

International EcoEnergy Cluster Meeting
May 10th, Gdansk, Poland

**Ways of Recovering Waste Heat
through the means of the
Altvater Mobile Heat Transport-System
(AMHT-System)**

Jakob Altvater (Director IG Mobile Heat)

Dr. rer. pol. Marc Oeffner (Representative of Mr. Altvater)

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1. **Introduction**
2. Principles of the AMHT-System
3. Advantages of the AMHT-System
4. Thermal Oil Heat Transfer Systems
(Presentation of Thomas Bures, Ascentec GmbH)

History of the AMHT-System

- Experiences in a pilot project in the early 1980thies:
 - Heat was extracted at the Oberland-Glas glassworks
 - Transportation of the heat energy (thermal oil, 320°C) by truck (5,3 MW per truck) over a distance of 38 kilometers
 - Destination: The Neutrauchburg Clinic and its heat supply
 - The pilot was closed after a fall in the oil prices in the mid1980thies.
 - In 2006, the Ministry of Internal Affairs in the Land of Baden-Württemberg (southwest Germany) initiated the re-discovery of the technology.
 - Thereafter the IG Mobile Heat was founded in 2007
 - Jakob Altvater and Thomas Bures (Ascentec GmbH),
 - Dr. Münch and Dr. Göttlicher – EnBW,
 - Prof. Gust, Dr. Fahl (University of Stuttgart) Prof. Zahoransky
Prof. Bühler (University of Applied Sciences).
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The Inventor: Jakob Altvater

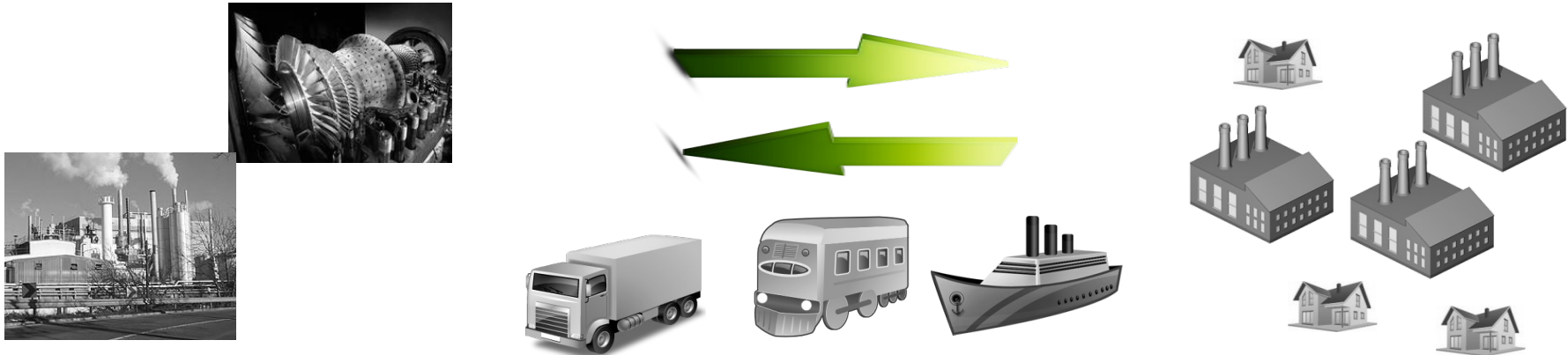
- Long-term experience in the waste disposal industry.
- Mr. Altvater has started in 1948 as the first private enterprise in the waste disposal industry in Germany after WWII.
- He is founder member of the BDE (Bundesverband der Deutschen Entsorgungswirtschaft).
- In the years 1964/65 Mr. Altvater sold his waste disposal company, the Altvater GmbH, to the SULO group. In 2007, the French company Veolia bought the SULO group and its waste disposal business.
- Mr. Altvater has about 30 patents applied in the waste disposal industry as well as in the utility industry.
- Since 2007 Mr. Altvater is director of the IG Mobile Wärme (located at the University of Stuttgart), which was incorporated in order to push the AMHT-system (especially in the area of Baden-Württemberg).

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Waste Heat Utilisation by the AMHT-System



Waste Resources:

- industrial plants
- conventional power stations
- renewable power stations

Requirements:

- high temperature
- permanent operation
- large heat quantities
- high thermal performance

Heat Transport:

- truck
- train
- ship

Requirements:

- favourable distance source – user
- permanent reachability

Heat Transport:

- industry & commerce
- private & municipal buildings (hospitals, swimming facilities etc.)

Requirements:

- low temperature
- permanent operation
- large heat/cold requirement
- high thermal performance

Heat Storage by Use of Thermal Oil

- Max. storage temperature 320 °C
- Low temperature-loss of about 8 °C per day
- Storage containers for hot and cold oil required
- Easy integration into user's supply system
- High flexibility through means of transportation infrastructure (train, truck, ship, or conventional pipeline-system)
- No contact with oxygen – patented technology provided by Mr. Altvater

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Fundamental Advantages of the Utilisation of Waste Heat

- Reduction of primary energy consumption
- Reduction of greenhouse gas emissions
- Lower energy costs for appropriate combination of heat user and heat source
- Financial benefits for heat source operator from waste heat sale
- Public subsidies for the investment costs
- Further cost reduction for operator due to lower CO₂ emissions certificates demand possible

Advantages with Regard to Biogas Operators

- Higher Autonomy in the choice of site, as the biogas operator is independent from pipeline systems
- Biogas operator can choose a site within a distance of 50 kilometers to potential heat consumers (requirement: transport infrastructure)
- No investment in the heat energy recovery system of the biogas facility, as the “Altvater service company” is planning, investing, constructing and operating the waste heat recovery system
- No additional costs for the biogas operator
- The biogas operator receives a fixed payment per MWh from the “Altvater service company”
- The duration of the long-term contract is usually between 10 to 20 years, which enables a quite riskless calculation of the investment
- Potentially high EU-subsidies due to world-wide innovation of the AMHT-system

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