

International Energy Systems in Transition  
- Perspectives from Science and Industry -  
**The 15th IERE General Meeting & German Forum**  
**Abstract Format**

**Title: Commercial conversion of an unused potential -  
waste heat and steam - into electrical energy**

**Frank Iding**  
**CFO, ENVA Energy GmbH**  
**Marl, Germany**

**Keywords:** Energy Efficiency, Conversion of thermal energy into electrical energy, Optimization of existing processes, ROI below 3 years, Easy to install, Worldwide range of applications, Support to energy producers and consumers

**Abstract**

ENVA Energy GmbH is a German company located in the "Ruhrgebiet" traditionally known for its steel and coal industry.

The global industrial energy market has been undergoing a significant transformation in the past decades both on the demand and the supply side. The boom of renewable energy sources and companies facing the demand of reducing its carbon footprint plus the economic necessity to review production processes for saving potentials created an atmosphere of Innovation and the avoidance of wasting valuable resources.

ENVA looks at energy systems in its entirety to increase the efficiency of energy production processes as well as identifying waste in energy consuming processes in order to provide potential customers with effective hands on solutions.

The two main products are the Energy Module (EM) and the Organic Rankine Cycle (ORC) Module. The EM uses steam for electricity generation, whereas the ORC Module uses a medium, which vaporizes at a lower temperature than water for the same purpose. ENVA's innovative technology generates electricity from low-pressure waste and unused steam starting from as low 0.6 bar up to 15 bar or heat as low as 80 degree Celsius. The ENVA systems are able to make use of so far unused thermal energy resources with the aim to reduce the overall energy consumption of industrial processes or increasing the energy production of power plants like e.g. CHPs.

Using an innovative and patented rotary blower technology transforms the thermal energy into electrical energy in three main different applications:

Waste heat or steam

1. that is discharged against the atmosphere
2. that is fed into a condenser

3. that is reduced by a pressure reduction valves

ENVA's technology advantages in a nutshell:

- It's a reliable and proven technology with very low maintenance
- The electricity production costs are below 0,04€ per Kwh
- The average ROI of the installations is below 3 years

First installations in the beverage, dairy and paper industry as well as in CHPs with cooperation partners like ABB and Kaeser demonstrate the performance of the systems and its wide range of applications in the international market.

With its technologies and products ENVA is an active part of International Energy Systems in Transition; especially its focus on energy efficiency by making unused resources of energy accessible is an essential part in dealing with the worlds valuable energy resources to support energy producers and consumers demands is the way ahead.