

PIPELINE CATHODIC PROTECTION DESIGN

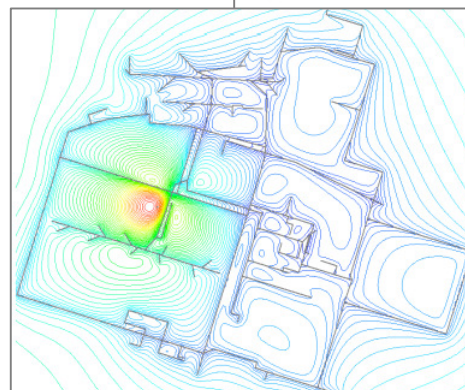
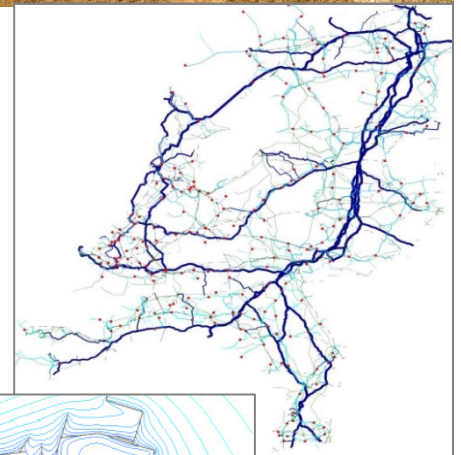
ELSYCA CATPRO software

Elsyca CatPro (Cathodic Protection Design for Pipelines) is a state-of-the-art graphical simulation platform for the design of cathodic protection solutions, for troubleshooting and investigation of operational CP issues, as well as for DC stray current analysis and mitigation on networks of pipelines. **Elsyca CatPro** is typically used as an engineering tool to assess the impact of changes that affect the cathodic protection (relocating pipeline or adding new sections, coating upgrades, etc.) and study the effect of stray current interferences for localized areas of the pipeline network. The software combines a user-friendly operator interface with a fast numerical solver and advanced pre/post-processing capabilities.

The Elsyca CatPro technology was fully developed in-house with the co-operation from Gasunie, the leading gas transmission operator in the Netherlands. Elsyca CatPro is much more advanced than the standard attenuation models since it additionally considers local coating quality, soil resistivity and polarization data along the pipeline routing, which can be varied for any number of sections. It has been validated through numerous industrial engineering projects with leading companies.

- **Model creation:** Elsyca CatPro software is designed for the optimization of cathodic protection systems of large pipeline networks. Pipeline assets, railway systems or third party DC interference systems are entered through geographic coordinates.
- **Model refinement:** Enter for user-defined pipeline sections the soil resistivity, coating condition, pipeline dimensions and define the rectifiers settings and anode bed properties. Add bonds between pipes and grounded structures or create insulating flanges for sectioning. Define the properties of the railway systems such as substations, resistance-to-earth of tracks, etc.
- **Solvers:** very quick and robust, calculating all relevant CP parameters such as ON/OFF/IR-free pipe-to-soil potentials, current densities, line current, ground potential rise, rectifier voltage etc.

Post-processing: graphical presentation of input data and simulation results on pipeline network in color plots and graph. Export of geometry, properties and results to Google Earth, SVG (Scalable Vector Graphics) of complete project (pipelines, rail tracks, anode beds, connections, ...). Generate tabulated output files for spreadsheet applications.



Elsyca CatPro Key Features

- Full 3D model for pipe structures, using “pipe elements” to reduce computation time
- Calculates ON/OFF /IR-free pipe-to-soil potentials, radial current density, axial current, voltage attenuation, soil potential, rail potentials, rail axial currents, current and voltage drop of drains and bonds
- Multiple pipeline networks
- Multiple CP-systems (imposed current, potential or sacrificial)
- Multiple DC-traction systems
- Database with standard pipes
- Any pipe section can be used in combination with any coating quality
- Advanced model for the coating quality (taking into account the local soil resistivity)
- Modeling of electrical networks using current and voltage supplies, (uni-directional) current drains, resistive bonds, insulation joints, ...
- Stray current influences from 3rd party systems
- Stray current influences from HVDC power transmission lines
- Double-layer analysis
- Visualization of radial current densities and axial currents along the pipes
- Import from file of existing coordinate databases
- Metric (kms) and English (miles) system
- Import from file of soil resistivity along the developed length of a pipeline
- Visualization of on/off pipe-to-soil potentials, pipeline attenuation and soil potential distributions
- Stray current influences from DC-traction systems such as trams, above/underground trains and Rapid Transit Systems
- Import from file of experimental pipe-to-soil potentials for comparison with calculations

Hardware and Software Requirements for Elsyca CatPro

- Minimum 1GHz processor (64-Bit architecture recommended), minimum 4GB RAM (8 recommended)
- Windows operating systems x32or x64: Windows7 and Windows8

Customer Quotes

- *“Elsyca Catpro is the easiest-to-use modeling and simulation software for the design and maintenance of cathodic protection systems of buried pipelines. Moreover, the prompt and professional support of Elsyca has made this an extremely satisfying solution”*
- *Elsyca CatPro has been a vital tool for us in maintaining the competitive power of our corrosion control group. It saves us huge efforts by supplying immediate modeling capability which allows us to validate our CP system maintenance plan without expensive trial-and-error. Elsyca CatPro is also extremely helpful in understanding complex interference situations which cannot be simulated by other methods.”*

