ENGINEERING & CONSULTING SERVICES
DRIVEN BY RWE’S OPERATIONAL AND
NEW BUILD EXPERIENCE
is RWE’s engineering consulting company. Our highly specialised expertise and outstanding performance stem from our employees’ experience as part of one of the world’s largest energy and mining groups.

- offers external clients tried and trusted procedures and innovative solutions that have proven to be effective within RWE for widely diversified projects employing the latest construction methods. As an owner and operator, we are independent of suppliers and equipment manufacturers.

- represents the skill set of the RWE Group.

- RE GmbH, formerly RHEINBRAUN ENGINEERING, was founded in 1965.

Our services
- Our services cover all aspects of the power generation business. This includes everything from feasibility through to planning, construction as well as commissioning, operation, maintenance and – if needed – decommissioning.

- Our in-depth knowledge of mining incorporates diverse types of ore and coal, and ranges from feasibility and mine development to operation, maintenance and recultivation.

- With over 50 years of experience in large-scale mining projects, we are in the ideal position to provide unrivalled support to our clients for the construction and optimisation of conveyor systems.

Our team
- RWE Power International’s success is built on the capabilities of our talented specialists in a variety of disciplines: project managers, quality managers, engineers, procurement and claim experts, designers, planners, geologists, environmental scientists and economists. Numerous other specialists from associated disciplines contribute to our team’s strength.

- Our clients around the world benefit from our independent engineering expertise. Our experts have many years of invaluable practical insights acquired through the operation of our own power plant and mining sites.
RWE operates
• the most diversified generation mix in Europe: lignite, hard coal, biomass, gas, hydro and nuclear.
• one of Europe’s largest and most efficient gas fired power plants (CCGT): Pembroke Power Station produces over 2,000 MW at 58% efficiency.
• the world’s most efficient super critical lignite fired power plants: BoA 2&3. Each unit has a capacity of 1,100 MW and 42% efficiency rating.
• the first industrial size continuous lignite drying plant: fluidised-bed drying with internal waste heat utilisation, wet coal ~210 t/h, dry coal ~110 t/h.
• the most modern hard coal power plant which can be partially fuelled by biomass: Eemshaven Power Station will produce 1,600 MW at 46% efficiency.

By 2014 RWE will have renewed 25% of its generation fleet.
Achieve sustainable improvement in plant performance with the support of RWE Power International's cutting-edge services.

Project Development and Management
- From preliminary study to investment decision
  - Site evaluation
  - Estimation of capital expenditure (Capex)
  - Concept, pre-feasibility and feasibility studies
  - Project scheduling and cost estimations
  - Technical due diligence
  - Support of studies for licensing and permits
  - Development of contract/procurement strategy
  - Supplier evaluations
  - Project planning, controlling and monitoring

Engineering Support
- Technical contract management
- Design management
- Technical specifications and definition of requirements
- Review of basic/detailed engineering
- Interface management for technical lots
- Technical consultancy in specialist areas
- Plant operation optimisation and operational support
- Retrofit and lifetime extensions

Health and Safety, Quality, Environment
- Project and technical services:
  - Expediting and on-site surveillance
  - Quality control and inspections
  - Expert witness, materials testing and damage analysis
  - Consulting on materials and technical components
- Management system services:
  - Quality management system development
  - Environmental management system development
  - Supplier quality evaluation and auditing
- Documentation services:
  - Document management
  - Technical data management

Nuclear Industry
- Technical analysis of nuclear new build projects
- Operational safety assessment of Nuclear Power Plants (NPP’s)
- Efficiency enhancement of NPP’s
- Maintenance measures and outage performance management
- Transfer of management know-how and safety culture
- Training tailored to local requirements

Maintenance Services and Ash Products
- TSG Ferrybridge
  - Maintenance, overhaul and modification
  - Outage management
  - Support for plant refurbishment, repair and upgrade
  - Inspections
  - Manufacturing of spare parts
- Steam and gas turbine specialist services
- Generation Aggregates
  - Provision of cost effective, readily available ash products for construction and engineering applications
  - Monitoring of ash quality in accordance with the Quality Protocol to ensure its suitability
  - Advice on the standards relevant to the use of ash
  - Provision of technical data to enable you to assess the suitability of ash in your particular application
  - Advice on best practices for use in your application

EXPERIENCED. FOCUSED. FLEXIBLE.
POWER GENERATION PROJECT EXPERIENCE

RWE Power International possesses worldwide experience in the modernisation and replanting of all types of power stations.

