

New Artificial Intelligence models for an efficient processing of phased-array ultrasonic testing data

F4E, with the collaboration of the expert Professor Prinja and the Consortium Ansaldo, Mangiarotti & Walter Tosto have developed a series of AI-based tools aimed at accelerating the analysis of PAUT outputs when evaluating welding defects. This will allow a decrease in time and cost in the evaluation process while minimizing the human error factor.

The technology

The AI models were designed to detect welding defects in the manufacturing process of the ITER Vacuum Vessel. The prediction obtained is presented in a way so that a human expert can confirm the potential weld defects identified.

Reduction in time and operational cost

The major benefit of this technology is that its successful application would reduce time and operational costs significantly, as well as improving Early Data Analysis during the manufacturing process. The implementation of the models indicated would allow for decreasing the processing and interpretation time of PAUT output from a week to just several minutes, providing prompter data that will help to take informed decisions.

Potential in manufacturing of big structures

The results obtained with these AI models indicate that they aim to be a breakthrough approach in use cases where a big amount of PAUT output needs to be processed, for example the manufacturing of pressure vessels. Given that the output prediction provided by these models is much shorter than that of human interpretation, the use of this tool should save at least 95% of the time taken by a human in a regular evaluation.

Collaboration opportunities

The AI models have been fully developed and are ready to be adapted to industrial environments where large volumes of PAUT output need to be processed.

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