Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

Ministry of Transport, Energy and Spatial Planning Nordrhein-Westfalen

NRW.

Programme

of the

Side Event

Climate Friendly and Efficient Power Plant Technologies from Germany and North Rhine Westphalia for the World

Thursday, 19 May 2005 from 18.00 - 20.00 h

followed by a

Reception

organised by the
German Ministry for the Environment, Nature Conservation and Nuclear Safety
and the
Ministry for Traffic, Energy and Spatial Planning of North Rhine Westphalia

The Programme:

- **The Energy Policy of the State of North Rhine Westphalia**
  Jörg Hennerkes, North Rhine Westphalia State Secretary
- **Combined Cycle Power Plants (CCPP)**
  Markus Brügmann, Director of Sales CCPP, Babcock-Hitachi Europe GmbH
- **Biomass Power Plants**
  Harald Dichtl, Director Business Development for Power Plants, Siemens Power Generation
- **The Concept Study for a "Reference Power Plant"**
  Dr. Klaus-Dieter Tigges, Head of Engineering for Utility Steam Generators, Babcock-Hitachi Europe GmbH
- **Efficient Power Generation by Fossil-Fired Power Plants - New Projects and Developments**
  Dr. Reinhold Elsen, Head of Power Plant Planning & Realisation, RWE Power AG

Where: Room Metro, Ministry of Traffic, Construction and Housing (*Bundesministerium für Verkehr, Bau- und Wohnungswesen*), Robert-Schuman-Platz 1, 53175 Bonn, Germany.

For further information please contact:
Matthias Ruchser - Energetic Consulting
Tel. 0049-(0)177-8031965
E-Mail: info@en-consulting.com

- **The Energy Policy of the State of North Rhine Westphalia**
  Jörg Hennerkes, North Rhine Westphalia State Secretary

Summary

Nordrhein-Westfalen (NRW) is the most important energy region in Europe and the centre of the energy economy in Germany. NRW generates around 30 % of the electrical power and consumes around 40% of the energy needed in industry. Eighteen million people live in Nordrhein-Westfalen and a quarter of those involved in the German energy economy work in NRW.

There are companies in NRW which are particularly able to make a contribution to efficient use of energy and use of renewable energy sources using new technologies. Not only solar technology, energetic use of biomass, geothermal, hydroelectric power and wind energy, but also efficient energy conversion in modern power plants with high efficiency ratings are central topics of discussion in NRW. Fuel cell and hydrogen technologies are also becoming increasingly important.

Over the next few years, the power plant stock in Nordrhein-Westfalen, Germany and the whole world will be extensively modernised. This will trigger a major technology boost, which will decisively modernise the power plant stock in NRW and at the same time provide great opportunities for the export of modern power plant engineering and plant engineering in general.

In view of the extremely high requirement for replacement and additional power plants on the European and world markets, the new technologies will open up exceptional opportunities for export business. In addition to innovative power plant technologies in the area of fossil fuels this also applies to the use of renewable energy sources. We can take our engineering expertise out to the world in the form of products and services. Marketing and export of environmental technologies as well as the use of CDM and JI projects within the framework of the Kyoto Protocol offer many opportunities.

- **Combined Cycle Power Plants (CCPP)**
  Markus Brügmann, Director of Sales CCPP, Babcock-Hitachi Europe GmbH

CURRICULUM VITAE

Name : Markus Bruegmann

Job Experience :

From 03/04	Head of International Sales Combined Cycle for Babcock-Hitachi Europe GmbH
10/02 - 02/04	Sales Director in the field "DCS technology" for Emerson Process Management GmbH
10/00 - 09/02	Head of sales and marketing in the field "Process automation technology and electrical engineering" for Babcock Prozessautomation GmbH
02/00 – 10/00	Head of sales and marketing for the division "Renewable Energies" for Babcock Prozessautomation GmbH
11/97 – 01/00	Sales representative in the field "Process automation technology and electrical" for Babcock Prozessautomation GmbH
11/95 – 10/97	Project manager for flue gas and emission monitoring systems in power plants "Flue Gas and Emission monitoring" Babcock Prozessautomation GmbH

Country Experience:

Libya, The Netherlands, Hungary, Austria, Russia, Poland, China, Iraq, Italy, Spain, Middle East, Malaysia, Thailand

- **Biomass Power Plants**
  Harald Dichtl, Director Business Development for Power Plants,
  Siemens Power Generation

Author Name:	Harald Dichtl
Job Title:	Director, Business Development
Company:	Siemens AG, Power Generation I5 BD
Address:	Freyeslebenstr. 1
City, Country, Postal Code:	Erlangen, 91058
Tel:	+ 49 9131 187196
Fax:	+ 49 9131 182758
E-mail:	herald.dichtl@siemens.com

Mr Harald Dichtl is Head of the Business Development Department within the PG Industrial Power Plant Business Area.

