CorrKin – Simulating the Growth of Corrosion Layers

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ABSTRACT

InCorr (KINCORR?) is a simulating software which can simulate the corrosion phenomena at high temperatures and in different atmospheres. It works basically by solving two-dimensional diffusion equation having within certain conditions and integrates the local thermodynamical equilibrium calculations using ChemApp (commercial software by GTT-technologies). The simulation time is reduced by applying some parallel computing techniques such as PVM. The developed software runs in Linux environment.

Previously the software was used to simulate the growth kinetics of the oxides formed on the steels which were grown only internally. But recent developments in the program and mathematical background allowed modifying the software such a way that it can simulate the complete oxidation behavior of the steels subjected to high temperatures. i.e the software can directly simulate the both inward diffusion and outward diffusion of cations to predict the external scale growth. Currently, the work is going on to include the effect of shot-peening and water vapour in InCorr. Then using InCorr, one can solve many high-temperature corrosion problems effectively.