We make use of our in-depth knowledge to secure the long-term value of our clients’ assets. Our engineers help our clients to extend the life of their power plants and make lasting improvements to plant performance.

Numerous power plants around the world serve as examples of how successful we are at modernising and refurbishing existing plants. For example, in Hungary and South Africa, we succeeded in increasing the output of several power plants whilst also significantly extending their operational life and ensuring full compliance with environmental requirements.

In south eastern Europe, we supported several boiler system modernisation projects. In the first stage of these projects, we provided the technical specifications with particular focus on increasing efficiency and reducing NOx emissions. Subsequently we assisted with the evaluation of bids for tender. During the refurbishment stage we advised the owner regarding the ongoing works on-site and in technical discussions with suppliers.
With experience in a variety of modernisation measures and safety upgrades, our engineers can be relied on for professional consulting and proven project management for nuclear power plants.

For more than ten years, our nuclear experts have been helping to improve the safety of nuclear power plant projects around the world. Whether they are shift leaders, trainers or project managers, the members of our nuclear team all have specific expertise in certain aspects of nuclear power plant construction and operation. Equipped with this in-depth knowledge, we support several international missions as well as several EU expert committees on nuclear safety. Our nuclear fleet comprises four units in operation, with a total capacity of 4,400 MW and five units in the decommissioning phase.

We provide consultancy services in the nuclear field to public institutions as well as to private companies. We possess in-depth knowledge regarding Generation I to Generation III reactors as well as the commissioning and decommissioning of all types of nuclear power plants. We have contributed our expertise to nuclear development programmes in Belene, Bulgaria; Cernavoda, Romania and the Horizon project in the United Kingdom.

We offer detailed knowledge of technical design standards and international licensing standards. In the field of nuclear power, our tasks typically include the assessment of technical requirements, preparation of technical specifications, contracting and on-site management during every stage of a project. We are also ideally placed to assist you with measures for radiation protection and radioactive waste management.
HAMBACH MINE. GARZWEILER MINE. INDEN MINE. 
OUR MINING KNOWLEDGE BASE

RWE operates
- three totally continuous open pit mines, producing 100 Mt/a lignite.
- 20 of the world’s largest bucket wheel excavators (up to 240,000 m³/d).
- 18 inpit overburden spreaders, to dump more than 480 M bcm/a.
- 240 km of up to 2.8 m wide belt conveyors, running at 7.5 m/s.
- the largest private European heavy duty rail network with a length of 565 km for coal transport.
- 19 km/a exploration and 45 km/a dewatering drilling.
INNOVATIVE. SUCCESSFUL. SOPHISTICATED.

We are committed to maximising value from your mining assets by tailoring our Services to your needs.

Our Specialists
• plan and develop your mines towards truly continuous mining operations.
• assist with the establishment of state-of-the-art mining technology and techniques, e.g. IPCC.
• provide the necessary transfer of skills to your own operators.
• ensure minimal impact on the surrounding environment throughout the mine’s life.
• support you throughout your total mining process.

Mine Design, Planning and Optimisation
• Conceptual and detailed mine design studies
• Individual opencast mine planning such as IPCC
• Net-present-value pit optimisation
• Choice of mining method and haulage method
• Life-of-mine stockpile, waste dump and tailings dam design
• Production and equipment schedule optimisation
• Run-of-mine tonnage and grade scheduling
• Equipment, staff and material requirements determination

Geological Services
• Exploration management
• Hydrological assessment
• Acid mine drainage studies
• Geotechnical assessment

Equipment Maintenance and Optimisation
• Development of a suitable maintenance strategy
• Maintenance planning and organisation
• Mine maintenance and warehouse management
• Maintenance training, audits and benchmarking
• Mine maintenance development
• Check and verification of the mine equipment’s rehabilitation needs

In-pit Crushing and Conveying (IPCC)
• Conceptual and detailed IPCC mine design
• Brownfield integration planning
• Equipment selection advice