After his degree in mechanical engineering he gained his professional experiences in international organisations such as more than 10 years at ABB Power Generation and Siemens Power Generation.

The Concept Study for a "Reference Power Plant"

Dr. Klaus-Dieter Tigges, Head of Engineering for Utility Steam Generators, Babcock-Hitachi Europe GmbH

Summary

The concept of the "Reference Power Plant North Rhine-Westphalia" (RPP NRW) is based on a hard coal-fired 600 MW plant with optimised plant technology and efficiency of 45.9%. Efficiency of over 48% could also be achieved with certain technical measures. However, that would require different site conditions and also different economic boundary conditions than can currently be assumed. With efficiency of 45.9%, the NRW reference power plant is clearly above the average of hard coal power plants currently in operation in Germany (average efficiency around 38%). Thus, its use can make a considerable contribution to attaining targets for the reduction of CO_2.

Looking at the price development scenarios for hard coal and natural gas, which were used as a basis in the study, the RPP NRW has an economic advantage compared to modern combined cycle plants. However, apart from price risks, considerable uncertainties also exist in respect of energy and environmental policies pertaining to CO_2 reduction. Already with low CO_2 induced pollution the RPP NRW is no longer competitive when compared to a gas-fired combined cycle plant. This would diminish the chances that this hard coal power plant would be built. As a result, there would be no opportunity to benefit from further substantial development potentials by using optimised materials, components and process management, which are unquestionable ecologically reasonable.

The building of RPP NRW will involve a total order volume of around € 480 million. This order volume will safeguard the employment of a total of 6,160 persons (employment effect 6,160 persons = 6,160 man-years). This boost to employment will be spread over three years and will achieve the greatest effect in the second year with 2,465 persons. About 3,600 persons will be required directly for the construction of the power plant. The remaining 2,560 persons of this total number will work for suppliers who are not required to be on site but who are influenced by the selection of the site. Policies linked to the employment market are particularly important when viewed within the context that over the next two decades it will be necessary to replace ageing power plants in Germany with a total output of around 40,000 MW.

The study has shown that technically, economically and ecologically optimised power plant technologies based on hard coal provide good opportunities. If it is intended that power will still be generated from coal in Germany in the future, it is important to establish an energy policy framework that allows this potential to be used. Provided, the above mentioned uncertainties are sorted out, the companies can make decisions concerning the construction of new power plants for their respective power plant parks, based on the resultant economic criteria and trends in market prices. The concept study for the NRW reference power plant provides an important basis for such decisions. It describes plant technology that can be implemented in the short- to medium-term.

The extensive study has been produced by the plant constructors Babcock Hitachi Europe and Siemens AG. The plant operators E.ON Kraftwerke, Mark-E, RWE Power and STEAG provided the design boundary conditions. In addition, the Chair for Energy Economics at the University of Duisburg-Essen, the Wuppertal Institute for Climate, Environment, Energy and the Rhinish-Westphalian Institute for Economic Research have investigated aspects relating to the economy, ecology and structural policy. Project co-ordination between the manufacturers, plant operators and institutes was organized by VBG PowerTech, the European association for power generation, which has its head-quarters in Essen.

- **Efficient Power Generation by Fossil-Fired Power Plants - New Projects and Developments**

Dr. Reinhold Elsen, Head of Power Plant Planning & Realisation, RWE Power AG

Abstract

In Germany and Europe, a considerable demand is emerging for new power plants in order to replace old stations and to cover the increasing demand. Consequently, RWE Power as one of Europe's leading electricity generating companies has set up a power plant renewal program. Its goal is to secure the competitiveness of its power generation over the long term by using state-of-the-art and new technologies maintaining a broad primary energy mix.

This paper introduces the developments targeting a further efficiency improvement of the steam power plant and CCGT processes. Furthermore, selected current power plant projects for the RWE Power fleet are presented. These new units are applying today's state of the art in power plant engineering and can substantially increase the efficiency of the existing power plant fleet. Finally, current research projects with RWE Power participation are outlined.

Speaker's vita

Dr. Elsen is the Head of Power Plant Planning and Realisation Department within RWE Power AG with responsibility for implementation of foreign and domestic power plant projects. He is also Chairman of the Thermal Working Group within the Energy Policy & Generation Committee of Eurelectric, Union of the Electricity Industry, Brussels.