**Title:** Multi-criteria evaluation of several million working fluids for waste heat recovery by means of organic rankine cycle in passenger cars and heavy duty trucks

**Author(s):** Markus Preibinger, Johannes A.H. Schwobel, Andreas Klamt, Dieter Bruggemann

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This paper has the unique feature (so far) of discussing the use of multiple heat sources and splitting mass flow.

This paper focuses on the first and second law efficiencies of a large selection of working fluids. These efficiencies are estimated using a simulation. The paper attempts to discern whether it is possible to determine an optimal working fluid for a given application.

“To answer this question, we screened about 72 million chemical structures given in the PubChem database by application of the COSMO-RS methodology and evaluated them for two different ORC configurations and three different cooling concepts to get a multicriteria ranking based on ten different criteria.”

Of those working fluids, 3,174 were deemed acceptable after filtering for unsuitably low vapor pressures, and those with unsuitable, highly reactive substructures.

This study contains a good literature review with respect to working fluids.

The Rankine cycle simulation in this study was performed using “DetailSimORC” which was developed using Matlab.

This study considered two different ORC configurations. The configurations considered different levels of superheating and reheating the working fluid.