



Environment

Environment

Climate change is one of the biggest challenges facing our society today. Industry, science, politics and society as a whole has to rise to this challenge by eliminating the increase in greenhouse gas emissions and using available resources more efficiently.

Responsibility for future generations

Preserving our environment for future generations is a key responsibility of the current generation. Sustainable protection of the earth, water and atmosphere plays a central role. AGO AG Energie + Anlagen is taking specific steps and making decisions to harmonize ecology with economics.

Our master strategy guarantees sustainable, economical and environmentally friendly energy production. This is why promoting and developing new energy sources is very important to AGO AG Energie + Anlagen.

In the 1997 Kyoto Protocol, signatories agreed to reduce greenhouse gas emissions by 5.2% compared to 1990 levels between 2008 and 2012. Since that time, industrialized nations had to amend their environmental policies in order to achieve the agreed emission targets – for example by promoting the use of environmentally friendly technologies.

Germany has committed to a reduction of 21% in greenhouse gas emissions compared to 1990 levels by the year 2012. In order to achieve this goal, the federal government and representatives of the German economy signed a supplementary agreement on the reduction of carbon dioxide emissions in 2001. The German economy has committed to reduce greenhouse gas emissions by a total of 45 million tons of carbon dioxide annually by the year 2010.

From the point of view of AGO AG Energie + Anlagen, the EU created an economic tool to help achieve the politically defined reduction targets with the introduction of emission certificate trading.

AGO AG Energie + Anlagen supports the objectives established by the Kyoto Accord and considers climate protection a global task that requires additional action. Human influence on the greenhouse effect is considered one of the main reasons for global climate change.

This is why a reduction of carbon dioxide emissions has long been an important objective of AGO AG Energie + Anlagen. We intend to continue meeting this challenge in the future by strengthening our commitment to environmental and climate protection even further.

Improving energy efficiency

Due to increasing air and environmental pollution, energy efficiency and climate protection are gaining more and more importance. Even today, the conservation and efficient use of natural resources presents a significant challenge. Major reductions in the consumption of resources can be achieved when it comes to energy production from energy sources. AGO AG Energie + Anlagen is constantly striving to improve plant efficiency and fuel utilization.

Company objective: Environmental protection

AGO AG Energie + Anlagen intends to meet its responsibilities to the environment and future generations with transparency and innovative solutions. Through efficient and reliable environmental management, we are able to examine the sustained environmental impact of any economic decision at an early stage. The sustainable use of resources is just as important to us as the efficient operation of our plants in the value creation chain. Our comprehensive environmental performance and the regular verification and evaluation of measures allow us to set the standards in the markets in which we operate while driving innovation. In conjunction with politicians, we help implement national laws and guidelines while providing a secure supply of energy. We cooperate with officials, the general public and other companies in a relationship based on openness and trust.

Environmental guidelines

AGO AG Energie + Anlagen deals with a variety of environmental issues. The management of greenhouse gas emissions, air quality, land use, soil protection, waste management and energy efficiency are considered key issues. Energy – especially in the form of electricity – is the basis of modern society and our quality of life. All AGO plants are highly efficient and operated responsibly.

This is why all entrepreneurial decisions are based on the following principles:

- Openness, effectiveness, and reliability
- Qualitative management
- Deployment of modern, efficient, environmentally friendly technologies
- Structured, systematic balance between ecology and economics
- Investments in research and development to improve energy efficiency
- Reduction of carbon dioxide emissions from energy generating plants
- Evaluation of the environmental performance of our suppliers, subcontractors and business partners

The environmental efforts of AGO AG Energie + Anlagen help to promote healthy Company development. They also improve our competitive position in accordance with applicable laws, regulations and approvals. We intend to continue taking a leadership role through continuity and innovation. We strive for sustainable economic, social and ecological development without losing sight of our mission to protect the environment and prevent pollution within our field of activity.

AGO AG Energie + Anlagen also consistently promotes sustainability, the efficient use of resources and environmental awareness within the Company. With the initiative to become CO2 neutral, AGO AG Energie + Anlagen has set a goal to compensate for Company carbon dioxide emissions in 2007.

In the course of this project, the total annual carbon dioxide emissions caused by electricity and natural gas consumption as well as fuel for Company vehicles was determined. Emissions due to train and airline travel were also included. A total of 527.7 tons of CO2 was calculated for 2007.

