pipelines & power lines
- Local soil resistivity changes

Elsyca works with you to optimize the CP system of your pipeline networks, resulting in safe and reliable transport of products and optimal protection of your assets and the environment.

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