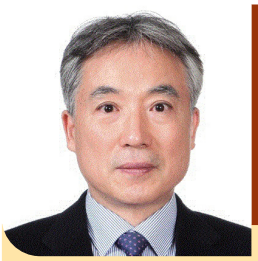

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QIRT-2024-090
PANEL
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PRESENTATION
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INFRARED THERMOGRAPHY-BASED SUPER-RESOLUTION AND AUTOMATIC RECOGNITION OF THERMAL BARRIER COATING DELAMINATION USING DEEP LEARNING IN GAS TURBINE BLADE

Next-generation gas turbine blade (GTB) plants have been in operation for decades, and cases of thinning defects due to corrosion are continuously detected. The non-destructive testing (NDT) technology is essential to efficiently inspect a wide area of the thermal barrier coating (TBC). Active Infra-Red Thermography (IRT) is a technology that is in the spotlight among 4.0 NDT technologies because it can scan and inspect a broad area in real time. In this work, thermographic images were acquired using IRT technology, and then the thermal uniformity process was performed using Fast Fourier Transform (FFT) based on Gaussian Filtering. Afterwards, super-resolution conversion was performed using the Very-Deep Super- Resolution (VDSR) technique. Finally, after learning the thermal image big data, automated object recognition was performed through transfer learning. Through this study, IRT technology can be used as basic data for detecting thinning defects in TBCs.