



# WHITETEC

## Vision to Reality



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## Our Vision

**WhiteTec** was created from the Haslach Group, which has been in operation for over 30 years. By realising visionary ideas, WhiteTec is able to tackle sensitive environmental and energy-related issues. For many years, WhiteTec has strived to use natural resources responsibly. Through innovative solutions, it has been able to meet this immense challenge.



*According to a study by the United Nations Environment Programme (UNEP), approximately half of the temperature increase in the Arctic is due to soot particles.*

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## The Management Team

**Jochen Lippert** has been able to implement extremely fuel-efficient internal combustion engines designed for the after-treatment of exhaust. His visionary concepts in the areas of exhaust control, reducing emission values for combustion engines in ships, and power plants have attracted attention.



**Bernd Mayer** has implemented multiple power including photovoltaic projects. From approval and land use planning to project planning and control to network connection and handover to investors, he is always fully involved in all processes. He has many years of experience in sales as well as financing transactions with banks and leasing partners.



For over 30 years, **Helmut Haslach** has been a driving force in organising the Haslach Group, a highly respected company renowned for producing highly complex components for the manufacturing industry and aerospace as well as for extraction/filter technology and sound insulation.



Through the contributions of **Marita Haslach-Dann**, the future-oriented Haslach Group has been able to take a leading position in the global market and continually advance the product portfolio, which now includes automotive suppliers, among others.



For many years, the Haslach Group, which specialises in air purification and noise control, has been dealing with the issue of environmental protection.

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## The Location

In close cooperation with the Group Haslach, WhiteTec relies on long-standing expertise to realise various projects.

The result is a perfect symbiosis between experience in the production of complex system components and expert knowledge of exhaust after-treatment and alternative power plants.

This partnership guarantees sustainable solutions that are customised to individual applications.



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## ENERGY

### Thermal Power Stations - White Energy

Current challenges such as the increasing importance of environmental protection and the reorganisation of the energy markets have motivated WhiteTec to satisfy customer needs in terms of an efficient and independent power system with targeted solutions.

Thermal power stations have proven to be a highly reliable, economical, and – considering the current energy mix – unavoidable technology. This decentralised production of energy in thermal power stations near the site of consumption has become increasingly more important.

A thermal power station is a modular system that simultaneously produces electricity, heat, and cold at the point of energy consumption. The combustion engine drives a generator to produce electricity. The thermal power station uses the exhaust heat produced for heating and warm water. The thermal power station thus becomes “power-generating heating”.

Using the principle of combined heat and power (CHP) technology, process heat can be supplied to a district heating network. Thermal power stations produce large amounts of electricity and heat with great efficiency with the goal of self-sufficient and economic energy production. The heat is used for heating purposes and to prepare warm water.



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## Thermal Power Stations - White Energy

The WhiteTec thermal power station has a **considerably higher energy efficiency** (i.e. a higher overall efficiency) than the conventional production of heat (i.e. in a boiler on site and the separate production of electricity in a central power plant).

With its compact design and smaller footprint, the **decentralised location** of a thermal power station offers greater flexibility and economic advantages.

Natural gas is the preferred source of energy. However, bio-gas, LPG, diesel, various oils, or bi-fuel operation are also possible. Because of this **high degree flexibility with respect to raw materials**, the customer no longer has to rely on wind, solar, and electricity suppliers.

The equipment, including exhaust after-treatment technology burn the fuel used so cleanly that **the legal limits or exhaust emissions are considerably undershot**. In some areas, the measurement results are even below the irrelevance limit. The US EPA Tier 4 PM limit values and the TA air limits are undershot by a considerable degree. As a result, one does not speak of "green" but rather "white" energy.

The overall efficiency of the units, **which is up to approx. 90% is also high**. These results have been achieved through extensive changes to the engine and the engine control.

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## Further Advantages

- └ Modules in different performance classes: 50–10 MW
- └ Combination of up to 256 modules possible
- └ Use as a control power plant possible
- └ Fuels: Diesel, vegetable oils, bi-fuel, and up to 80% gas (bio-gas, natural gas, LPG) can be injected
- └ Low noise emission: 49.5 dB

Permanent availability, marked reliability, and controllability allow for extremely versatile and flexible applications. Durable components, low maintenance costs, and long maintenance intervals result in low operating and follow-up costs.

Because of this innovative technology and continuous research, we are a recognised partner for sustainable energy infrastructure solutions and contribute to developing methods for the performance-enhancing combustion of fuels for current and future generations.



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## What we do

Our services include

- └ Individual consultation
- └ Detailed inventory and demand forecast
- └ Individual survey
- └ Project management
- └ System planning and optimisation
- └ Permit applications
- └ Evaluation of economic efficiency
- └ Turnkey delivery and installation of the entire system
- └ Full-service maintenance agreement



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## Facts

- └ Our thermal power stations produce highly efficient, large amounts of electricity and heat.
- └ Possible fuels are natural gas, bio-gas, bi-fuel, LPG and various oils.
- └ Remote sites are its application areas.
- └ Own and economical energy production
- └ Very low operating costs due to extremely high efficiency
- └ Less required space due to very compact design (approx. 20-40 m<sup>2</sup>)
- └ Very low maintenance costs and maintenance effort due to a clever arrangement of components
- └ The thermal power station produces permanent electricity and thermal energy.
- └ Established, baseload capable container system
- └ Independent of wind, sun or electricity suppliers
- └ Low environmental impact thanks to patented, highly efficient exhaust cleaning system
- └ Permanent availability and controllability, therefore very versatile applications

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## Settings

A thermal power station is a modular system which simultaneously produces heat and electricity directly at the place of energy consumption. The combustion engine drives a generator to produce electricity. The rejected heat is then used by the thermal power station for heating and hot water. So, a thermal power station thus becomes a „power-generating heating“.



Conclusion: The co-generation of electricity and heat implicates a very high overall efficiency.

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## Compared Investment Costs with Photo-Voltaic and Wind

	Thermal Power Station	Photo-Voltaic	Wind Energy
Base load capability	Yes	No	No
Decentralised	Yes	Conditioned	Conditioned
MW / ha	Approx. 200 MW	Approx. 0,5 MW	Approx. 2,5 MW
Availability of full load hours	Approx. 8.000 hours / year	Approx. 1.000 hours / year	Approx. 2.000 hours / year
Investment	Approx. € 1.000 / kW	Approx. € 1.200 / kW	Approx. € 2.000 / kW
Investment/kWh for 10 years	1.000/ (8.000x10) = € 0,0125/KWh	1.200/ (1.000x10) = € 0,12/KWh	2.000/ (2.000x10) = € 0,10/KWh

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### **First biogenic, CO<sub>2</sub>-neutral, baseload-capable thermal power station in the world!**

With a total of 30 baseload-capable marine diesel engines housed in containers, 12 MW of electric energy and 12 MW of thermal energy are produced at a central location in Neuss Harbour. The energy generated by the visionary thermal heating station park is used to supply 25,000 households and a heating terminal for tank containers with electricity and heat.



### **Solar Park**

Under the leadership of Bernd Mayer, several open-air photovoltaic projects in the megawatt range have been planned and implemented since 2009. Bernd Mayer has acquired extensive and in-depth technical expertise in the field of renewable and alternative energy generation plants.

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### Indonesia project

Indonesia consists of over 17,000 islands of which are inhabited more than 6,000 individuals. On some of these islands, 300 thermal power stations have been installed. These are powered by renewable raw materials from domestic cultivation. In small infrastructure projects, the energy produced by the stations is provided to the population via area networks.



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