

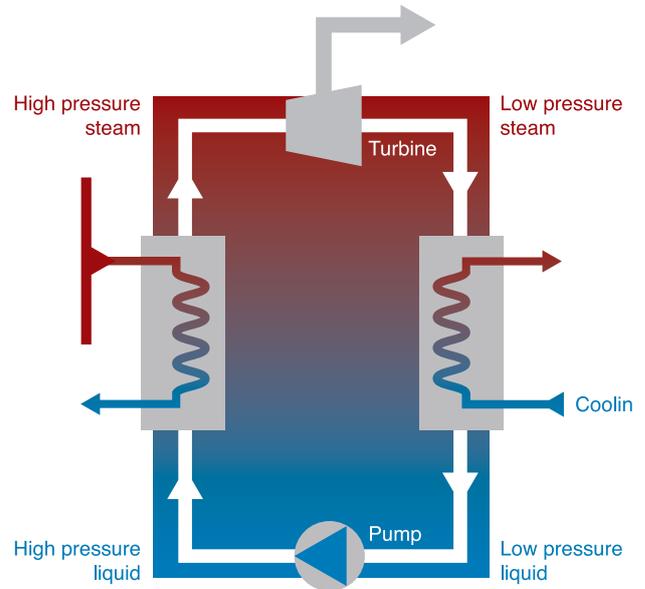
**Entropea**  
LABS

SUSTAINABLE  
ENERGY  
SOLUTIONS

Recovering wasted thermal energy is the single most effective and affordable way to **reduce energy costs** and shift to **more sustainable energy consumption**.

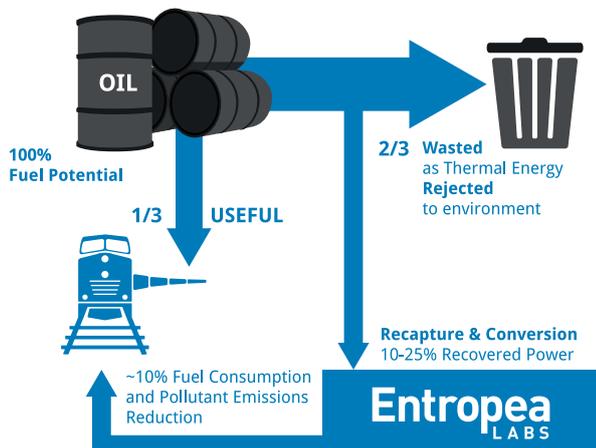
**Entropea Labs** focuses on the development and optimization of high efficiency, scalable heat to power systems.

We specialize in the concepts of generation, design, analysis, manufacturing and testing of any component forming a thermodynamic steam and Organic Rankine Cycle. Our philosophy is based on an **in-house production model** that significantly reduces costs & lead times for bringing a component from conception to manufacturing.



## APPLICATIONS

Entropea Labs focuses on waste heat recovery for **electric power generation** in the 10 -500 kW range. Currently our expertise is on waste heat recovery from large diesel engines in transport applications.



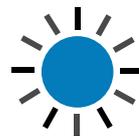
As our technology is modular it can be applied to all fields with wasted thermal energy specifically:



Biomass CHP



Industrial wasted thermal energy



Concentrated solar power  
CHP, desalination



Diesel Generators



## RESEARCH



## DESIGN



## TEST

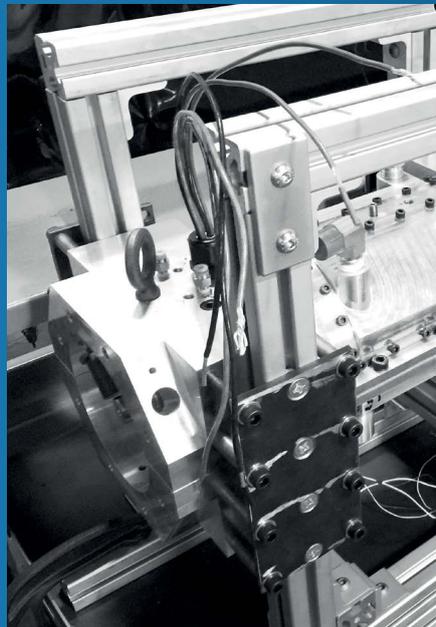
Entropea Labs vertical approach enables to design, manufacture and test in-house all the components forming the thermodynamic Rankine Cycle. This approach free us from any dependency from external contractors, enabling Entropea Labs to cost-effectively deliver our technology solutions.

Our capabilities include high-effectiveness, high-pressure heat exchangers that can withstand full flame engulfment for undetermined amounts of time, compact condensers, high-speed unconventional gas/steam/organic turbines and fast permanent magnet and induction machines with conditioned electric output to match final utilization.



### HEAT TRANSFER

Preliminary concept design, CFD design, CAD/CAM design, manufacturing and testing of unconventional heat exchangers. We specialize in the development of high pressure heat exchangers. To achieve this we use state of the art computer codes developed by our team and research partners to support commercially available softwares for the design and simulation process. Moreover our research partners possess the necessary tools to manufacture and test the CAD design to an optimized and finished product.



### POWER SYSTEMS

Preliminary concept design, CAD, manufacturing and testing of high speed high power permanent magnet and induction machines.

### CONTROL/CYCLE OPTIMISATION

We have developed advanced control systems to condition electric output to match final utilisation: power auxiliaries or increased propulsion power. Moreover we have developed models, which can optimise thermodynamic cycles performance based on power output and components costs.



### TURBOMACHINERY

Preliminary 2-D design, CFD design, CAD/CAM design, manufacturing and testing of unconventional turbines driven by steam or organic fluids. To achieve this we use state of the art computer codes developed by our team and research partners to support commercially available softwares for the design and simulation process. Moreover our research partners possess the necessary tools to manufacture and test the CAD design to an optimized and finished product.

# Entropea LABS

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