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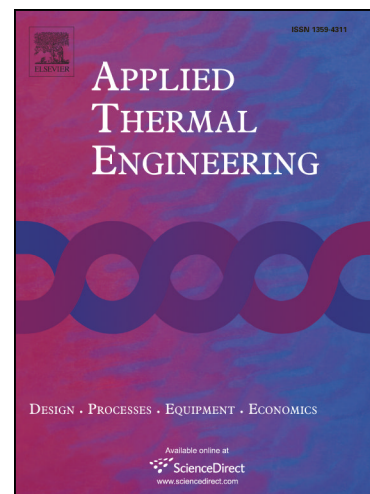
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Engine working condition effects on the dynamic response of Organic Rankine Cycle as exhaust waste heat recovery system

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Abstract

Organic Rankine Cycle (ORC) is paid more and more attention on waste heat recovery of internal combustion engines. The ORC system is usually designed under the rated working condition of engines, while the engine often works under different conditions, which means the ORC system always works at part-load conditions and unsteady state as well. Consequently, the research of ORC dynamic response process is very significant and it is useful to develop the control system which ensures the safety and efficiency of the ORC during the whole running process. ORC is nonlinear system and the dynamic response is not the same under different engine working conditions. Therefore, the dynamic math model of an ORC with a medium heat transfer cycle as waste heat recovery system for a natural gas engine of 1000kW rated power is built by Simulink in this work. Since ORC is mainly controlled through working fluid pump speed, the dynamic response process to pump speed change of

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