

## Brief overview

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<sub>2</sub>.

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<sub>2</sub> reduction. Already with low CO<sub>2</sub> induced financial strains 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 the RPP NRW will involve a total order volume of around € 480 million. This 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 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 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 of Energy Economics at the University of Duisburg-Essen, the Wuppertal Institute for Climate, Environment, Energy and the Rhenish-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 institute was organized by VGB PowerTech, the European association for new generation, which has its headquarter in Essen.