Concepts to improve air cooling in portable X-ray systems

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An extensive limitation of portable X-ray systems was the low ability to operate in hot ambient conditions. This limitation allowed the operators only to do X-ray exposures for a shorter period, to avoid thermal overheating interrupting the workflow and causing delays. The newest generation of portable X-ray systems is able to deliver 1200W continuous X-ray exposure in one hour at 95°F and intermittent exposures up to 131°F ambient temperature. This paper shows the change in air cooling principle and how improved cooling performance has been achieved through a combination of CFD simulations and agile design verifications.
Keywords: Portable X-ray, 1200W, air cooling, continuous exposure, CFD simulations An extensive limitation of portable X-ray systems was the low ability to operate in hot ambient conditions. This limitation allowed the operators only to do X-ray exposures for a shorter period, to avoid thermal overheating interrupting the workflow and causing delays. The newest generation of portable X-ray systems is able to deliver 1200W continuous X-ray exposure in one hour at 95°F and intermittent exposures up to 131°F ambient temperature. This paper shows the change in air cooling principle and how improved cooling performance has been achieved through a combination of CFD simulations and agile design verifications.
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