2007 energy consumption and CO2 emissions

	Total consumption 2007	CO2 emissions in tons
Electricity ¹⁾ (KWh)	119,722	36.4
Natural gas ²⁾ (KWh)	214,629	50.2
Fuel ³⁾ (litres)	159,923	423.8
Train travel ⁴⁾ (km)	3,000	1.7
Airline Travel ⁵⁾ (km)	4,700	3.6
TOTAL		527.7

- 1) Factor to convert kWh of electricity into tons of CO2: 0.000304 according to the energy supplier
2) Factor to convert kWh of natural gas into tons of CO2 : 0.000233
3) Factor to estimate CO2 emissions from fuels: 1 litre of diesel = 2.65 kg CO2
4) According to calculations by the Federal Environmental Agency
5) According to "Atmosfair" calculations ; <https://www.atmosfair.de/index.php?id=5>

Neutrality is achieved by our thermal plant in Kölldeda. The amount of carbon dioxide emitted by the Company in 2007 is offset by the use of 909.28 t of wood chips as a natural gas equivalent.

AGO AG Energie + Anlagen is also striving to reduce its total emissions. It was noted that the vehicle fleet contributes over 80% of all emissions. As a result, investigations were conducted to determine possible fuel savings which would reduce CO₂ emissions. The use of a bonus program evaluated by voluntary monitoring will create an incentive to reduce driving. Ultimately, this will result in an active contribution towards helping the environment.

The biomass environmental concept

Biomass refers to all organic substances – plant and animal matter – that can be used to produce energy. Two categories have been defined: Renewable resources and organic waste. In Germany, biomass that can be used to produce energy is generated by the forest industry, wood processing, agriculture and factory farming. Examples of renewable biomass energy sources include firewood, wood chips and bioethanol. Energy generation only releases the same amount of CO₂ previously absorbed by the biomass.

Advantages from the use of biomass as fuel:

- Virtually self-contained CO₂ cycle
- Reduced sulphur dioxide and hydrocarbon emissions
- Safe storage and transportation (no oil spills and gas leaks)
- Short transportation routes
- Energy consumption awareness

Energy generation plants that blend into the landscape

Our landscape is usually defined by the generation and distribution of electricity, heat and refrigeration. AGO AG Energie + Anlagen strives to design the required processes harmoniously. The location and size of energy generation plants is one of the key design aspects. The Alperstedt biomass cogeneration plant in the Erfurt lake district is a prime example. The biomass cogeneration plant supplies one of the largest greenhouse installations in Germany (20 hectares) with heat and electricity. In order to focus on its core business, the greenhouse operator decided to cease independent heat production.

Since the end of 2006, this has been the responsibility of a project company founded for this purpose which counts AGO AG Energie + Anlagen among its shareholders. AGO AG Energie + Anlagen considered the landscape of the Erfurt lake district during its circumspect planning and architecture design process.

Two self-contained boiler rooms, each of which had three hot water boilers and heat output of 25 MW, used to supply heat to the two greenhouses. Continuously rising fuel prices led to the search for new energy supply concepts. In order to remain competitive, the switch to wood chips as a fuel was inevitable.

Information on the Alperstedt biomass cogeneration plant:	Heat output:	63,000 MWh/a
	Electricity output:	13,300 MWh /a
	Implementation period:	March 2006 - December 2006
	Planning:	AGO AG Energie + Anlagen



Aerial photo of the Alperstedt biomass cogeneration plant

AGO AG Energie + Anlagen was awarded the 2007 innovation prize for small to medium-sized enterprises in mid-2007. The Company was honored for the groundbreaking implementation of the Alperstedt generation plant in a record time of twelve months from the first draft to commissioning with an output of 19 MWth and 1.7 MWe. Measured according to its annual energy output, the Alperstedt biomass cogeneration plant is among the largest ORC biomass cogeneration plants in Europe.

Raw material for the Alperstedt biomass cogeneration plant is supplied under an agency agreement with HolSoTherm GmbH. This ensures access to a long-standing supplier network with optimized procurement costs. Annual demand for wood chips is around 38,000 tons. Wood chips consist of 100% pure wood that burns CO₂ neutral in terms of the German Greenhouse Gas Emissions Trading Act (TEHG). The fuel value is approximately 4.0 kWh per kg (depending on the type of wood, at approximately 20% water content). The density is 2.5 kN/m³.



