

**Public Page**  
**Model Modules to Assist Assessing and Controlling Stress Corrosion Cracking #126**  
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Life prediction model will be based on five different steps to calculate the time for initiation of the first defect on the surface (pitting) to the failure time of the metallic structure under simulated operating conditions for near neutral solutions and high pH solutions. Mechanisms for pitting or active sites formation are considered in the model depending on the solution that is exposed to the steel, in the case of near neutral solutions the formation and breakdown of iron carbonate due to stress exposure or ionic species presented in the solution. Now, for the high pH solutions the formation and breakdown mechanism of corrosion products based on iron hydroxide is considered to take part in the formation of active sites.

Electrochemical and mechanical techniques are used to follow pitting, hydrogen content, crack initiation phenomena, this techniques are used simultaneously to get experimental procedures and obtain practical ways of detect this variables. So far, the EIS (Electrochemical Impedance Spectroscopy) is giving good experimental results for the surface of the interface at static conditions; the technique is used for loading conditions and applied the concept of electrochemical mechanical impedance.

Laboratory experiments that are underway will result in data for parametric analysis between mechanical materials and electrochemical properties of the system, and generation of relations to the life prediction model. The experimental part is focused in the NNSCC system while electrochemical techniques and materials characterization are following the phenomenon.