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P2.11: A Study on the Feasibility of High-Energy X-ray CT for Inspection of AM Products

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In the industrial sector, commonly used non-destructive testing techniques include ultrasonic testing (UT), radiographic testing (RT), penetration testing (PT), magnetic testing (MT), and other methods. These techniques have undergone significant development, particularly in real-time testing, low cost, high efficiency, and high precision, with the concomitant development and release of novel industrial products. Moreover, these techniques are being integrated with artificial intelligence to enhance product reliability.

Several research studies have attempted to apply computed tomography (CT) technology, commonly employed in the medical industry, to the industrial sector by incorporating it into the RT testing method. This enables easy detection of internal product defects, although its application is limited by system size and cost. The increasing adoption of additive manufacturing (AM), which employs 3D printing technology, in the manufacturing industry has further emphasized the need for non-destructive testing. AM products necessitate precision analysis through 3D cross-sectional images of material layers, and non-destructive testing using CT methods within RT is becoming an increasingly valuable testing technique. Therefore, this study applied CT non-destructive testing to in-house AM products to ensure their reliability and confirmed the applicability of CT testing to AM products by varying testing parameters.

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