



# Energy for the Future

Engineering & Consulting from Energy Technologies



# Always a step ahead

We – being part of Energy Technologies – simply love challenges. Therefore, we continuously ask ourselves what the energy supply of the future might be like and which power plant technology and services will become necessary.

**There are many interesting approaches – Frank Schätzing (a popular German author) for example describes a run on resources on the moon in his novel „Limit“. Exploitation of the isotope helium-3 as described in this novel would ensure thousands of years of energy safety. Dreams of the future, fiction or films running in your head?**

Certainly – but for our engineers and energy experts this is an inspirational scene at the same time. Until we get there, we will master the energy turnaround in Germany. Here, we are pioneers in sustainable and future-oriented energy supply. At the same time, we help satisfy the worldwide growing energy demand. In doing so, we use our know-how effici-

**Engineering:**

Planning, monitoring, commissioning

**Owner's Consulting:**

Managing, controlling, optimizing

**Power Business Consulting:**

Evaluating, consulting, projecting

ently, environmentally friendly and considering local circumstances - we call this „engineering made in Germany“.

In the company's beginnings about 75 years ago, our conventional, coal fueled power plant technology set the standard. Today, more than one third of our engineers work in projects based on renewable energies. Whether it's solar energy, wind power, hydro, geothermal or regrowing biomass: we want to transform these energies as efficiently and sustainably usable for the people.

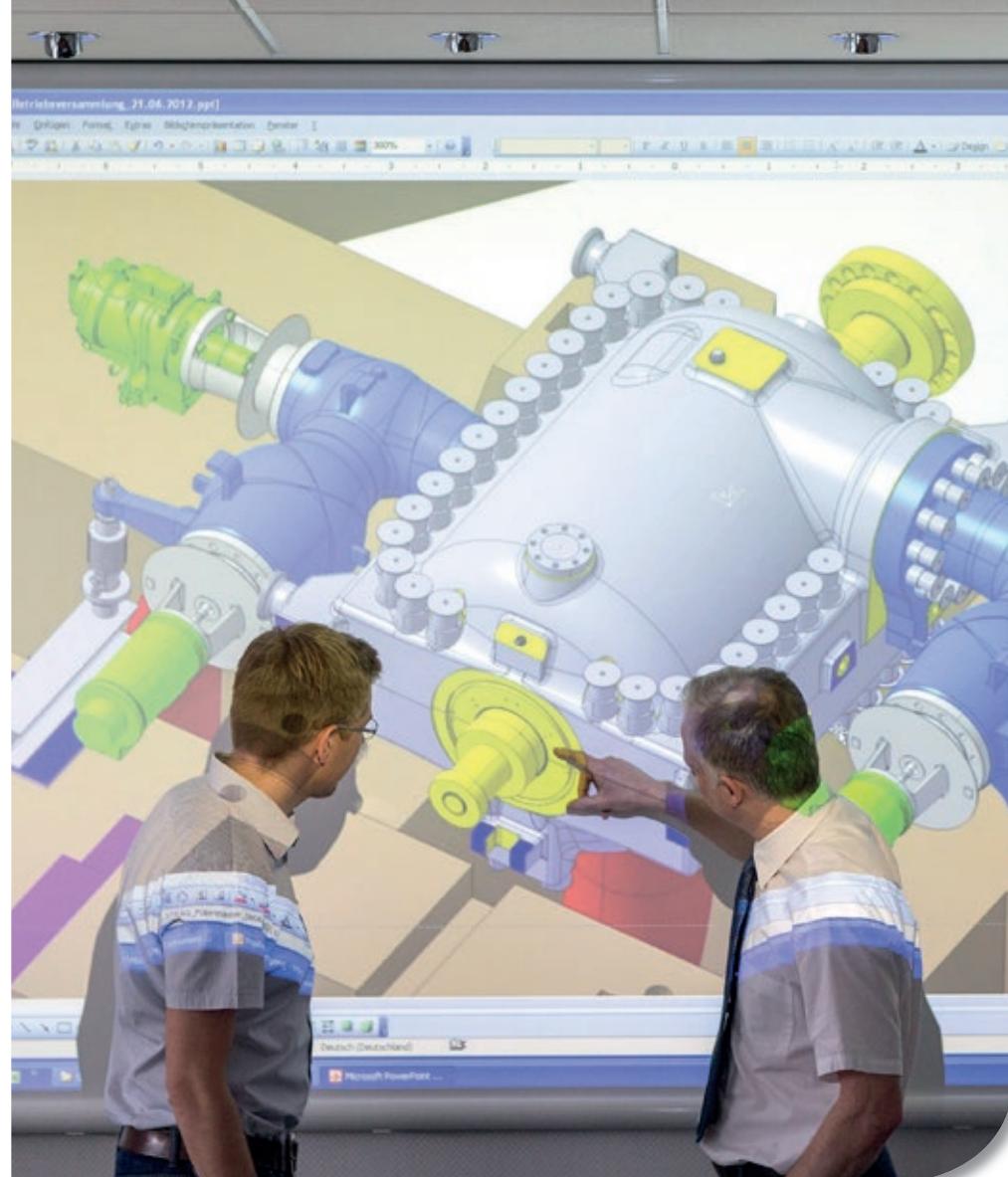
Overall, we moved more than 100,000 MW energy in more than 50 countries, tendency increasing.

