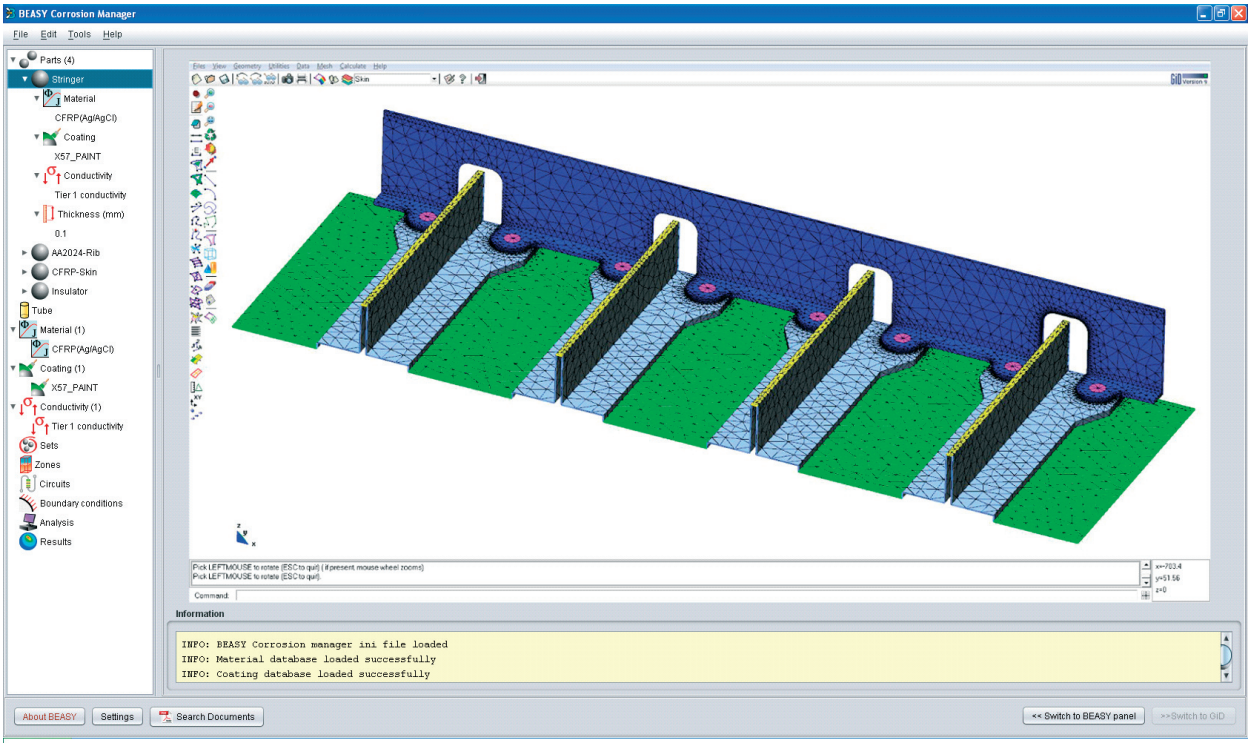
PRODUCT DATA SHEET

BEASY Software
Corrosion Manager

BEASY Corrosion Manager Software enables engineers to quickly assess the risk to components and structures of corrosion and the effectiveness of surface protection systems. Galvanic Corrosion is important as it occurs whenever dissimiliar metals or certain types of composites (eg carbon based) are located close to each other.

The geometry of the connections, the characteristics and extent of the electrolyte and the type of mitigation methods employed affect the extent and rate of corrosion. BEASY Corrosion Manager Simulation enables engineers to replace the "find it and fix it" approach and replace it by a more fundamental approach based on an understanding of the corrosion process and the ability to predict its behaviour.



Study of the protection system required to prevent corrosion in a structure. (SICOM)

