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ADVANCED THERMODYNAMICS METRICS FOR SUSTAINABILITY ASSESMENTS OF OPEN ENGINEERING SYSTEMS

ABSTRACT

This paper offers a verification of the following hypotheses.

Advanced thermodynamics metrics based on entropy generation assessments indicate the level of sustainability of transient open systems, such as in manufacturing or process industries. The indicator of sustainability may be related to particular property uniformity during materials processing. In such a case, the property uniformity would indicate systems' distance from equilibrium, i.e., from the sustainable energy utilization level. This idea is applied to a selected state-of-the-art manufacturing process. The system under consideration involves thermal processing of complex aluminum structures during controlled atmosphere brazing for a near-net-shape mass production of compact heat exchangers.

KEYWORDS

[thermodynamics metrics](#), [manufacturing](#), [sustainability](#)

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