

## **THE USE OF X-RAY TOMOGRAPHY IN DETERMINING DEFECT MORPHOLOGY FOR NDE MODELLING**

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Modelling of NDT provides the industry with a valuable tool that aids NDT development and qualification and as the sophistication of NDT models increase, the ability to predict responses from more complex defects is enhanced. Confidence in the results from such models needs to be commensurate with model developments and consequently reliable validation evidence is needed.

Whilst validation evidence can be provided through collecting experimental data the availability of real plant complex defects such as stress corrosion cracks (SCC) for such work are extremely rare and therefore there is a reliance on laboratory grown defects that simulate the real cases. The relevance of such evidence depends crucially on how well the laboratory grown defects represent real plant defects.

This paper describes the processes that have been used for confirming the suitability of laboratory grown SCC and, in particular, the role of X-ray tomography in revealing the complex morphology of defects. X-ray tomography is shown to provide significant benefits over destructive examination by retaining the defect for future experimental work and by providing a continuous 3-D illustration of the defect structure. The paper describes how this approach has been used to confirm the validity of model results for specific applications and to support future model development. The paper also briefly describes an interesting spin-off use of the tomographic data in supporting finite element analysis of crack growth propagation