

Research and development

Through its research and development program, Bilfinger Berger works continuously to enhance the quality of construction and services processes. Research and development activities are focused toward the needs of the Company's practical work. Technical innovation and the further development of processes are important in securing our competitiveness in all business segments. Last year, a large number of research projects again resulted in approvals by building authorities, new registered industrial designs and patents.

Research and development is coordinated and managed centrally at Bilfinger Berger. However, the actual development work is mostly carried out by the operational units. As a result, our R&D work is marked by technically sophisticated solutions that create competitive advantages, as well as efficient processes and a strong focus on the needs of our customers. In addition to project-related development work, Bilfinger Berger cooperates with leading universities to carry out research on selected topics that can provide direct, operational benefit.

Group-wide expertise for all segments

In the 2006 financial year, some 50 research projects from the building, services and concessions businesses were managed centrally. They focused on:

- Construction materials technology
- Construction elements and structural technology
- Maintenance, repair and operation
- Process and machine technology
- Planning and knowledge tools, as well as
- Property rights

The decentralized structure of our research and development work means that the Group Technology Corporate Function is also responsible for knowledge management throughout the Company.

Construction business

In our construction business, we produce unique developments of a complex nature. Simulating the behavior of construction elements is therefore extremely important.

In conjunction with renowned universities, we develop models that enable us to credibly predict the long-term behavior of various materials and processes. In the past year, such models found practical application primarily in tunneling, dam wall construction and the field of building and industrial construction. In road construction, we are studying methods of creating the grip necessary for concrete roads and are developing a simulation tool here, too.

The tools used for tunnel construction experience high levels of wear and tear. We are developing software to predict the lifetime of drills and chisels. This will enable us to calculate costs more precisely. Other projects this division is working

on include the optimized production of tubing for tunnels. Besides achieving cost efficiency in the production of precast concrete parts, we also aim to improve working conditions and environmental protection.

In bridge building, we are developing a process to accelerate the construction of steel composite bridges. Our simultaneous goal here is to further enhance the quality of the precast concrete decks used for this type of bridge.

In a joint undertaking with universities and commercial partners, we are looking into systems for the optical measurement and documentation of building structures. A functional prototype has been available since 2006. The objective is to be able to create a precise and detailed digital picture of a building, its rooms and its infrastructure with a minimum amount of work input.

Our activities in the field of environmental technology include working on the development of an already patented high-efficiency method for the treatment of heavily polluted surface water. The project is sponsored by the German Ministry of Education and Research. Our construction and operation of pilot plants in Germany and overseas opens up prospects in interesting markets.

Services

The services business also accounts for a substantial share of our research and development activities.

Bilfinger Berger Power Services is involved in trials for forward-looking research projects in the power plant sector. A major way of helping achieve efficiency enhancements and, consequently, realizing zero-emissions power plants is by raising the pressure and temperature parameters. Due in particular to the increased steam temperature, extremely high demands are placed on the materials used for secure operation of power plants over long lifetimes. A project sponsored by the German Ministry for Economics and Labor is investigating new materials for use in operating temperatures of up to 720 degrees Celsius. In this context, we are optimizing the construction of thick-walled welded joints for steam boilers and high-pressure pipes made of high-alloy chromium-nickel steels, which will subsequently be subjected to special testing methods to measure their quality. There are plans to stage test runs at the Weisweiler lignite-fired power plant to provide insight into the aspects of high-temperature corrosion, scaling, slagging properties and thermal shock susceptibility under realistic operating conditions.

In the Facility Services division, we have developed innovative processes for digitally processing work orders and for documenting maintenance work with the help of mobile computing

and radio frequency identification (RFID) technology. The scope of services and the required materials are recorded digitally on site and transmitted directly to the central IT system. No additional data entry is required in the course of completing the work, thereby substantially cutting processing costs. We have been trialing the system since the beginning of 2007.

Concessions projects

Economic aspects are at the forefront of our analyses in the Concessions segment. For instance, we are looking into ways of optimizing the operation of municipal event centers in Germany. Concepts for boosting efficiency include commercial measures, as well as the physical adaptation of existing buildings to meet modern usage requirements.

In the summer of 2006, we assumed the lead management of the European QuicNet research initiative. This ambitious undertaking aims to raise the quality and efficiency of infrastructure networks. It encompasses all phases in the design, construction and usage of the networks, placing particular emphasis on sustainability and life cycle considerations in the design of road and rail networks. Our consortium consists of international representatives from the worlds of politics, business, public administration and research, along with network owners and users. These projects also help us intensify our involvement in the European research landscape.

Group-wide information management

Efficient management of the knowledge within The Group is essential to the success of our business. Intensive management of the Technology Portal in our company-wide intranet serves to network the available knowledge and enables us quickly and purposefully to find answers to specific questions. Together with the Fraunhofer Gesellschaft, we have developed a semantic search engine that can pull together all technical information on a selected word or phrase in a structured manner. This allows all of our business units even faster access to the full range of knowledge available within the Company.

Practical orientation and continuity

The further development of expertise and competence is key to remaining one of the leading companies in the industries in which we operate. In developing intelligent solutions, we place an emphasis on practical orientation and continuity. Besides issues from the construction business, we are increasingly tackling questions from the Services and Concessions business segments. The ongoing internationalization trend will serve to make global information exchange even more important.