

NoWaste

Engine waste heat recovery and re-use

Motivation and Objectives

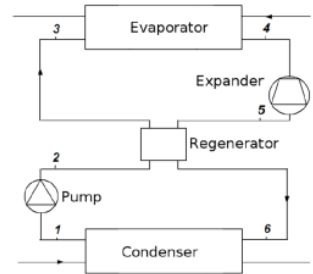
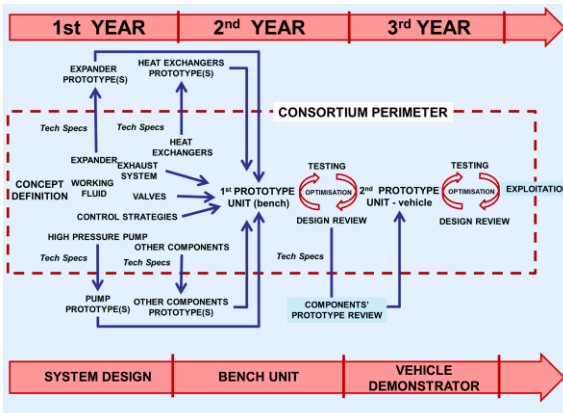
Partial re-use of waste heat (60% of the combustion energy) could allow an increase in overall vehicle energy efficiency of up to 15%. This benefit is complementary when using a hybrid powertrain where the generated electric energy will be used when it is more convenient.

NoWaste aims to demonstrate the feasibility of such a system based on a thermodynamic cycle, e.g. the Rankine cycle. The main objectives are as follows:

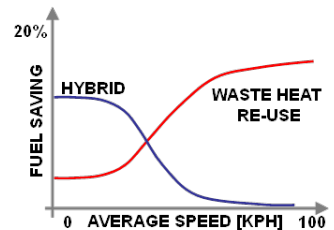
- Fuel Economy: 12% fuel consumption improvement at vehicle level on a reference mission,
- Cost (for the OEM): < 4500 Euro/system,
- Weight: < 150 kg .

Project Plan, Milestones and Deliverables

The Project is clustered with CORE



Simple Rankine Cycle scheme



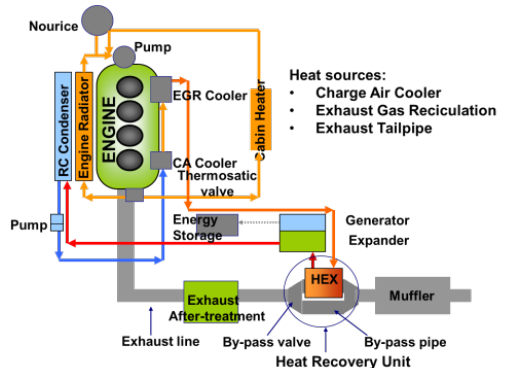
Technical Approach

The project key points are:

- Reference mission definition,
- Selection of the most appropriate architecture,
- Heat rejection system minimizing the cooling drag,
- Heat exchangers development to maximize the heat recuperation efficiency,
- Integration with the exhaust system,
- Validation of the developed system on a **test rig** and then in **vehicle demonstrator**,
- Benefit evaluation on different powertrain by means of a model approach.

Achievements

- Development of a Rankine cycle able to convert the engine waste in electrical energy.
- Supply chain identification.
- Experimental validation with test rig and vehicle demonstrator.



Budget 4.7 M€
 Duration 42 months
 DG Research / SST
 Coordinator Carloandrea Malvicino, CRF
 Partners CRF, Volvo, AVL, Faurecia, Dell'Orto, University of Liège

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 Contact carloandrea.malvicino@crf.it