

DeVeTec's waste heat power plants





Cost-effective use of waste heat

Continuously rising energy costs, legal requirements concerning energy saving and independence from imports of various energy sources are emerging as huge challenges. These can only be overcome by developing new and sustainable forms of energy production, in particular renewable energies, and by enhancing energy efficiency. Because every kilowatt hour of electricity not consumed is the most cost-effective and eco-friendly way to save energy, DeVeTec GmbH has developed a heat recovery system for highly efficient power generation from waste heat.

All advantages at a glance:

- Improvement of the energy balance of your company
- ✓ Savings of fuel and energy costs
- ✓ Bio ethanol as an eco-friendly, inexpensive and sustainable working fluid (not affected by the F-Gas Regulation)
- ✓ Sophisticated and easy-to-integrate Siemens S7 control system
- ✓ Combined heat and power system with an overall efficiency ratio of up to 90% and promoted under the German heat and power act
- ✓ Unique partial load behaviour for maximum runtimes even with fluctuating and discontinuous waste heat (up to 90% variation from the operating point possible)





Application fields

DeVeTec waste heat power plants: tailor-made solutions for different application fields:

- ✓ Industrial companies with energy-intensive production processes: steel industry, chemical industry, glass, cement and ceramics industry, food and animal feed industry, plastics industry, metals production and metals processing, paper industry, etc.
- ✓ Direct electricity generation from biogas, sewage gas, natural gas, landfill gas and coal mine gas.
- ✓ Solar and geothermal installations
- ✓ Marine engines and heavy duty machinery
- ✓ Energy contracting companies

The directly generated power can be used for own consumption and/or be fed into the public grid. The heat resulting from the process can for example be used to run absorption cooling systems, heating systems or in drying processes or fed into the local heating network.

Besides direct integration of DeVeTec waste heat power plants in new installations, existing systems can also be retrofitted and modernized.





DeVeTec's ORC process involves a classical steam cycle. However, by contrast to conventional processes, it uses bio-ethanol as an organic fluid instead of water.

The cyclic process always works with the same conditions.

By means of the feed pump the fluid is compressed and fed into the cycle. The pressurized fluid enters the heat exchanger and runs through the coiled tube where the fluid is pre-heated, directly evaporated and superheated.

The thermo-dynamic energy of the resulting steam is converted in the engine into mechanical rotational energy. This generates electricity in a generator. The expanded steam is subsequently admitted to a condenser where it is cooled and liquefied, thus completing the cycle. The energy transferred during cooling is subsequently available as useful heat.



Product overview

DeVeTec provides tailored concepts from engine to turn-key plant.

The standard scope of supply includes the complete basic module with container, steam expansion engine, generator, ethanol pump station and the plant control system.

DeVeTec of course also supplies turn-key waste heat power plants including the complete heat transfer technology (condenser, thermal oil heat exchanger or direct evaporator).

technological specifications	
working fluid	bioethanol
working machine	V8/V12/V16-reciprocating piston engine
plant operation:	fully automatical and remote-monitored
control system:	Siemens S7 Failsafe
motor monitoring :	DeVeTec Noise & Vibration Guard
CO2-reduction potential:	< 4,900 t _{co2} /a (per ORC-module)
noise emissions :	installation in residential areas in accordance with German technical guideline for noise reduction (TA Lärm) is possible
safety:	CE conformity in accordance with Machinery Directive 2006/42/EC

performance data	
thermal input of waste heat:	> 300 kWth
	250 °C - 1000 °C
ORC electrical output	50 - 270kWei
	50 Hz, 400V, 3 ph
ORC thermal output:	75% of thermal input
	< 75 °C (< 100 °C with decreasing el. output)

dimensions & weight		
length:	9.2 m	
heigth:	6.0 m	
width:	3.2 m	
weigth:	25 t	





Our services

Our offer includes all services necessary to implement a complete project:

- ✓ Analysis of your specific requirements and analysis of local conditions and technical requirements
- ✓ Budget price offer based on your individual requirements
- ✓ Planning and feasibility studies
- ✓ Detail planning of your waste heat power plant
- ✓ Support with approval process
- ✓ Execution planning
- ✓ Construction supervision
- ✓ Erection and mounting of your waste heat power plant
- ✓ Commissioning of your waste heat power plant
- ✓ Expert appraisal for cogeneration plants
- ✓ Briefing and training of your staff
- ✓ Maintenance and repairs in accordance with customer-specific maintenance intervals
- ✓ Remote monitoring



Our reference plants

DeVeTec GmbH has been developing and building stationary waste heat power plants for power generation since 2007.

Our reference plants reflect the typical applications for DeVeTec's technology.

Projects realized to date recover energy from the following heat sources: exhaust gas from gas engines, hot air from chemical processes, flue gases from glass melting tanks and pusher-type furnaces with fluctuating heat volumes and temperatures and waste heat from annealing hoods.

If you are interested in our plants, you are welcome to visit Völklingen them. Please feel free to contact us!





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