

AI evaluation of ultrasonic test data successfully completed during field trials at an American nuclear power plant

Trueflaw (Finland) and EPRI (USA) used artificial intelligence (AI) to evaluate inspection data at a U.S. nuclear power plant. As part of the first of its kind field trial, the ultrasonic inspection data from non-destructive evaluation (NDE) of pressure vessel head penetrations was evaluated using AI developed by Trueflaw.

Critical components in power plants are inspected during scheduled outages using various non-destructive techniques, including ultrasonic testing. Inspections are used to detect any possible service induced degradation. These inspections generate vast amounts of data that need to be reviewed by highly skilled human experts. This critical task is time consuming and difficult.

Automated data analysis with AI works alongside the human experts and makes the inspections both more efficient and more reliable. AI is used to pre-screen the data and to highlight any potential defects found. The human experts then review these areas of interest and make the final decisions. The analysis, that took the human inspector alone hours will be reduced to minutes with help of the AI. At the same time, the evaluation is made more consistent, and the potential of human error is reduced. Human experts still have the final say and the AI is there to help concentrate their effort to make the data analysis faster and more dependable.

This field trial is an important step in adopting AI in the nuclear industry to improve inspections and supports the continued safe and economic operation of the nuclear fleet.

Trueflaw Ltd. (trueflaw.com) is a company based in Espoo, Finland that specializes in AI-based defect detection systems and reliability of non-destructive evaluation (NDE). Founded in 2001, Trueflaw started out making cracked samples used to test and develop NDE reliability, then expanded to provide statistical reliability evaluation services and now leverages this expertise to provide industry leading AI-based automated defect recognition systems to wide range of industries.

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