

# **Experience in applying Array Probe to steam generator tube ECT at Korean nuclear power plant**

**Inchul Kim<sup>1</sup>**

<sup>1</sup>NDE Engineering Group, KHNP CRI, Republic of Korea

The steam generator tube of nuclear power plant is an important component as a pressure boundary between the reactor coolant in the primary system and feed water in the secondary system. ECT(Eddy Current Test) for steam generator tubes is performed periodically in order to check the degradation(wear, cracks, etc). ECT of steam generator tubes at Korean nuclear power plants is performed using bobbin probes and MRPC(Motorized Rotating Pancake Coil) probes. Bobbin Probe has the advantage of high speed(over 40inch/sec), but has the disadvantage of low ability to detect cracks in the circumferential direction, so MRPC, which has a slow speed(below 1.2inch/sec), is used for inspection of areas where cracks are likely to occur, such as the expansion area at the top of the steam generator tubesheet. In this paper, we analyzed the results of the first application of the Array Probe (X-Probe), which compensates for the slow speed of MRPC and has excellent foreign material detection ability, to the ECT examination of steam generator tubes at a Korean nuclear power plant. Before applying to ECT examination, we developed a signal acquisition and analysis ETSS(Examination Technique Specification Sheet} for the application of X-Probe, and developed SV(Site Validation) to prove that the developed ETSS is equivalent to overseas verified technology. In addition, the pros and cons of applying X-Probe were analyzed based on inspection results and operational experience.