In our areas of Engineering, Owner's Consulting and Power Business Consulting, nearly 120 highly qualified employees with operation experience and entrepreneurial thinking provide a complete service-kit worldwide, which provides individual solutions for all our customers. Both on the large and the small scale.

We make visions become innovations, concrete projects and real facilities. We are the leader in technology in a lot of areas and contribute crucially with our know-how for ensuring the energy supply of tomorrow. For keeping it that way, we already think of tomorrow today. Always one step ahead.



# Engineering: Planning, monitoring, commissioning...



We are specialists for planning and realizing power plants and energy-technological facilities of all kind. Our know-how results from the experience we've gained with our own power plants in decades.

The interdisciplinary approach of our engineers and industrial architects ensures a customized facility for our customers, which is accurately adjusted to economical, technical and architectural circumstances - regardless of whether a conventional solution, a solution based on renewable energies or a systemic solution is needed. Our proven national and international experience allows us to

provide holistic solutions in project development. Beginning with surveys through conceptual design and organizing construction sites to plant commissioning, we take care of the complete project realization. This way, our customers not only receive intelligent technical solutions, but we also ensure an optimization of costs and schedules.



# Owner's Consulting: Managing, controlling,

The operation of power plants and other energy-intensive industry facilities is complex and requires a lot of experience and know-how. We have both. Our experts have a lot of services in their portfolio which are applicable to different scenarios and optimize costs and processes. This way, we create benefits for our customers in the global competition.

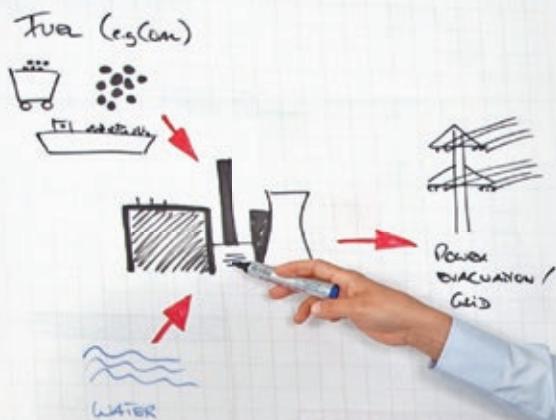


# optimizing

At power plants and related energy-intensive industries increasing efficiency correlates directly with profitability. From unimpeded and ideal processes in all areas results the best efficiency. Therefore, we provide a broad portfolio of specialized services and practically proven expert-knowledge to our customers.

Our experts coordinate project processes and take care of commercial and technical control of our own and external power plants. We monitor and analyse the operation of plants, organize urgent measures for trouble-shooting in case of malfunctions and damages and manage weak point analysis (WPA) and inspections for increasing quality.

### Site Factors for Thermal Power Plants



# Power Business Consulting: Evaluating, consulting, projecting

Strategy-planning, consulting in buying or selling power plants, as well as developing projects are complex processes and require technical and economic expertise. From the decades of experience at our own company, we perfectly know the divers needs of our partners.

