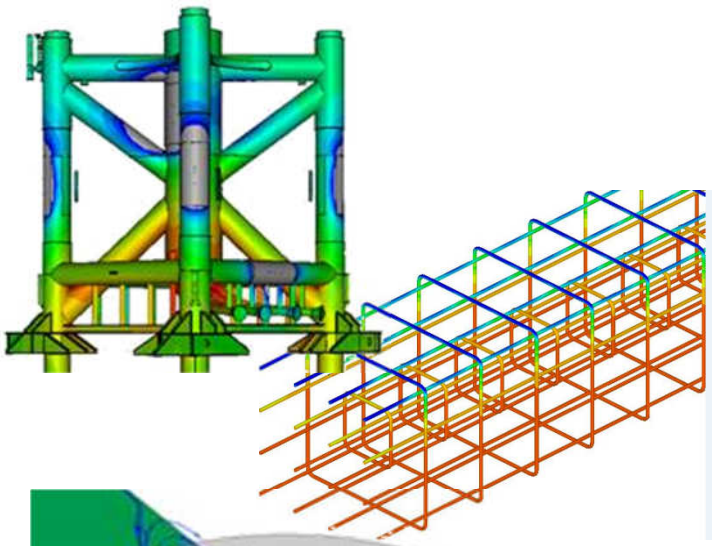
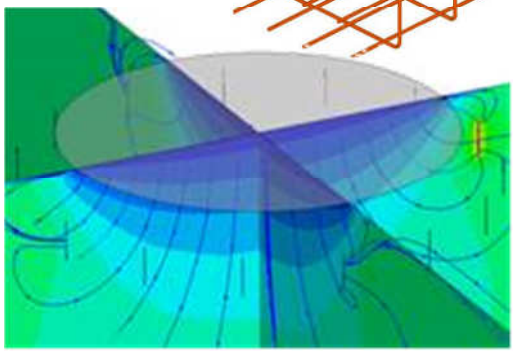
CATHODIC PROTECTION MODELING

ELSYCA CPMASTER software

Elsyca CPMaster is a state-of-the-art CAD-based simulation platform for the design and analysis of cathodic protection installations. **Elsyca CPMaster** is typically used for the CP protection of structures such as storage tanks, off-shore oil platforms, FPSOs, ship hulls, ballast tanks, offshore wind turbine foundations, … and is also applied for detailed 3D analyses on specific areas of pipeline networks such as crossings. **Elsyca CPMaster** enables the corrosion engineer to develop, assess and verify designs in compliance with international standards, ensuring optimal operational costs, significantly reducing expensive commissioning surveys and costly repairs.

- **CAD-embedded**: embedded into the Solidworks platform for easy of CAD creation and manipulation. Elsyca CPMaster creates/ imports the complete geometrical configuration of pipelines, tanks, sheet piles, ground beds, sacrificial (SACP) and impressed CP (ICCP) systems
- **Boundary conditions**: Elsyca CPMaster reads the electrolyte (soil, sea water…) characteristics and metal polarization behavior from file or database;
- **Meshing**: automatic generation of very high-quality meshes for your complete CAD model configuration;
- **Solver**: very quick and robust, delivering potential gradients inside the electrolyte, and potentials and current density distributions on all metallic structures;
- **Post-processing**: powerful visualization tool for comprehensive 3D analysis and study;
- **Optimization**: fast adaptation of the CP configuration and electrical parameters.
- **Special features** - allows the designer to quickly assess many scenarios providing huge insight into the corrosion protection of the structure over its entire service life:
    - **Time transient**: simulations accounting for the anode shape changes and coating degradation
    - **Calcareous growth and erosion**: study effect of film (de)formation on the structure's current demand
    - **Anode shape change**: take into account the reduction in performance and of sacrificial anodes





The Elsyca CPMaster technology was completely developed in-house – from grid generation & solver up to post-processing and visualization – and has been validated through numerous industrial engineering projects with leading companies.

