

CORROSION-RESISTANT DESIGN

ELSYCA CORROSIONMASTER software

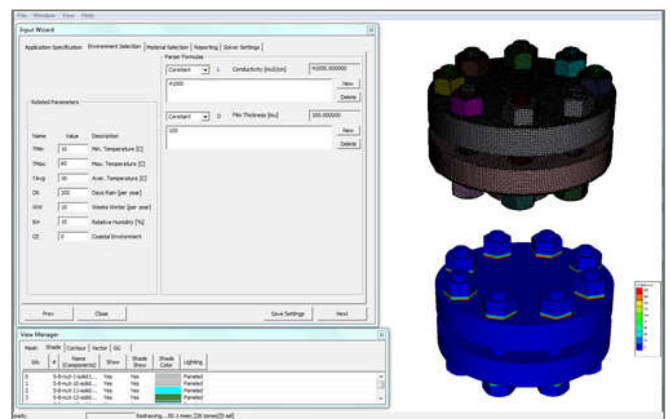
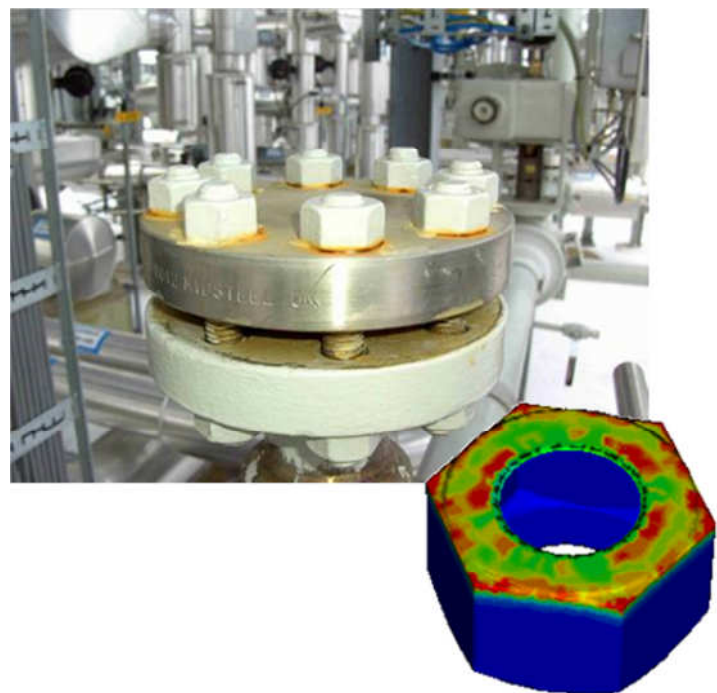
Elsyca CorrosionMaster is the exclusive state-of-the-art graphical simulation platform for modeling the inherent corrosion susceptibility for industrial product design. **Elsyca CorrosionMaster** enables designers and engineers to tackle upfront corrosion issues allowing implementation of qualified mitigation strategies early in the design phase. Corrosion modeling is also used for diagnosis and solving of day-to-day corrosion problems, or in research & development for studying corrosion phenomena and executing virtual salt spray tests.

Corrosion impacts safety, function and appearance of products and, on average, costs our economies 6% of GDP annually. All material structures and assemblies will degrade as corrosion is a natural process, however, through expert choice of materials, coatings, paints and mitigation techniques, the impact of corrosion can be reduced significantly.

Elsyca CorrosionMaster identifies corrosion hot spots and predicts corrosion rates, enabling engineers to look at alternative material combinations and/or coating systems, or investigate corrosion-mitigating measures.

- **Model creation:** direct import of CAD or FE models from any CAD package from component-level to full assembly models
- **Easy set-up:** the engineer identifies the various materials on the parts of the CAD model, links these with the proper polarization data, selects the corrosive environment, and is ready to start the simulation
- **Solver:** very quick and robust, solves the scientific equations that define the corrosion behavior, and identifies the corrosion risk zones and expected corrosion rates and metal loss
- **Post-processing & reporting:** automated reporting, export to movie file, export to Elsyca XPlorer for visualization, post-processing, and sharing of results
- **Special features:** choice of environment, library of polarization data, shape change simulation due to corrosion damage, sacrificial coating degradation, etc.

The Elsyca CorrosionMaster technology has been adopted and validated by leading clients in the pipeline industry, in the automotive industry, and was selected for research funding by the US Department of Defense.



Elsyca CorrosionMaster Key Features

- Science-based! This is not a simple look-up of galvanic potentials... the technology is based on FEA (finite element analysis) techniques solving the potential distribution as a function of material/environment polarization data.
- Models from any CAD package can be imported as STL grids
- Automated high-quality meshing is included – no user interaction required
- Corrosive environment is defined as thin film of arbitrary thickness on the assembly (for corrosion cases under immersed conditions please refer to our Elsyca CPMaster software)
- Supports time stepping for accumulation of corrosion damage over the service life of the product
- Library of polarization data (metal/environment electrochemical interaction) for standard metals is included
- Supply of polarization data for other metal/environment interactions can be acquired from Elsyca’s Engineering Services (full laboratory facilities are available)
- Allows to investigate difference in corrosion behavior for product submitted to differing environments (eg. coastal vs. inland, tropical vs. desert)
- Allows modeling of change in shape of the product due to the metal loss from the accumulated corrosion damage
- Supports sacrificial coatings: coatings degrade under corrosion until underlying substrate is exposed that exhibits a different corrosion behavior
- Includes model for paint degradation
- On-going research with leading clients to include new models for corrosion
- Supports Elsyca XPlorer, the visualization and post-processing environment that allows sharing 3D simulation results with other stakeholders

Hardware and Software Requirements for Elsyca CorrosionMaster

- Minimum 4GHz processor (64-Bit architecture recommended), minimum 4GB RAM (8GB recommended)
- Windows operating systems x32 or x64: Windows7 and Windows8

Customer Quotes

- *“The corrosion on an aluminium trunnion was identified and was perfectly in line with real-life experience.”*
- *“Thanks to the CorrosionMaster platform our R&D team was able, within a matter of days, to troubleshoot and find a solution for a corrosion issue with which we had been struggling for the last 6 months.”*
- *“Galvanic corrosion FEA modeling can identify – upfront – the locations of corrosion ‘hot spots’ and provide an indicative severity (corrosion rate) on systems of interest to the defense industry. The prediction matches the service corrosion !”*

