An AI-based Computed Tomography Solutions for New Energy Vehicles

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During the recent years, industrial computed tomography (ICT) has become a vigorous tool for nondestructive testing, especially when it comes to intricate parts and their inner structures such as battery modules, electric-engine stators or electric motor housings. On the other hand, the customers from automotive industry have brought a tall order to ICT in terms of cycle time, reliability and fidelity of flaw recognition, ease to use etc. Scanning of such nontrivial parts in high quality and short time is challenging due to large part sizes, complex layouts, dense materials, and small defect sizes. To ensure the best performance of main electric motor components, nondestructive inspection of internal structures must be performed in many cases. Especially hairpin welding of electric stators, internal structures of battery modules and functional areas of light alloy housings are often requested inspection tasks. Due to inspection time limitations, it is not always possible to acquire the best possible image quality for analysis of such integrate components made of very dense materials and complex structures. Besides our powerful ICT systems we offer also very reliable detection and evaluation software, that is based on a deep learning-based segmentation workflow. This robust technique counteracts the suboptimal imaging conditions detailed above with the adoption of deep neural networks. We present an inspection solution that combines a robust industrial-grade 225-kV and 450-kV system hardware with an end-to-end train- and deployable machine learning models and demonstrate that this powerful match can be used to disambiguate even complex background structures from defects.