Dokumenttyp: Zeitschriftenaufsatz
Autor(en) des Beitrags: Jiménez-Arreola, M.; Pili, R.; Wieland, C.; Romagnoli, A.
Titel des Beitrags: Dynamic study of ORC evaporator operating under fluctuating thermal power from waste heat sources
Abstract: Waste heat recovery systems such as the Organic Rankine Cycle (ORC) face the challenge of being subordinated to the main process, and therefore they are not allowed to control the heat source as conventional power systems. Because of the conceivable fluctuating characteristic of the heat source the dynamic response of the system has to be analyzed. The component of major importance for the dynamics of the system is the evaporator, because it links the heat source to the ORC. Although different dynamic models of heat exchangers for ORC are available in literature, researchers have hardly focused their attention on a thorough analysis of the key factors that affect the evaporator dynamics. In particular, the influence of the evaporator geometry and materials is analyzed in this work. A characterization approach based on the main heat exchanger construction parameters is carried out in order to predict the evaporator response time and how it is affected by those design factors. With the help of dynamic simulations, the approach is applied to a real kettle boiler geometry. Possible improvements in the heat exchanger geometry that can lead to a dynamically more
robust system and buffering some of the intermittency of the heat source are foreseen.

Stichworte: Organic Rankine Cycle; kettle boiler; thermal power fluctuations; waste heat recovery


Kongress / Zusatzinformationen: WES-CUE 2017

Zeitschriftentitel: Energy Procedia

Jahr: 2017

Band: 143

Seiten: 404-409

Nachgewiesen in: Scopus; Web of Science

Reviewed: ja

Sprache: en


Verlag / Institution: Elsevier BV

E-ISSN: 1876-6102

Publikationsdatum: 01.12.2017

Occurences:
- Einrichtungen > Fakultäten > Fakultät für Maschinenwesen > Institut für Energietechnik > Lehrstuhl für Energiesysteme (Prof. Spliethoff) > Publikationen > 2017
- Hochschulbibliographie > 2017 > Fakultäten > Maschinenwesen > Lehrstuhl für Energiesysteme (Prof. Spliethoff)

entries: