

Verantwortung
für Generationen

Responsibility
for Generations

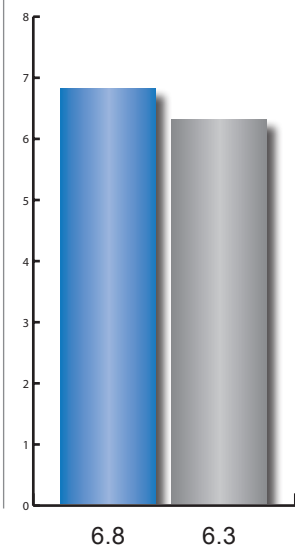
DBETEC
DBE TECHNOLOGY GmbH



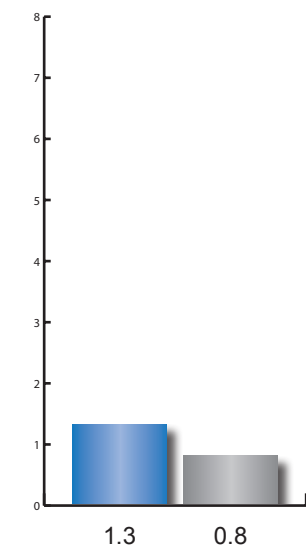
ANNUAL REPORT 2012

IN FIGURES

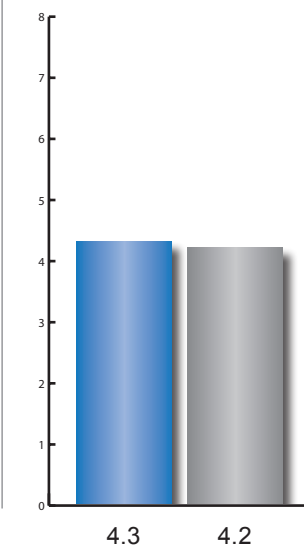
**TURNOVER
(MILLION EUR)**



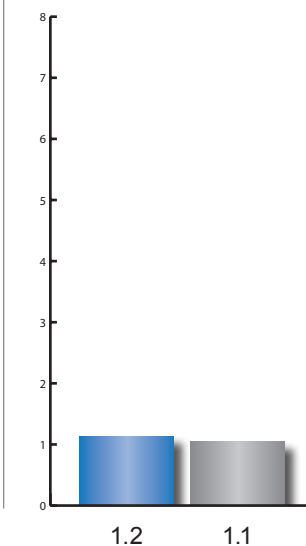
**COST OF PURCHASED
SERVICES
(MILLION EUR)**



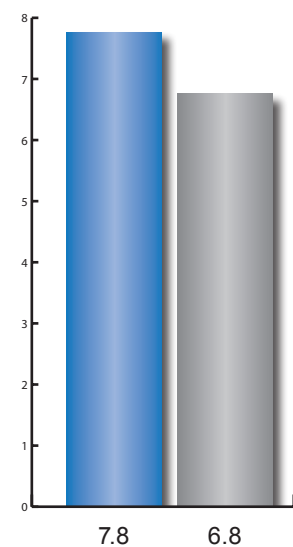
**PERSONNEL EXPENSES
(MILLION EUR)**



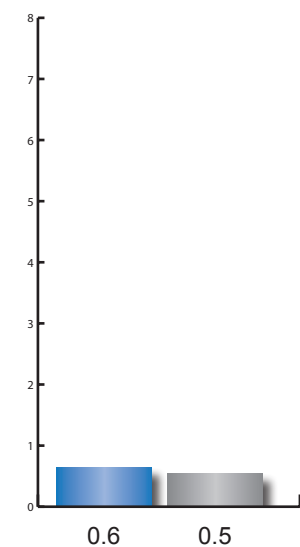
**OTHER OPERATING
EXPENSES
(MILLION EUR)**



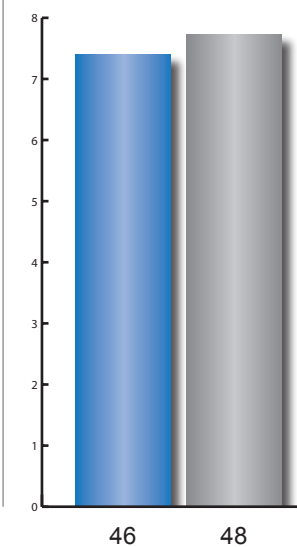
**BALANCE SHEET
TOTAL
(MILLION EUR)**



**NET INCOME
(MILLION EUR)**



**EMPLOYEES AS OF
DECEMBER 31**



■ 2012 ■ 2011

INHALT

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EXECUTIVE BODIES



MANAGEMENT

Commercial Director:

Dipl.-Kfm.
Borries Raapke,
Peine

Technical Director:

Assessor des Bergfachs
Michael Ripkens,
Peine



ADVISORY BOARD

Dipl.-Ing. Holger Bröskamp

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Vice Chairman,
GNS Gesellschaft für Nuklear-Service mbH,
Essen
(until June 29, 2012)

Dr. Hannes Wimmer

Chairman
Chairman,
GNS Gesellschaft für Nuklear-Service mbH,
Essen
(as of June 29, 2012)

Georg Büth

Managing Director,
GNS Gesellschaft für Nuklear-Service mbH,
Essen

Henry B. Cordes

Chief Executive Officer,
Energiewerke Nord GmbH,
Rubenow

EXPERTS ADVISORY BOARD

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GNS Gesellschaft für Nuklear-Service mbH,
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Franz-Gerhard Hörnschemeyer

Trade Union Secretary,
IG Bergbau, Chemie, Energie,
Hanover

COMPANY PROFILE



Our team

EXPERTISE AND KNOW-HOW

DBE TECHNOLOGY GmbH was established in the year 2000 as a 100 per cent subsidiary of Deutsche Gesellschaft zum Bau und Betrieb von Endlagern für Abfallstoffe mbH (DBE) (*German Company for the Construction and Operation of Waste Repositories*) in order to focus and further develop the scientific and technical know-how of DBE and to make it available to interested parties both nationally and internationally. Since its founding 12 years ago, DBE TECHNOLOGY GmbH has rapidly become a nationally and internationally recognized engineering company in the area of radioactive waste disposal.

Its activities are based on over 30 years of experience gained by its parent company in German nuclear waste repository projects as well as on the know-how gained through over 25 years of collaborative efforts in similar national and international research projects. The company's main fields of activity today include waste disposal strategies and activities, site characterizations and evaluations, concept, design, safety, and engineering of repositories, and their closure.

On behalf of German research institutions and energy supply companies, DBE TECHNOLOGY GmbH provides services in the field of radioactive waste management, e.g. support in collecting and documenting waste data and demonstrating that the waste packages destined for the Konrad repository meet the corresponding technical acceptance criteria.

In Germany, the legal requirements for licensing a repository stipulate that the technical feasibility of the equipment and

components to be utilized in the repository and of the intended operational processes be demonstrated before a license is granted. DBE TECHNOLOGY GmbH developed the systems and components required for operating a repository in salt, which were subsequently tested until ready for approval.

DBE TECHNOLOGY GmbH develops safety concepts for the operating and post-operating phases of repositories and plans corresponding safety measures. In this context, the company is involved in a preliminary safety analysis of a potential repository for spent fuel elements and high-level waste in a salt formation which uses the Gorleben salt dome as an



Members of a Japanese delegation visiting the Gorleben exploration mine

example. Within the scope of an R&D project, the company also develops a safety case for a repository in clay.

Thorough sealing of subsurface repositories is essential for ensuring the long-term safe isolation of radioactive waste. In this context, the company develops sealing concepts that are adapted to the site-specific requirements, the radionuclide inventory destined for disposal, and the disposal concept.

Throughout the world, DBE TECHNOLOGY GmbH advises and supports public and private energy, waste disposal, and mining companies as well as testing organizations and governmental authorities in all issues concerning the disposal of radioactive waste, mining, and other related technical fields. Furthermore, the company develops and tests new materials, processes, and machinery for their practical application in repositories.

DBE TECHNOLOGY GmbH participates in research projects in underground laboratories in clay and claystone in Mont Terri (Switzerland) and Bure (France), and in granite in Grimsel (Switzerland) and Äspö (Sweden). Based on the knowledge gained in these projects, the company develops and analyses repository concepts for various host rocks (crystalline rock, clay, lime, and salt) and waste types (high-level, intermediate-level, and low-level radioactive waste). Furthermore, the company reviews repository concepts of other waste management organizations and gives recommendations for optimization measures.

Based on its comprehensive know-how, the company supports governmental institutions in the development of national waste management strategies and gives recommendations for corresponding financing strategies and pertinent legislation.

EVENING OF ARTS AND SCIENCES

Continuing a tradition established over the past years, DBE TECHNOLOGY GmbH hosted an “Evening of Arts and Sciences” for colleagues and business partners at their head office in Peine on September 18, 2012. Approximately 120 guests from 34 companies, research institutes, and government institutions used the opportunity to exchange ideas in a relaxed and informal atmosphere.

As an invited speaker, Dr. Volker Steinbach, Head of the *Department of Energy Resources and Mineral Resources* at the *Federal Institute for Geosciences and Natural Resources* (BGR) in Hanover, discussed the issue “Resources for the future – rare or only expensive?”

Musical entertainment was provided by the „Saratoga Seven“ jazz band from Brunswick.

Evening of Arts and Sciences on September 18, 2012, in Peine

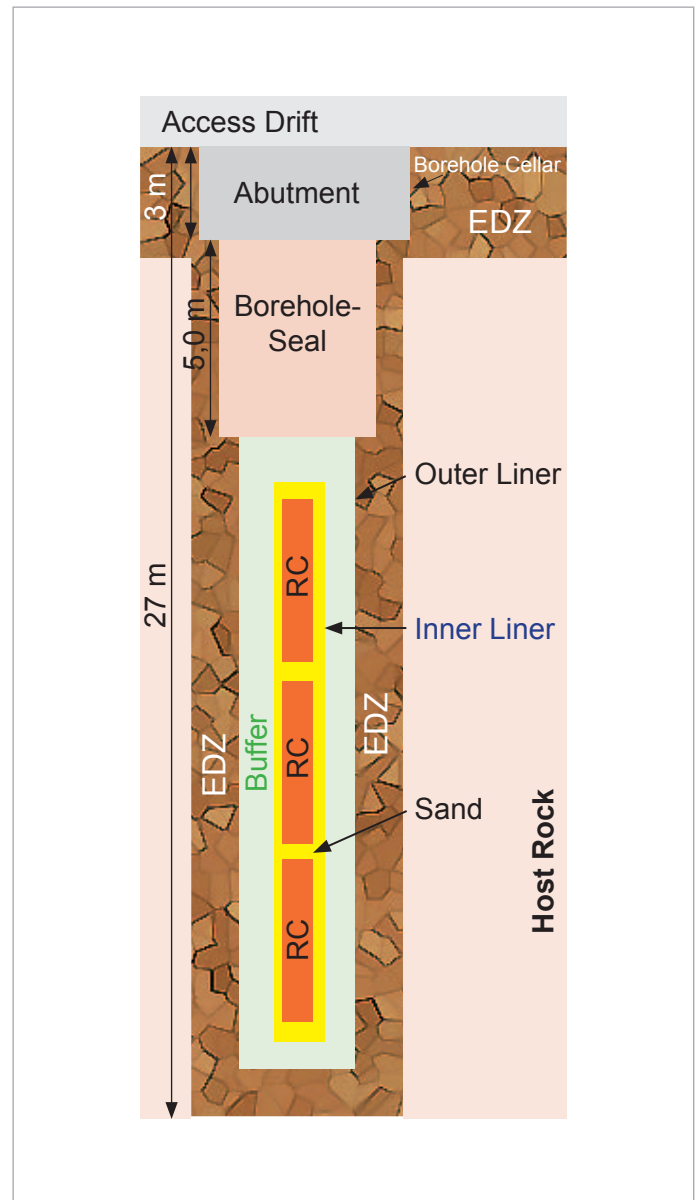


COMPANY PROFILE

ANSICHT – METHODOLOGY FOR DEMONSTRATING THE SAFETY OF A HLW REPOSITORY IN CLAY FORMATIONS

The Federal Government of Germany and the parties represented in the Bundestag (*German Parliament*) seek a consensus on a new site selection procedure for a repository for high-level radioactive waste. As an alternative to salt formations, clay formations are also to be investigated regarding their suitability to host a repository for radioactive waste. Within the scope of the R&D project ANSICHT, the tools and methods available to assess the safety of such a repository in a clay formation are to be reviewed. ANSICHT, a joint project of DBE TECHNOLOGY GmbH, Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) mbH, and Bundesanstalt für Geowissenschaften und Rohstoffe (BGR, *Federal Institute for Geosciences and Natural Resources*), started in autumn 2011. The methodology of the project is based on the results of the R&D projects ISIBEL (completed in 2010) and the “Preliminary Safety Analysis of the Gorleben site” (VSG) which both investigated the same issues for a HLW repository in salt.

The concept to demonstrate the safety of a repository in clay formations is based on the advantageous properties of the clay (low permeability, sorption capacity for radionuclides, plastic behavior) on the one hand and on the constructions used to seal the mine openings on the other hand. Analyses of several regions with potentially suitable clay formations identified two generic reference profiles – one in Northern and one in Southern Germany. Furthermore, a disposal and closure concept for a HLW repository in clay was developed that takes into account the requirements of the Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU, *Federal Ministry for the Environment, Nature Conservation and Nuclear Safety*) regarding the retrievability and recovery of waste containers. The identification of possible future developments of the repository system (scenario development) is based on the identification and assessment of all features, events, and processes that may be relevant (FEP catalogue). As the geologic conditions and the future developments may differ in the respective regions in the North and in the South, these aspects have to be studied separately for each region. When the FEP catalogues have been completed, the corresponding scenarios are to be developed.



Concept for emplacing retrievable canisters (RC) containing spent fuel elements in boreholes in a clay formation, EDZ = Excavation Damaged Zone

PRELIMINARY SAFETY ANALYSIS OF THE GORLEBEN SITE

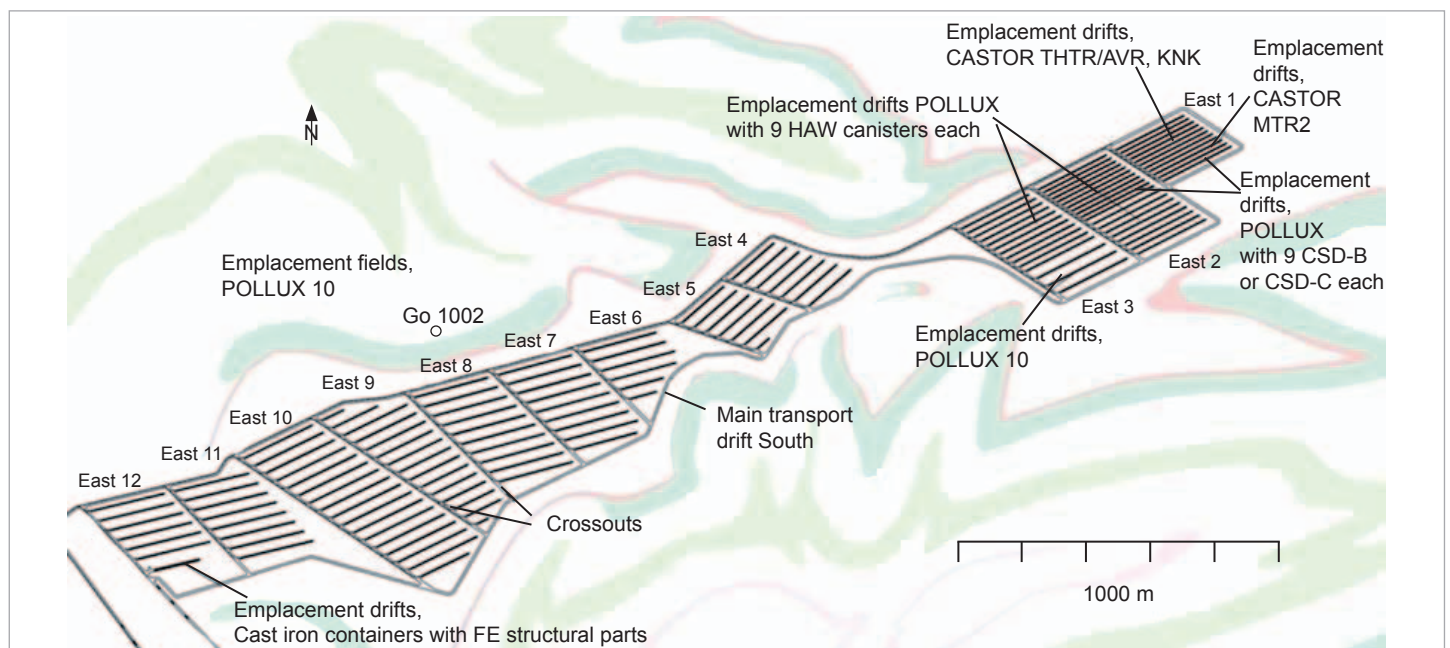
In 2012, the scientific and technical activities of DBE TECHNOLOGY GmbH again focused on collaborating in the first *Preliminary Safety Analysis of the Gorleben Site* (Vorläufige Sicherheitsanalyse Gorleben, VSG). The main goal of this project is a clearly documented analysis and assessment of a repository system in a salt formation focusing on:

- determining if and under what conditions a salt formation can host a safe repository for heat-generating radioactive waste
- developing optimized waste container, emplacement, and closure concepts
- identifying further investigation and exploration needs

The second aspect was primarily handled by DBE TECHNOLOGY GmbH. Based on the geologic data of the Gorleben site, the quantities of heat-generating radioactive waste to be expected, and the data on the corresponding waste containers, an optimized mine layout was developed. The design of the mine openings is based on thermal model calculations and takes into account mining requirements. The emplacement concept takes into account the possibility to retrieve the waste containers as stipulated in the safety requirements issued by the Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU, *Federal Ministry for the Environment, Nature Conservation and Nuclear Safety*). For both concepts, i.e.,

the drift emplacement of POLLUX® casks and the borehole emplacement of canisters in lined vertical boreholes, the possibility to retrieve the waste containers with proven and tested mining and disposal technology during the operating time of the repository could be demonstrated. Recommendations for the further development and improvement of individual components and for their testing underground were also documented.

In addition to this, a backfill and closure concept for the repository was developed which is based on the safety concept developed within the scope of the Preliminary Safety Analysis. One main idea of this concept – in addition to the safe operation of the repository – is the long-term safe isolation of the radioactive waste. For this purpose, the backfill and closure concept provides for a fast and effective sealing of the repository in order to re-establish the integrity of the 500-m-thick salt barrier in the long term. When all drifts and boreholes are filled, the remaining open voids are to be backfilled with crushed salt and the main drifts and the shafts are to be sealed by means of sealing constructions. Essential parts of the sealing constructions were tested in large-scale experiments in the shaft Salzdetfurth, in the Morsleben repository for radioactive waste, and in the Asse mine. In addition to this, comprehensive design and verification calculations were carried out in order to demonstrate that the seals will remain effective regardless of the future developments of the site.



Mine layout: Here – Concept for emplacing POLLUX® casks with heat-generating radioactive waste in drifts. The layout is adapted to the expected geologic structure of the north-eastern part of the Gorleben salt dome at a depth of 870 m.

COMPANY PROFILE

SUPPORT OF ASSE-GMBH IN THE CLOSURE OF THE ASSE RESEARCH MINE

Approximately 126,000 drums containing low- and intermediate-level radioactive waste were disposed of in the former potash and rock salt mine Asse. Until the end of the 1990s, the facility was also used for research purposes concerning the final disposal of radioactive waste. In 1988, the first brine intrusions from the surrounding rock into the mine openings were observed, which – beginning in the 1990s – resulted in efforts to stabilize the underground openings and to initiate preparations for closing the facility.

Since January 1, 2009, the Asse facility has been operated by the newly established Asse-GmbH which retained DBE TECHNOLOGY GmbH to carry out portions of the planning activities and support functions related to the closure of the Asse facility. Six – at times seven – specialists of DBE TECHNOLOGY GmbH were transferred to the Asse site on a temporary basis to carry out the commissioned work, which is part of the hazard prevention and emergency planning activities.

Draft of a control room for monitoring the facilities of the Asse mine



Overview of the work

- Fractures and cracks in the rock can compromise the effectiveness of the sealing constructions. Within the scope of a work package, technical concepts for injections to seal fractures and cracks are thus to be developed and the corresponding work is to be carried out. In 2012, the drilling and injection equipment required for the work was procured and approved. Additionally, based on material research studies, new injection materials were developed, which meet the requirements of the mining law and those specific to the site. At various locations in the mine, fractures in the rock were sealed by means of injections.
- An important aspect in the closure of the Asse mine is the backfilling of the mine openings with crushed salt. Thus, an in-situ test scheme was developed in order to investigate possibilities to decrease the pore space of the backfill material, to increase its rigidity, and to minimize the possibility of brine flow through the material. The test scheme has been started.
- To demonstrate compliance with the material specifications, the methods for testing construction material were optimized until ready for application.
- In case of brine intrusion, flow barriers are to divert the brines around the disposal chambers. DBE TECHNOLOGY GmbH supervised the construction of these barriers in order to ensure the high quality of the work. Compliance with all requirements was verified.
- Based on tests, crack limitation was demonstrated for the individual construction stages of the standard geometries of the flow barriers. Within the scope of a comprehensive research programme, the database on the material properties of sored concrete was updated so that now constitutive models can be used for numerical demonstrations as well.
- In the event of brine intrusion, minerals containing magnesium hydroxide are to influence the chemical environment in the disposal chambers in such a way that the solubility of the radionuclides in the waste is reduced. Within the scope of the work package “Planning and construction supervision of the installation of Mg buffers in the disposal chambers”, the functionality of the material to be used and its technical manageability were studied on a semi-industrial scale.
- DBE TECHNOLOGY GmbH was project manager in the refurbishment project of the shaft hoisting system of the shaft Asse 4 and supported the client in the tendering and contracting process through electrotechnical planning and inspection work.
- DBE TECHNOLOGY GmbH was responsible for planning the furnishing of a central control room which is still in the draft stage.
- Tender documents for the acquisition of vehicles, systems, and technical equipment were compiled.
- The design planning phase for the extension of the existing power supply system has been concluded. The tendering documents are being prepared.

COMPANY PROFILE

IMPROVEMENT OF THE RADIOACTIVE WASTE CLASSIFICATION SYSTEM IN UKRAINE

As is the case in most Eastern European countries, the waste classification system currently used in Ukraine primarily focuses on the safe and economic interim storage of the radioactive waste but not on its eventual final disposal. Before it can be disposed of, the waste already accumulated needs to be reclassified, sorted, characterized, and the components need to be documented. This results in additional costs and efforts, and the operating personnel would be exposed to further radioactive dose rates. In advanced radioactive waste management systems, the radioactive waste is therefore classified and separated immediately after generation.

Within the scope of its assistance programme on nuclear safety, the European Commission had therefore announced a tender for the improvement of the radioactive waste classification system in Ukraine. At the beginning of 2011, a consortium consisting of DBE TECHNOLOGY GmbH as consortium leader and four other European waste management organisations (ANDRA/France, COVRA/Netherlands, ENRESA/Spain, SKB/Sweden) was awarded the contract. A team of local experts of the Radioenvironmental Centre at the Presidium of the Ukrainian Academy of Science assisted the consortium in the project.

The waste classification system was developed in consultation with the three Ukrainian end users and complies with the most recent recommendations of IAEA. The results of the project were presented during a public workshop held in Kiev in December 2012. The new waste classification system does not only allow the safe disposal of all existing and future radioactive waste amounts, it also makes disposal more economic. According to first estimates, the disposal costs can be reduced by approx. 50 % while at the same time radiological safety can be increased.

In addition to this, proposals and recommendations for amendments to the corresponding laws and regulations and for a stepwise implementation of the new classification system into practical use were made.

ПРОЕКТ INSC – U4.01/08-C
Усовершенствование
системы классификации РАО
в Украине

Предложения по
внедрению новой системы
классификации РАО
в регуляторную структуру Украины

Ноябрь 2012

ANDRA
DBE TEC
DBE TECHNOLOGY GmbH
enresa
COVRA
SKB

Final report on the improvement of the radioactive waste classification system in Ukraine

ASSISTANCE TO MINISTRIES AND ORGANISATIONS RESPONSIBLE FOR RADIOACTIVE WASTE MANAGEMENT IN UKRAINE

Since 2006, a consortium consisting of DBE TECHNOLOGY GmbH (consortium leader) and four other European waste management organisations (ANDRA/France, COVRA/Netherlands, ENRESA/Spain, SKB/Sweden) has been assisting the European Commission in various projects regarding the management of radioactive waste in Ukraine.

Following a Europe-wide tender, the consortium was awarded a further contract for a project with a duration of three years. The aim of the project is to support the organisations and ministries responsible for radioactive waste management in Ukraine, especially the State Agency of Ukraine for the management of the Exclusion Zone and the Ministry of Energy and Coal Industry of Ukraine, in improving the relevant administrative structures and processes.

First, a detailed analysis of the current state in Ukraine and of the experience of other countries with advanced waste management systems has to be carried out. The main goals of the analysis are to identify the allocation of responsibilities among the various stakeholders in the waste management system

and to determine cross-organisational collaboration and information flow. Further topics of the analysis are the initial and further training of experts and the documentation and inspection of radioactive waste.

In the course of the project, recommendations for optimizations are to be given based on the results of the analysis. One special issue and major challenge is the fact that practically all stakeholders – from the waste producers to the regulator to the waste management organisation – are state-owned institutions or enterprises that are incorporated in a tightly woven administrative system, which is still characterized by patterns established during times of planned economy. To find areas to introduce international experience requires a close cooperation with the Ukrainian experts of the respective organisations and with the project team formed at the Radioenvironmental Centre at the Presidium of the Ukrainian Academy of Science.

Further issues of the project are a comprehensive training programme for Ukrainian executives and the implementation of an IT system to improve information flow.

Project partners meeting at a workshop in Kiev (Ukraine)



COMPANY PROFILE

DOCUMENTING RADIOACTIVE WASTE DESTINED FOR FINAL DISPOSAL ON BEHALF OF THE CENTRAL DECONTAMINATION DEPARTMENT (HDB) OF WAK GMBH



Employees of DBE TECHNOLOGY GmbH who assist HDB at the interim storage facility in the preparation of documents for the final disposal of radioactive waste

Hauptabteilung Dekontaminationsbetriebe (HDB, *Central Decontamination Department*) of Wiederaufarbeitungsanlage Karlsruhe Rückbau- und Entsorgungs-GmbH (WAK, *Decommissioning and Waste Management Company*, formerly *Karlsruhe Research Centre*) carries out the disposal of radioactive waste from the operation and decommissioning of research reactors, from institutes of the Karlsruhe Institute of Technology (KIT, formerly *Karlsruhe Research Centre*), from the Karlsruhe Reprocessing Plant, from the European Institute for Transuranium Elements, and from the Collection Centre of the State of Baden-Württemberg. The compilation of appropriate waste documentation demonstrating that the HDB waste meets the technical waste acceptance criteria for the future Konrad repository is a requirement for its disposal.

Since 2004, DBE TECHNOLOGY GmbH, together with Studsvik GmbH & Co. KG, has been compiling the required documentation for the waste stored in the HDB interim storage facility. In 2009, the two companies were joined by Kraftanlagen Heidelberg GmbH.

In 2012, WAK GmbH put out a tender for continuing the work where DBE TECHNOLOGY GmbH, now as part of a working group with the two partners above, again prevailed. DBE TECHNOLOGY GmbH represents the working group towards the customer and third parties.

The scope of the contract includes the following tasks:

- Compilation of the waste documentation pursuant to the waste acceptance criteria (WAC) for the Konrad repository
- Declaration of water-contaminating substances in the waste packages pursuant to the WAC for the Konrad repository
- Coordination of post conditioning and product control measures with the interim storage facility and the facilities of HDB
- Preparation and review of flow charts
- Preparation of documents for the approval of waste containers or individual shielding systems
- Preparation of a treatment plan and disposal concept

COMPLETING THE INSTRUMENTS NEEDED FOR THE TECHNICAL FEASIBILITY AND SAFETY ASSESSMENT OF HLW REPOSITORIES IN SALT

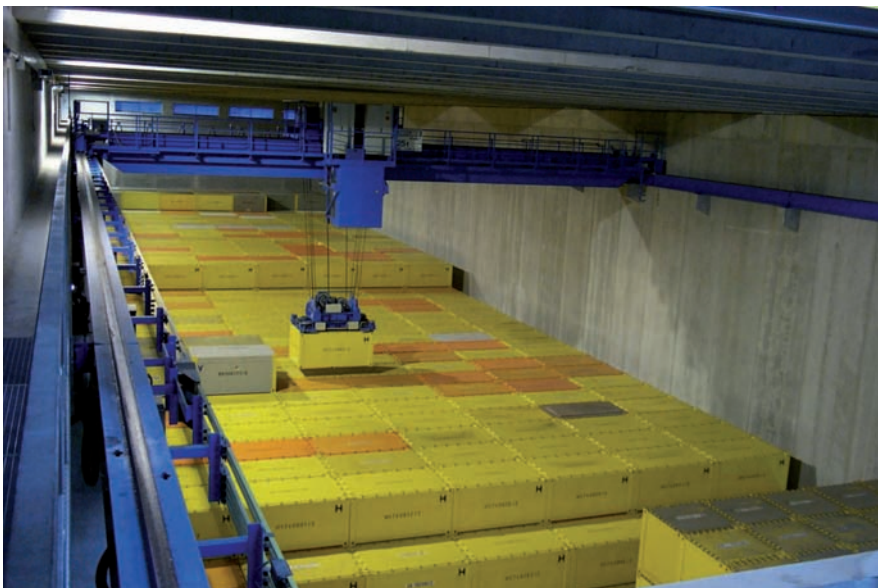
Over the last few decades, German research institutions and companies, both directly and indirectly involved in radioactive waste management, have conducted comprehensive R&D work on conceptual and safety-related questions regarding the disposal of high-level radioactive waste (HLW) and spent fuel elements.

Within the scope of the R&D project KOMTESSA, a critical assessment of the state of the art in science and technology concerning the technical feasibility of HLW disposal in a salt formation and concerning the safety assessment of a corresponding repository was carried out. The project was carried out by a working group consisting of DBE TECHNOLOGY GmbH, Bundesanstalt für Geowissenschaften und Rohstoffe (BGR, *Federal Institute for Geosciences and Natural Resources*), and Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) mbH on behalf of Projektträger Karlsruhe, Bereich Wassertechnologie und Entsorgung (PTKA-WTE, *Project Management Agency Karlsruhe, Water Technology and Waste Management Division*).

The design and operation of a HLW repository are largely determined by the inventory of radioactive waste to be disposed of and by the corresponding waste containers. Therefore, a detailed investigation of the waste to be taken into account in a future HLW repository and of the corresponding waste containers was carried out.

The waste inventory includes radioactive waste from the reprocessing of fuel elements from German nuclear power plants. In addition to this, spent fuel elements from nuclear power plants and from prototype and research reactors need to be taken into account, which are either already stored in interim storage facilities or fuel pools or will accumulate in the future. A further issue to be investigated is whether co-disposal of waste with negligible heat generation that – from today's perspective – does not fully comply with the waste acceptance criteria of the Konrad repository would be possible in a HLW repository. This waste category includes graphite and carbon bricks which are used as reflector and moderator materials in high temperature and research reactors. An open issue is the handling of uranium tails which consist of depleted uranium and are a by-product of the uranium enrichment process. If no possibilities for their utilization can be found in the future, they could be declared as radioactive wastes and would then have to be taken into account in the waste inventory.

Within the scope of the R&D project, it is assumed that the waste with negligible heat generation and the depleted uranium are stored in the same waste containers as used for radioactive waste destined for the Konrad repository.



Waste containers destined for the Konrad repository in the interim storage facility of HDB in Karlsruhe

COMPANY PROFILE

THIRD US/GERMAN WORKSHOP ON SALT REPOSITORY RESEARCH AND SEVENTH PROJECT MEETING ON THE GEOMECHANICS OF SALT IN ALBUQUERQUE AND CARLSBAD

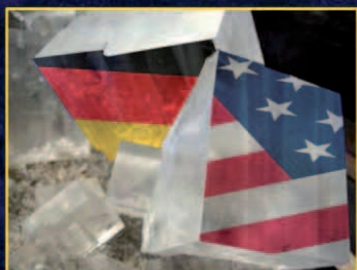
From October 8 – 10, 2012, the third US/German Workshop on Salt Repository Research, Design, and Operation and the seventh project meeting of the joint project “Comparison of current constitutive models and simulation procedures on the basis of model calculations of the thermo-mechanical behaviour and healing of rock salt” took place in Albuquerque (NM) and Carlsbad (NM) respectively. Both events had been organized by Sandia National Laboratories (USA) with the assistance of DBE TECHNOLOGY GmbH and the *Project Management Agency Karlsruhe, Water Technology and Waste Management* (PTKA-WTE – on behalf of the *German Federal Ministry of Economics and Technology, BMWi*).

Now that the Yucca Mountain project for the final disposal of spent fuel elements in tuff formations has been suspended, investigations to identify other suitable host rocks and sites are to be carried out in the USA. In the USA, salt formations have been used for the final disposal of defence-related transuranic radioactive waste in the Waste Isolation Pilot Plant (WIPP, Carlsbad, New Mexico) since 1999. Due to the positive experience gained at this site, studies have been initiated to analyse if other salt formations can be used for the final disposal of

radioactive waste. In Germany, repository research in salt formations has been carried out for more than 40 years, and the expertise and results gathered so far are of major interest to the American partners.

Based on the results of the second US/German Workshop, which was held in Peine in 2011, the third workshop and the project meeting on salt mechanics were to intensify the cooperation between Germany and the USA in the field of repository research in salt formations, to coordinate a potential research programme that meets mutual interests, and to increase the collective efforts for its implementation.

During the workshop, the current status of repository research in salt formations in Germany and the USA was outlined. DBE TECHNOLOGY GmbH presented the results of the Preliminary Safety Analysis for the Gorleben Site, described EC projects on sealing concepts in HLW repositories, outlined research projects on thermo-mechanical modelling for salt formations, and presented current developments with regard to repository design and technology.



US/GERMAN WORKSHOP

Salt Repository Research,
Design, & Operation

ALBUQUERQUE, NM • USA

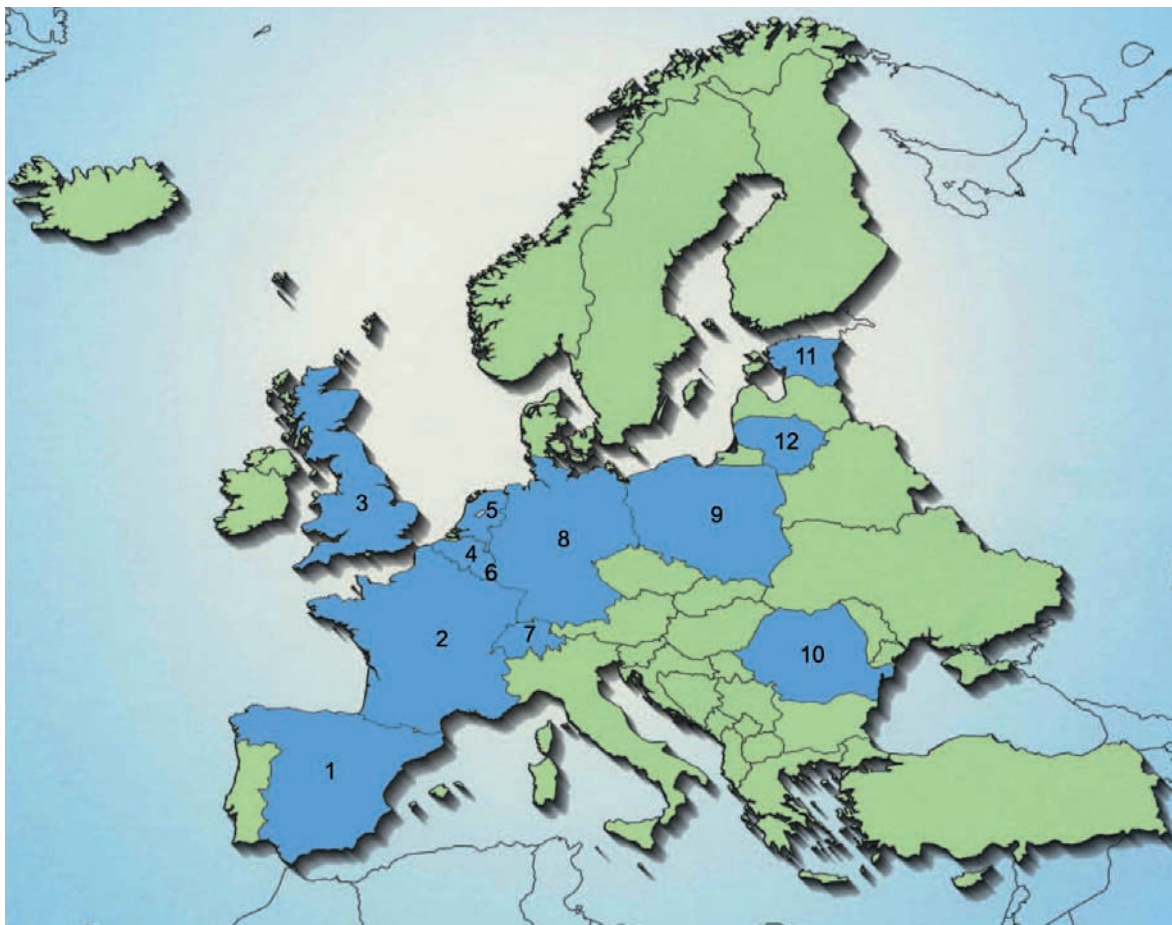
54TH CLUB OF AGENCIES MEETING IN PEINE

On November 21, 2012, the 54th Club of Agencies meeting took place at DBE TECHNOLOGY GmbH in Peine. In the Club of Agencies, representatives of the European Commission and of European radioactive waste management agencies come together to exchange their experience in disposal issues and to bring each other up to date on the status of the various national radioactive waste management programmes. In addition to this, a key issue is defined for each meeting, and related experience of the various agencies is presented and discussed.

Twenty-one representatives of RWM agencies from eleven countries as well as one representative of the European

Commission attended the 54th meeting. The key issue of the meeting was the definition of waste acceptance criteria for repositories and ways to monitor that they are met. Bundesamt für Strahlenschutz (BfS, *German Federal Office for Radiation Protection*), the Nuclear Decommissioning Authority (NDA), UK, and the Romanian waste management agency ANDRAD presented their experience on this issue.

On the second day of the meeting, the participants visited the Konrad mine in Salzgitter (Germany) and were informed on the status of the conversion of the former iron ore mine into a repository for low and intermediate level waste.



- | | | |
|-------------------------|------------------------|--------------------|
| 1 Enresa, Spain | 5 COVRA, Netherlands | 9 ZUOP, Poland |
| 2 ANDRA, France | 6 EC, Luxembourg | 10 ANDRAD, Romania |
| 3 NDA, UK | 7 NAGRA, Switzerland | 11 ALARA, Estonia |
| 4 ONDRAF/NIRAS, Belgium | 8 DBE/DBE TEC, Germany | 12 RATA, Lithuania |

Participating organisations of the 54th Club of Agencies meeting in Peine

MANAGEMENT REPORT FOR THE FINANCIAL YEAR 2012

BUSINESS DEVELOPMENT AND SITUATION IN THE FINANCIAL YEAR

The Company continued its successful development in the current financial year. Sales amounted to € 6.8 million. The net income for the year amounted to € 0.6 million. As of December 31, 2012, the Company had orders on hand amounting to approximately € 18.6 million. Because of the extremely specialist nature of the Company's activities, the macro-economic situation does not have a major impact on the development of business and order intake.

The Company continues to focus on providing services for domestic and foreign clients. These services comprise in particular national and international research and development projects for the final disposal of radioactive waste. Particular mention has to be made of international projects which deal with various aspects of final disposal of radioactive waste in different forms of host rock (clay, Belgium, as well as magmatic host rock, Russia).

The Company is also the leading partner in international consortia which carry out safety analyses regarding the renovation and extension of the final disposal site at Buryakovka (Ukraine) and carry out work for introducing a new waste classification system and developing final disposal concepts for all types of radioactive waste in Ukraine. International projects also include design work for the final disposal facility in Kozloduy (Bulgaria). The concept for the facility was completed and submitted to the client for final site selection.

The Company has provided services to Asse-GmbH related to several major tasks which are part of the emergency planning activities. These include the planning and drilling of injection boreholes and the injections themselves as well as experiments to increase the tightness of crushed salt backfill material.

The preparation of the "Preliminary Safety Analysis Gorleben", a project commissioned by the Federal Ministry for the Environment (BMU), is of major importance. Together with five other institutions, the Company is developing a comprehensively documented suitability forecast for a repository for high-level radioactive waste, based on the example of the Gorleben site.

The Company has completed work on the following subjects: Repository concept, design, and optimization, analysis and demonstration of the integrity of the geotechnical barriers as well as recommendations for further concept optimization.

The requirements of environmentally responsible action are taken account of by DBE TECHNOLOGY GmbH's activities, which specifically focus on environmental impact.

Management of the Company continues to be the responsibility of the managing directors of the sole shareholder Deutsche Gesellschaft zum Bau und Betrieb von Endlagern für Abfallstoffe mbH (DBE).

RESULTS OF OPERATIONS, NET ASSETS, AND FINANCIAL POSITION

RESULTS OF OPERATIONS

Compared with the previous year, the total output comprising turnover and changes in inventories of DBE TECHNOLOGY GmbH has increased by € 1.0 million to € 7.5 million.

The other operating income decreased by € 0.2 million compared with the previous year as a result of one-off effects resulting from the reversal of provisions in 2011.

Personnel expenses have increased by € 0.1 million to € 4.3 million. This is mainly due to an increase in employee remuneration.

The costs of purchased services mainly comprise assistance in major contracts or foreign projects and increased by € 0.5 million to € 1.3 million.

Other operating expenses increased by € 0.1 million to € 1.2 million compared with the previous year.

Net interest income has remained virtually unchanged compared with the previous year and includes not only interest income from investments but also interest elements from the valuation of other provisions as well as other interest expenses.

Compared with the previous year, the result from ordinary operations has increased by € 0.1 million due to the growth in overall performance and now amounts to € 0.8 million.

As a consequence, the tax expense has risen by € 0.1 million to € 0.3 million. This includes not only taxes on income but also income from deferred taxes resulting from the differences between the figures shown in the commercial and tax balance sheets for other provisions as of December 31, 2012.

Compared with the previous year, the net income of € 0.6 million for the year is higher by € 0.1 million.

NET ASSETS AND FINANCIAL POSITION

The balance sheet total increased by € 1.0 million compared with the previous year and amounts to € 7.8 million.

On the assets' side of the balance sheet, inventories rose in total by € 0.8 million as a result of the increase in work in progress by € 0.7 million and of advance payments by € 0.1 million. Work in progress has been valued at directly attributable cost of production in accordance with the lower valuation threshold under Commercial Law.

Receivables and other assets have remained at the same level as the previous year (€ 0.6 million). They consist primarily of claims from part-billing of major orders and from other orders as well as value-added tax (VAT) refunds.

The item "Cash in hand and bank balances" has risen by € 0.1 million to € 3.2 million compared with the closing date of the previous year and, consequently, reflects the good liquidity position of the Company.

On the liabilities' side of the balance sheet, shareholders'

equity has risen by € 0.1 million compared with the previous year and now amounts to € 1.8 million.

Provisions have risen by € 0.1 million to € 0.8 million due primarily to tax provisions and provisions for revenue risks from billing of services.

Liabilities have increased by € 0.7 million to € 5.2 million compared with the previous year. The largest individual item at € 4.5 million consists of customer advances received in the form of financial advances for orders which have not yet been completed and for which a final invoice has not yet been issued.

The equity ratio of DBE TECHNOLOGY GmbH at 22.9 % has fallen slightly compared with the previous year. As of the reference date, equity financed not only fixed assets but also 45.1 % of inventories (previous year: 52.5 %).

The Company was solvent at all times during the past financial year and remained so thereafter.

HUMAN RESOURCES AND SOCIAL REPORT

As of December 31, 2012, the Company's workforce consisted of 46 employees. Support for processing the tasks of the Company is provided by employees of DBE under the terms of an agency and service agreement which has been concluded with DBE.

This primarily involves the provision of commercial services.

The Company is integrated into the occupational safety concept and compliance organization of DBE.

RESEARCH AND DEVELOPMENT

A main focus of operations continues to be on research and development contracts. This ensures that, in conjunction with DBE, the competence for planning, constructing, operating, and closing final disposal sites for radioactive waste based on the state of the art in science and technol-

ogy is maintained and further developed. In the reporting period, the Company was involved in eleven national and international research and development projects, the focus of which was on the contributions to the "Preliminary Safety Analysis Gorleben" (VSG).

MANAGEMENT REPORT FOR THE FINANCIAL YEAR 2012

RISIK MANAGEMENT

Reporting and risk management are carried out in line with the systems existing at DBE. Risks from order processing are controlled on a timely basis by way of checks carried out in the course of the order. The Company has adequate insurance cover for risks that normally need to be covered. This

is achieved essentially by way of contractual inclusion in the insurance cover of DBE. There are no risks threatening the Company's status as a going concern. There have been no special events after the reporting date.

FORECAST REPORT

The order volume as of December 31, 2012, amounted to approx. € 18.6 million and continues to be at a high level. Capacity utilization of the Company is ensured for all of 2013 and to 65 % for 2014. The activities of the Company continue to focus on expanding and enhancing the core competence of the DBE / DBE TECHNOLOGY GmbH group in order to be able to offer competent services to national and international

clients. In 2013, it is intended to identify further attractive and interesting markets and to intensify corresponding activities.

With constant orders in hand, it is expected that earnings will continue to be positive and constant both in 2013 and in the medium term.

MANAGEMENT REPORT FOR THE FINANCIAL YEAR 2012

GENERAL INFORMATION

The Company is a small corporation in terms of Section 267 (1) HGB. The annual financial statements of DBE TECHNOLOGY GmbH are prepared voluntarily in accordance with the regulations applicable for large corporations.

In order to improve the overall clarity of presentation, individual items in the balance sheet and income statement have

been combined and are shown separately in the notes to the financial statements.

The type of expenditure format was used for the preparation of the income statement.

The accounting and valuation methods have remained unchanged compared with the previous year.

ACCOUNTING AND VALUATION METHODS

The figures shown in the balance sheet for intangible assets and tangible assets are based on costs of purchase. The intangible assets – exclusively software – are subject to linear depreciation over a period of three to five years while the tangible assets are depreciated linearly in accordance with their expected useful lives. Minor value assets, with costs of purchase and costs of production of more than € 150 and up to € 1,000, are combined in an annual collective item and are depreciated uniformly over a period of five years.

Orders which have been commenced (work in progress) are valued at the directly attributable product costs in accordance with the minimum valuation threshold under tax law.

Advance payments are recognized at nominal value.

Receivables, other assets, and liquid funds (cash on hand, bank balances) are valued at nominal value. In the case of receivables, identifiable individual risks are recognized by way of allowances.

Prepaid expenses and deferred charges are reported for payments prior to the balance sheet date insofar as they relate to expenditure for a specific period after that date.

Provisions are reported at the figure equivalent to the settlement amount required according to sound business judgment.

Provisions with a term of more than one year are discounted at the average market interest rate prevailing in the past seven financial years corresponding to their remaining term.

Provisions for revenue risks attributable to billings under other provisions have been discounted with the average market rate published by the Deutsche Bundesbank (German Federal Bank) of 4.22 % as of December 31, 2012. Average terms of five years have been used as a basis for calculating the provisions.

The other provisions also take into account all identifiable risks and contingent liabilities.

Liabilities are reported at the settlement amount.

Deferred taxes are created in relation to the differences between the amounts shown in the commercial accounts and the tax accounts if such differences will probably be reversed in subsequent years. Deferred tax assets and deferred tax liabilities are shown without being netted.

The Company has exercised the capitalization option of Section 274 (1) Clause 2 HGB, and reports deferred tax assets.

Deferred taxes are calculated on the basis of an effective tax rate of 30.0 % (15.82 % for corporation tax including solidarity surcharge and 14.18 % for trade tax) which will probably be applicable at the point at which the differences are reversed. The trade tax rate is based on the trade tax assessment rate of 405 %.

NOTES TO THE FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR 2012

NOTES TO THE BALANCE SHEET

ASSETS

1. Fixed assets

The financial assets shown under III consist of a cooperative share acquired in 2012 which has been valued at cost of acquisition.

Other than this, movements of fixed assets are shown in the Annex to the Notes.

2. Receivables and other assets

All receivables have a remaining term of less than one year.

Other assets mainly consist of claims against the Finanzamt (fiscal authorities) for VAT refunds.

3. Deferred tax assets

Deferred tax assets, which are shown separately in the balance sheet without being netted, are attributable to the following temporary differences.

Balance sheet item	31.12.2012 Difference between commercial and tax balance sheets T€	31.12.2012 Deferred tax assets T€
Other provisions	387	116

As of the balance sheet date, the deferred taxes stated on the balance sheet amount to € 0.1 million.

EQUITY AND LIABILITIES

4. Subscribed capital

The subscribed capital remains unchanged at € 0.5 million. It is fully paid up and is held to 100 % by Deutsche Gesellschaft zum Bau und Betrieb von Endlagern für Abfallstoffe mit beschränkter Haftung (DBE), Peine.

5. Capital reserves

The capital reserves originate from other contributions made by the shareholder in previous years.

6. Unappropriated retained earnings

Unappropriated retained earnings remain unchanged at € 0.5 million and include contributions (€ 0.4 million) made in previous years from net profits as well as € 0.1 million resulting from the BilMoG conversion as of January 1, 2010.