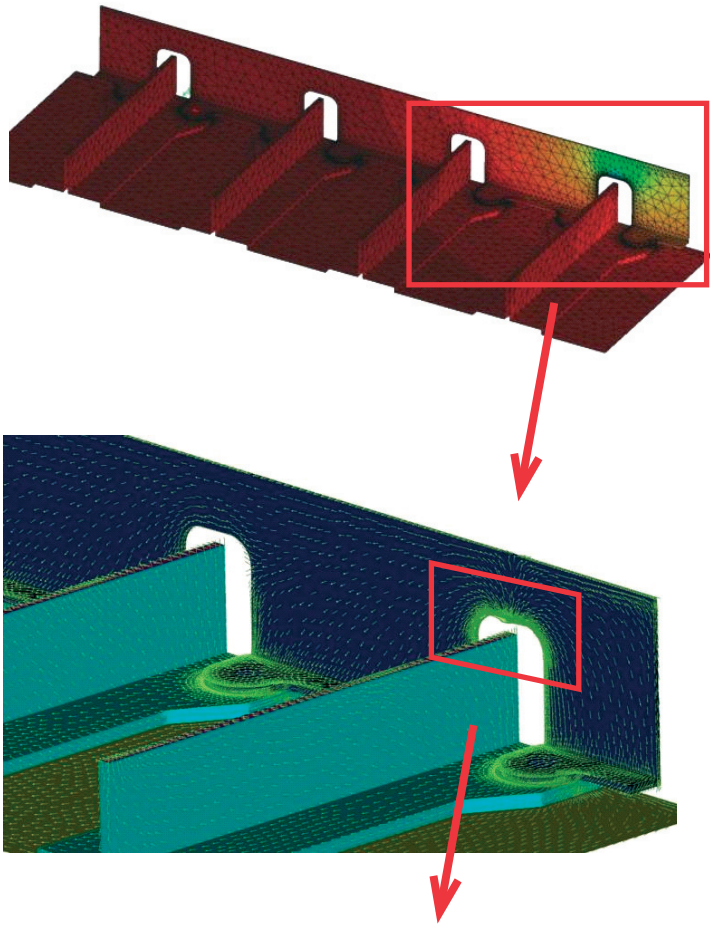
Typical applications include:

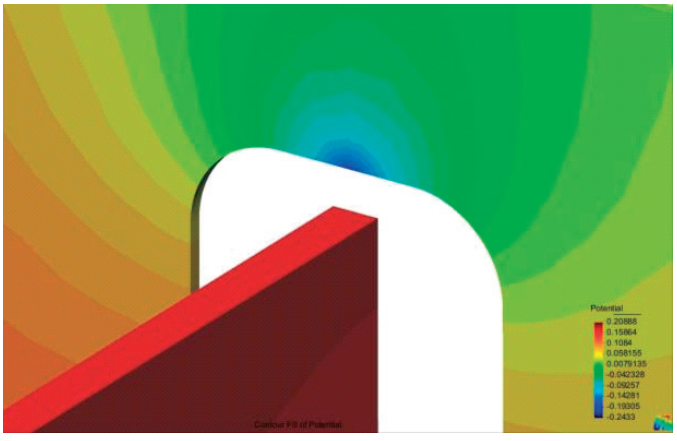
- Predicting the location of potential corrosion sites and assessing the severity of the corrosion
- Identifying the location and extent of corrosion protection measures required against galvanic corrosion (e.g. coatings, paints etc)
- Optimizing corrosion protection measures
- Material selection to minimize corrosion
- Assessing the impact of coating degradation and damage

The modeling technology can be applied to a wide range of structures and components such as those found in Aircraft, Automobiles, Ground Vehicles, Ships and similar structures. It is well suited to support engineers with Sensitivity analyses, Parametric Studies, What if scenarios, Optimisation studies and Risk Assessment

Benefits

- Reduction in qualification time and costs
- Development and improvement of testing procedures
- Reduction of materials and process development costs
- Decrease in maintenance costs





Detailed view of model predictions identifying the risk of corrosion. (SICOM)

Model Inputs

The inputs required by the model are:

Model geometry: The geometry of the component/structure similar to that provided by CAD software which describe the shape of the structure and the different materials and their mechanical connections.

Polarisation curves: These describe the electrochemical response of the material, and are used by the model to predict the Galvanic reactions and hence the areas of the structure subject to corrosion and the corrosion rate.

Electrolyte conductivity & thickness: These describe the properties of the electrolyte on the surfaces of the metals. They typically vary with the location of the structure. For example, in aircraft structures, the thickness of the liquid on the surface of the structure and its corrosivity is more severe at the bottom of the aircraft, whereas higher up in the structure the thickness and corrosivity is lower. Similarly, for automobiles, the electrolyte conditions will be more severe for parts of the structure exposed to deicing fluids.

External interconnection between electrodes: Galvanic corrosion will only occur if structures are electrically connected, so these connections are defined in the model. Strategies for controlling corrosion by insulating parts of the structure from each other can be investigated.

Model Outputs: The extent of corrosion and the corrosion rate on the component or structure.

The BEASY Corrosion Manager Software was part developed in conjunction with the SICOM project. SICOM partners included EADS, Airbus and a consortium of University partners and was supported by the EU Framework 6 programme.

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