Conveyor Belt Inspection
• Direct feedback of recommended improvements at plant inspection
• Analysis of plant breakdown
• Proposals for plant improvement through detailed analysis

Conveying Engineering
• Design of the whole conveyor chain-systems
• Independent checking and verification of an equipment manufacturer’s design
• Preparation of tender documents
• Evaluation of bids and recommendation of the most suitable bidder
• Assistance during contract negotiations
• Mine equipment erection supervision

Conveyor Belt Testing (laboratory)
• Conveyor belt testing according to DIN, ISO and other international standards (all testing equipment available)
• Belt testing according to RWE standards for heavy duty mining demand (large scale testing)
• Expertise in belt failure analysis and lifetime prediction
In opencast mining, the use of In-Pit Crushing and Conveying (IPCC) systems is becoming increasingly common.

There are good reasons for this. As far as fuel consumption, carbon dioxide emissions and time are concerned, modern IPCC systems have clearly proven to be more efficient than traditional “shovel-and-truck” methods. With mounting international pressure on mining companies to increase their environmental responsibility, the new technology is becoming more and more attractive – not to mention the potential savings on fuel and operating costs.

An IPCC system consists of a crusher that is connected to several conveyors. The crusher is strategically positioned in the opencast mine and the conveyors remove the crushed material. A major advantage of this system is that while trucks are only able to transport overburden, ore or coal on inclines up to 12%, the conveyors can operate safely and reliably at gradients of up to 25%. Therefore, this not only reduces the distance that the material has to travel from the pit but it also lowers costs for fuel, maintenance and personnel.

We have many years of experience using IPCC, particularly in South America. Our first project was in Chile in the early 1990s with the design, development and supervision of the construction of a crusher-belt conveyor-spreader system. After successfully completing this project, our team was subsequently awarded a contract by the Chilean copper mining company Codelco. In 1995, we were awarded a contract to construct a tunnel conveyor to transport ore 1,200 metres downhill from Antofagasta’s Los Pelambres copper mine. We continue to assist the company with the operation and maintenance of the system. In addition, we have conducted numerous IPCC studies for locations around the world, including Peru, Columbia, Thailand, India, Indonesia and Australia.

Our experience in this area is wide-ranging, both geographically and technically. Whatever your project – coal, copper, ore or overburden – RWE Power International is your best choice for the task. For example, we built the world’s largest compact bucket wheel excavator for the Bükkábrány opencast mine in Hungary. Our engineers were responsible for drafting the plans, constructing the coal storage and selecting and qualifying the suppliers.

In Serbia, we conducted similar projects for the state electricity company, EPS including supporting the completion of complex overburden removal systems.

We also analysed existing bulk ore conveyor and transport systems for several copper mines in Chile to identify weak points. We then developed a number of solutions for improving performance and increasing throughput.

Our customers can be confident of maximum safety and reliability when they purchase conveyor belts which are “RWE tested”. We want you to feel confident that you integrate reliable components into your production system. For this reason, we refuse to buy any products that have not successfully withstood rigorous testing in our own laboratories.

Of our many support services, none is more in demand than our mining equipment engineering support.
Building on many years of specialised expertise, we provide our clients with one-stop solutions covering the entire cycle of a mining project.

Our practical experience covers all types of open-cast mining and construction projects. For instance as part of a mine feasibility study, we conducted exploration drilling and hydrological pump tests in the Thar Desert in Pakistan. The investigations revealed lignite reserves of around 400 million tonnes.

For an open-cast mining project in the Bushveld Complex in South Africa, our experts drafted a precise model of a platinum-palladium deposit which enabled the client to carry out highly targeted mining operations.

On a contract for Neyveli Lignite Corporation (NLC), which operates several open-cast lignite mines in southeast India, we conducted a feasibility study including detailed mine planning. Our experts needed to overcome a number of geotechnical, environmental and technological challenges. For the duration of the project, we supported NLC on site and also via internet from Cologne.

The Gallilee Coal Basin in Australia is being developed by several mining companies. Our team of experts is involved in concept and feasibility stage studies, especially when it comes to the utilisation of continuous mining equipment. To develop totally continuous operating coal and overburden transport systems our operational knowledge is of extraordinary value in the fields of mine stage planning and equipment selection.

Further information may be found on our website: www.rwepi.com