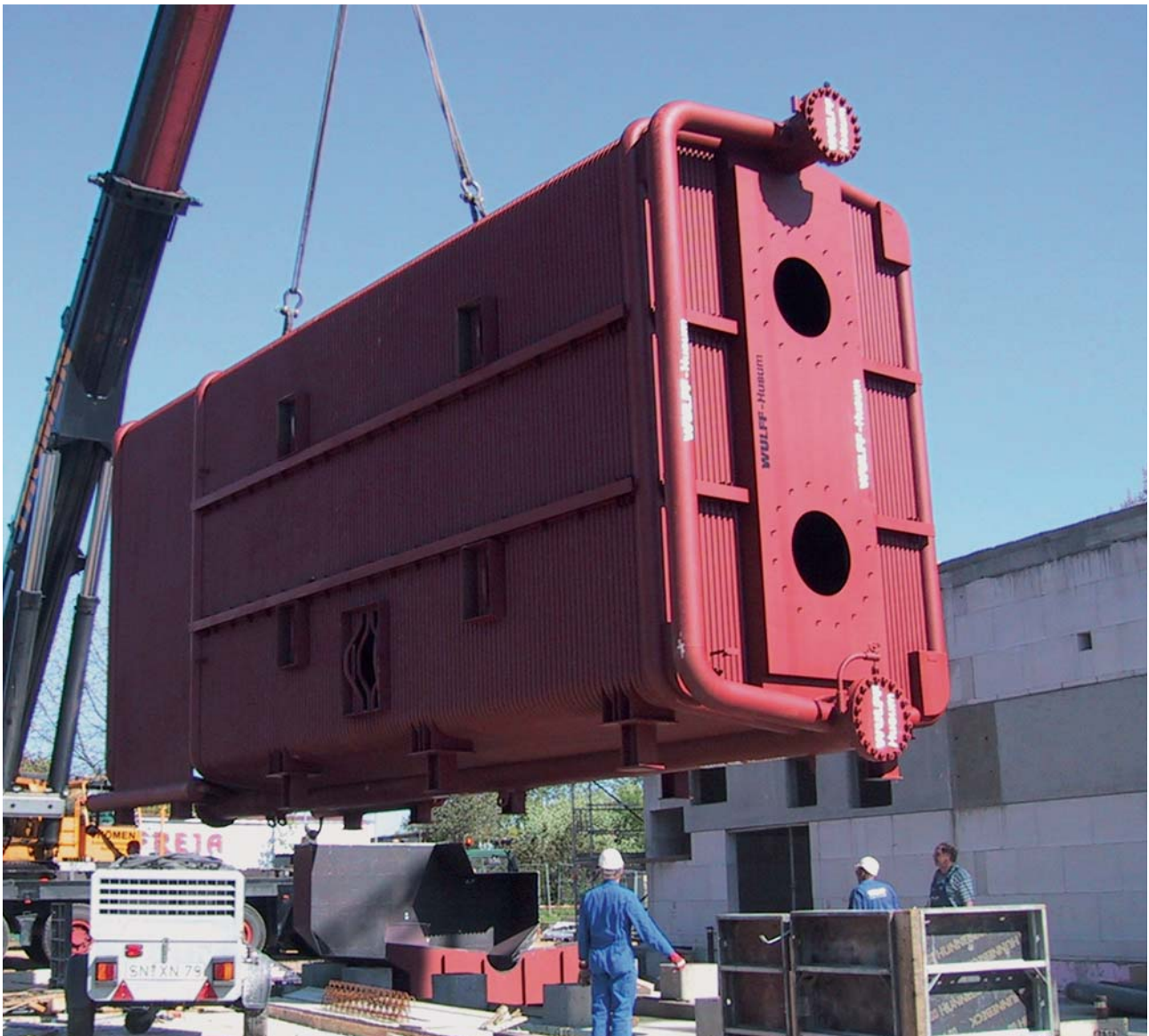
Wood chips

High level of transparency through precise evaluation

Our goal is to continuously improve the safety of AGO plants. Safety and environmental experts inspect all our facilities on a regular basis. We verify the implementation of our high standards with the help of an inspection catalogue. Based on these activities, we prepare a comprehensive operating profile to derive the need for additional measures.

Safety

Company responsibilities include safe transportation and the reliability of our facilities. This is why safety is extremely important to AGO AG Energie + Anlagen. We intend to prevent breakdowns and accidents, since they could endanger the health of our employees and neighbors in addition to causing environmental damage and disrupting production. All safety, health and environmental protection aspects have to be considered from the design to commissioning of power generation plants. In order to pursue consistent safety standards, we place great emphasis on the training and continuing education of our safety experts. We continuously examine and evaluate our internal performance based on an approved process. Cooperation with external logistics service providers is also geared towards safety. This is why we used recognized evaluation systems to evaluate the performance of our shippers.



Installation of an energy center with supervisory staff