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Elsyca CPMaster Key Features

- Seamless integration within SolidWorks® for 3D CAD modeling
- File import from numerous CAD packages such as IGES, STEP, SAT (ACIS), VDAFS, DXF, PARASOLID, ProE, Inventor
- Model parameterization
- Automated & high-quality finite element mesh generator
- Robust and fast numerical solver calculating structure-to soil or structure-to-water potentials, current and sacrificial anodes consumption rates
- Database for material/environment polarization data
- Impressed current and/or sacrificial anodes
- Anodic and cathodic reaction polarization behavior
- Considers Ohmic drop effects in the soil or water
- Floating (not contacted) electrodes (for example casings)
- Multi-layered (multi domain) environments with varying resistivity
- Stray current influences from 3rd party systems
- Unique module for simulation of calcareous layer growth for off-shore applications
- Anode dissolution & shape change for anode consumption calculations
- Metric (SI) and Imperial unit systems

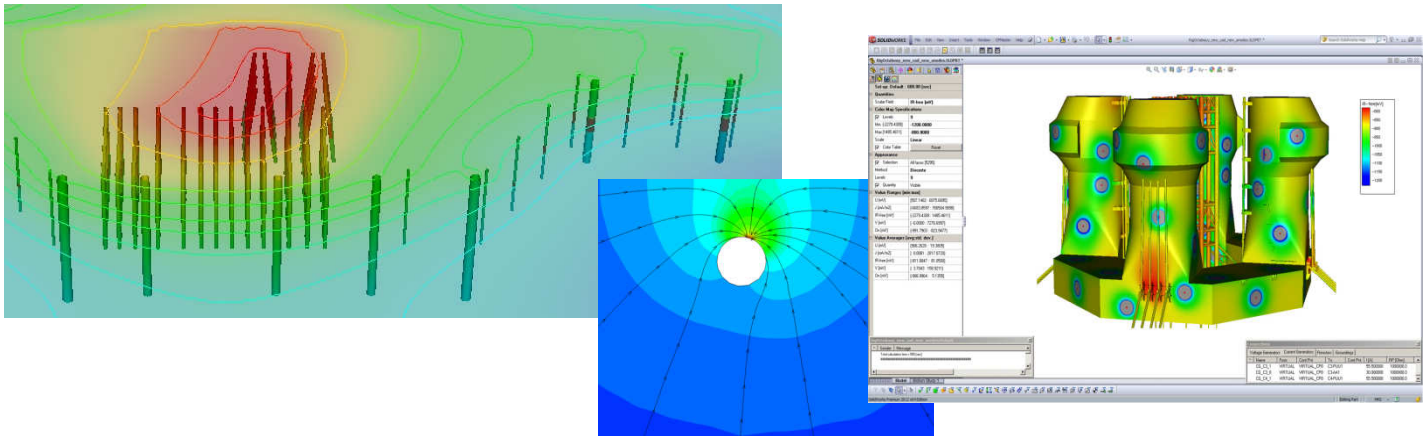
Powerful visualization tools with Elsyca XPlorer for 3D analysis of most relevant CP parameters and results

Hardware and Software Requirements for Elsyca CPMaster

- Minimum 4GHz processor (64-Bit architecture recommended), minimum 4GB RAM (8GB recommended)
- High performing video card: NVidia QuatroFX
- Windows operating systems x32or x64: Windows7 and Windows8
- Solidworks required, check on www.solidworks.com

Benefits

- Elsyca'sCPMaster simulation results have been validated through numerous industrial engineering projects with leading companies world-wide.
- Elsyca CPMaster outranks other commercially available tools both in performance, accuracy, robustness, and user-friendliness.
- Elsyca has years of knowledge with a team of highly skilled engineers and PhDs in various fields of chemistry, metallurgy, electrical and mechanical engineering, available to assist you with your project.



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