

# **CTUT: Revolutionizing In-Line Inspection in Iron & Steel Manufacturing**

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The Iron and Steel industry faces growing demands for both superior quality control and increased production efficiency. Traditional phased array inline detection systems are struggling to keep pace with these ever-mounting expectations. In response, Advanced OEM Solutions (AOS) proudly presents CTUT—Computed Tomography Ultrasonic Testing—a pioneering proprietary technology born from the vast family of FMC/TFM but applied to In-Line demanding applications. Driven by AOS's cutting-edge FMC-capable Explorer product, CTUT enables full parallel scanning, transmission, and reception of all elements concurrently. It empowers comprehensive cross-sectional material inspection with 100% coverage, achieved in optimized and specific firings through the deployment of synchronized sets of curved PA probes. Our in-house TFM algorithm, enhanced by NVIDIA CUDA for accelerated parallel data processing, operates within a distributed system involving multiple processing PCs. This system effectively handles the exceptionally high data throughput. Distinguished by its ability to detect flaws such as FBH as small as 0.6mm diameter while sustaining throughput speeds of 1.5 m/s or higher, CTUT boasts remarkable immunity to issues such as reverberation echoes, crosstalk, ghost echoes, and more, ensuring a high signal-to-noise ratio (SNR) with the guaranty that all the volume is inspected. Additionally, it offers a simplified setup configuration and real-time scan views for streamlined analysis, as well as reducing to nearly nothing the time of bar diameter change. This groundbreaking technology redefines the landscape of in-line inspection within the Iron & Steel industry, delivering an unprecedented blend of sensitivity, speed, and adaptability. Moreover, CTUT's versatility extends beyond metallurgy, finding compelling applications in Rail, Power Generation, and Jet Engines, promising transformative solutions to meet the evolving needs of these sectors.