Customers who value our experience and know-how in technology and economics are operators, buyers and seller of plants, as well as banks and financial institutions (Due Diligence).

We developed processes and qualified measures for these customers to estimate projects, power plants and assets, as well as power and heat markets ideally. Depending on the given requirements, we go into the tiniest detail.

Another business area is the creation of concepts, reports and case studies, which we supervise into the project development phase. We also consult plant operators in optimizing and increasing the flexibility of the technology used, in optimizing maintenance, as well as creating efficient and sustainable strategies for innovation.

# Energy? No problem!

Solar



Biomass



Re-newable Energies

Natural gas



Wind



Fossil Fuels

Coal



Refinery residuals



## Hybrid plants



The benefits of our services have been proven by our worldwide acting engineers in a lot of reference projects. Therefore, we are not just consulted when it comes to the technology of power plants. Our services in the areas of Engineering, Owner's Consulting and Power Business Consulting can be adapted so flexibly that diverse customer requirements in different sectors can be met.

Here, our diversity serves as schedule and unique characteristic. Apart from planning and realizing power plants for fossil fuels , biomass and residues from industrial production, we also optimize existing plants regarding their reduction of emissions or increasing efficiency. We are qualified counterparts for the waste management industry, provide technical processes for water and waste water treatment and develop solar thermal power plants, wind farms and biomass power plants in the area of

renewable energies. Our specialists and their knowledge are in demand in the area of modern electrical grids, as well as at the systemic cutover of a whole island to the sole supply through renewable energies with appropriate storage system solutions.

In many areas, we are experts in current technologies and we continuously look for new, more efficient concepts for resource-saving, sustainable energy-supply for the people on our planet.

# We have not yet been to the moon...



...but we can be found anywhere else when it comes to energy. Our employees – engineers, industrial architects and consultants – and their self-developed engineering- and overall-services make us attractive worldwide. Our reference projects prove the diversity and flexibility of our work. Our exhibition shows: We are a one-stop shop.

## **Walsum 10**

In December 2013 one of the most modern hard coal-fired power stations with an output of 790 MW went into operation. Beginning at the very first concepts through all challenges to realisation and optimization, engineers of Energy Technologies have been essentially involved. Modern, highly efficient coal-based power generation with the highest environmental standards - that is what we stand for.



### Exploitation of biomass

As a disposable energy source with diverse fields of application biomass provides outstanding opportunities in the area of renewable energies. Therefore, we are concerned with all opportunities from torrefaction in Namibia through mono-combustion in the UK or Brazil to co-combustion on the Philippines.

### CSP plant Arenales

At the solar thermal plant in Arenales, Spain, STEAG GmbH is partner with 25 percent, and STEAG Energy Services is charged with the plant operation. Engineers of Energy Technologies contributed with their know-how in all phases of this project – including due diligence at the acquisition of this share as well as technical experts during construction and operation of this plant.



## Electric grids and networks

One cannot imagine our modern world without the highly available and secure supply with electricity. This holds true for industrial areas with highly sensible production facilities, for distribution grids in public supply with a lot of feeders from renewable

energies and even for the independent supply of islands with renewable energy sources up to 100 percent. This is where we can provide our expertise from calculation through dimensioning up to projecting of electric grids.

## Steam- and gas-turbine plant in Parnáiba, Brazil

In cooperation with Eneva S.A. STEAG Energy Service plans and realizes, with German and Brazilian engineers, a steam- and gas-turbine power plant in Parnáiba with a total power of approx. 3.700 MWel.



### Wind farm Crucea North, Romania

Here, our specialists take care of the project management, planning, negotiation of contracts, construction management, commissioning and handover of the plant for commercial operation.

Within this project, we provide typical services of an Owner's Engineer. We develop the technical specification of terms, take care of the technical analysis and compare proposals. Furthermore, we are in charge of the technical negotiation rounds as well as

the complete planning of grid-connection and construction technologies and infrastructure. During the development phase, the organization of the construction site including the construction management and commissioning are our responsibilities.

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