The net income of the previous year of € 0.5 million was paid out as dividend to the sole shareholder.

7. Other provisions

Other provisions amounted to € 0.8 million as of the balance sheet date. They include revenue risks attributable to billings for research and development contracts (€ 0.4 million), vacation obligations (€ 0.1 million), and other obligations (€ 0.3 million).

8. Liabilities

All advance payments received consist of contractually agreed advance payments from clients.

Payables to affiliated companies are due in full to the sole shareholder and are the result of current business operations. Other liabilities consist primarily of tax payables to an amount of € 0.4 million.

All liabilities are unsecured and are due within one year.

NOTES TO THE FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR 2012

CONTINGENCIES

As of the balance sheet date, contingencies existed to an amount of T€ 32 (previous year: T€ 32) from a guarantee loan framework agreement for providing a contract fulfillment guarantee and to an amount of T€ 501 (previous year: T€ 0) for providing a prepayment guarantee. Based on past experience, there is only a slight probability of the contingencies being utilized.

NOTES TO THE INCOME STATEMENT

9. Turnover

	2012 T€	2011 T€
Project assistance and engineering services for industrial companies	5.273	5.089
Revenues from billing domestic research and development contracts	995	1.165
Revenues from international contracts	492	50
	6.760	6.304

Revenues from project assistance and engineering services for industrial companies were generated exclusively in Germany.

10. Other operating income

Other operating income mainly consists of income from costs charged on in the course of business operations to an amount of T€ 50, income from a contribution refund from the Bergbau-Berufsgenossenschaft (employers' liability insurance association for the mining industry) to an amount of T€ 45 for the year 2011 and insurance refunds amounting to T€ 40. The decline in this item is in connection with a one-off effect from the reversal of provisions in 2011.

11. Costs of purchased services

The costs of purchased services includes third party costs for project assistance activities.

12. Personnel expenses

	2012 T€	2011 T€
Salaries	3.465	3.376
Social security and pension benefit costs (thereof for pensions)	831 (3)	821 (3)
	4.296	4.197

13. Other operating expenses

This item mainly comprises costs of services in connection with the agency and service agreement with the parent company, rents and travel expenses, as well as general administrative expenses.

14. Net interest income

Net interest income is broken down as follows:

	2012 T€	2011 T€
Other interest and similar income	39	35
Income from discounting other provisions	11	14
Interest and similar expenses	9	7
	41	42

Other interest and similar income result from short-term investment of liquid funds.

15. Taxes on income

Taxes on income consist of corporation tax (including solidarity surcharge) at T€ 142 (previous year: T€ 114) and trade tax at T€ 128 (previous year: T€ 102).

Income from deferred taxes (T€ 17) results from differences between figures shown in the commercial and tax balance sheets as of December 31, 2012.

NOTES TO THE FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR 2012

OTHER DISCLOSURES

Annual average number of employees

On average, the Company had 47 employees during the year (previous year: 48).

Compensation

The separately listed members of the Advisory Board and management did not receive any compensation for their activities.

Auditor's fees

The total auditor's fees charged for the financial year are shown in the consolidated financial statements of DBE.

Amounts subject to a distribution restriction in accordance Section 268 (8) Clause 2 HGB

Zum AbThe following were subject to a distribution restriction as of the closing date:

Deferred tax assets	116 T€
Less other deferred tax liabilities	<u>0 T€</u>
Total amount subject to distribution restriction	<u>116 T€</u>

APPROPRIATION OF NET INCOME

Subject to the approval of the sole shareholder, the entire net income of € 0.6 million is to be paid out in the form of a dividend.

GROUP AFFILIATION

DBE TECHNOLOGY GmbH, Peine, is under the uniform management of DBE. In its capacity as parent company, the latter prepares consolidated financial statements for the smallest and largest group of companies in which the annual financial statements of the Company are included. The consolidated financial statements are submitted to the operator of the electronic Federal Gazette and are published in the Electronic Federal Gazette.

AUDITOR'S REPORT

The auditor, PricewaterhouseCoopers, Aktiengesellschaft Wirtschaftsprüfungsgesellschaft, Hanover, provided the annual financial statements of the Company as of December 31, 2012, with an unqualified auditor's report dated May 24, 2013.

BALANCE SHEET AS OF DECEMBER 31, 2012

Assets	Notes	31.12.2012 (T€)	31.12.2011 (T€)
A. Fixed assets	(1)		
I. Intangible assets		19	30
II. Tangible assets		95	104
III. Financial assets		(€ 250,00)	0
		114	134
B. Current assets			
I. Inventories			
1. Work in progress		3.540	2.823
2. Advance payments		186	131
		3.726	2.954
II. Receivables and other assets	(2)		
1. Trade receivables		595	522
2. Other assets		35	53
		630	575
III. Cash in hand, bank balances		3.221	3.061
		7.577	6.590
C. Prepaid expenses and other charges		19	11
D. Deferred tax assets	(3)	116	99
		7.826	6.834

Equity and Liabilities	Notes	31.12.2012 (T€)	31.12.2011 (T€)
A. Equity			
I. Subscribed capital	(4)	511	511
II. Capital reserves	(5)	179	179
III. Revenue reserves	(6)	519	519
IV. Net income for the year		584	475
		1.793	1.684
B. Provisions			
1. Tax provision		55	0
2. Other provisions	(7)	754	663
		809	663
C. Liabilities			
	(8)		
1. Advance payments received		4.497	3.961
2. Trade accounts payable		232	218
3. Payables to affiliated companies		125	137
4. Other liabilities		370	171
		5.224	4.487
		7.826	6.834

INCOME STATEMENT FOR THE PERIOD FROM JANUARY 1 UNTIL DECEMBER 31, 2012

	Notes	2012 (T€)	2011 (T€)
1. Turnover	(9)	6.760	6.304
2. Changes in inventories		717	193
3. Other operating income	(10)	153	338
		7.630	6.835
4. Costs of purchased services	(11)	1.297	826
5. Personnel expenses	(12)	4.296	4.197
6. Depreciation		62	46
7. Other operating expenses	(13)	1.169	1.119
		6.824	6.188
		806	647
8. Net interest income	(14)	41	42
9. Results from ordinary operations		847	689
10. Taxes on income	(15)	253	208
11. Other taxes		10	6
		263	214
12. Net income for the year		584	475

FIXED ASSET MOVEMENT SCHEDULE, FINANCIAL YEAR 2012

	At cost				Impairments				Net book values	
	As of 01.01.2012	Additions	Disposals	As of 31.12.2012	Cumulative Impair- ments 01.01.2012	Additions	Disposals	Cumulative Impair- ments 31.12.2012	As of 31.12.2012	As of 31.12.2011
	T€	T€	T€	T€	T€	T€	T€	T€	T€	T€
Intangible assets										
- Concessions, industrial property and similar rights and assets, and licenses in such rights and assets	135	8	0	143	105	19	0	124	19	30
Tangible assets										
- Other equipment, factory and office equipment	251	35	16	270	147	43	15	175	95	104
Sub-total	386	43	16	413	252	62	15	299	114	134
Financial assets										
- other loans	0	(250 €)	0	(250 €)	0	0	0	0	(250 €)	0
Total fixed assets	386	43	16	413	252	62	15	299	114	134



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