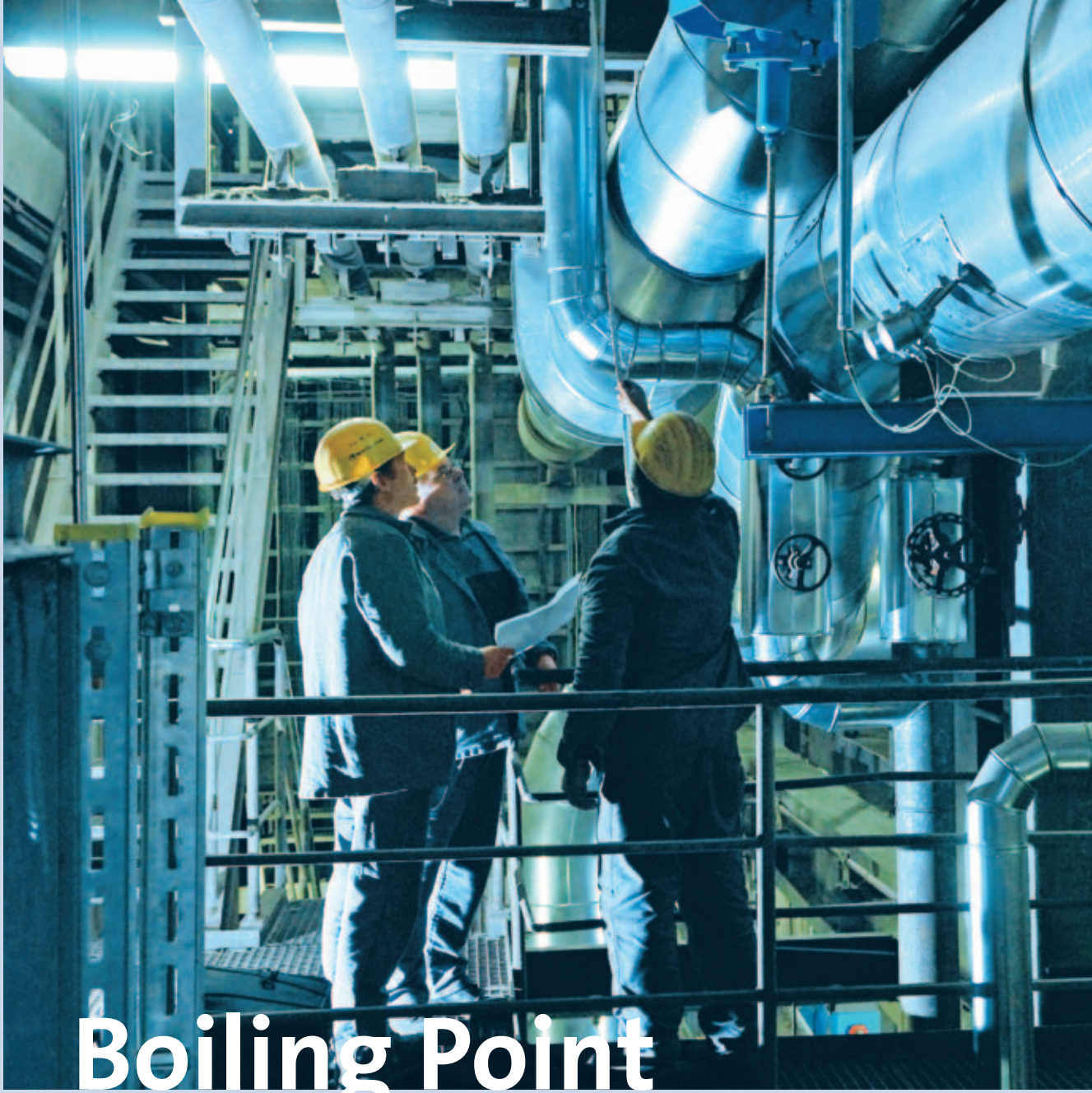

Boiling Point and Beyond

Europe’s appetite for energy continues to grow. With new processes and higher temperatures, power stations are becoming increasingly efficient.

Text
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Photos
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The energy industry is faced with great challenges. Experts anticipate a massive rise in Europe's energy needs. Demand for electricity is expected to rise by around 35 percent by 2030. It is obvious from this forecast alone that new power stations will have to be built. Additionally, in Germany in particular, many existing stations look back on a long service life, while the country also has plans to abandon nuclear energy. Consequently the current need for new power generation is several times greater than in previous years.

For Bilfinger Berger Power Services – under the roof of which renowned companies such as Babcock Borsig Services (BBS) and Essener Hochdruck Rohrleitungsbau (EHR) are gathered – this means its market volume is set to double. In total, new building projects currently being planned for the European Union add up to a total capacity

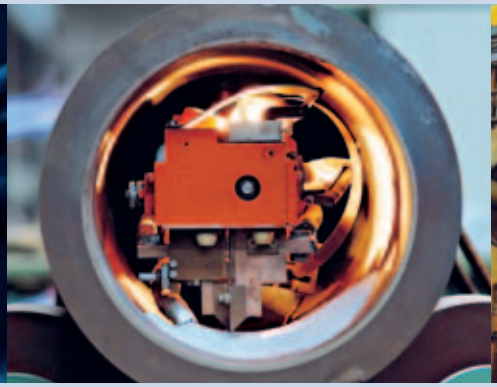
of around 130,000 megawatts – more electricity than is generated in all of France. Power generators in Germany are presently proposing to expand and build new stations on a scale in excess of 20,000 megawatts. The majority of these stations will be coal- or lignite-fired. Besides building new plants, a large number of modernization projects are pending. In many cases, even after thirty years in service, extensive upgrading of components such as coal mills, burners or steam generators is still well worth while.

When such modernization projects are undertaken, the calculations and designs by Bilfinger Berger Power Services engineers provide a basis both for factory production and for on-site assembly. For example, at the Steag AG coal-fired power station in Voerde a project was completed last year in which engineers significantly increased the degree of efficiency just by replacing the heating surfaces and making process changes in the water-steam cycle. System fitters and engineers working at the station north of Duisburg installed around 110 kilometers of boiler tubes, entailing at least 25,000 welds. The order included designing the new components as well as manufacturing and professionally installing the pressurized boiler parts and pipework. Once the work was completed, the Company retained a presence in Voerde, where it now takes care of regular plant servicing and maintenance.

Electricity generators profit in more than one respect from increased efficiency. More efficient power stations not only save increasingly expensive raw materials, but also emit less carbon dioxide. Consequently, trading in emissions certificates adds a further incentive for investments, which make plants more efficient. The efficiency level of coal-fired power stations in the European Union today averages around 38 percent.

Increasing efficiency reduces emissions

Current projects offer the prospect of raising this to an outstanding 43 percent for lignite-fired stations and 46 percent for coal-fired stations. With plant components from BBS and EHR, Bilfinger Berger Power Services is contributing substantially to this result.


New boilers can reach operating temperatures in excess of 600 degrees centigrade. "We're using more and more new steels, each of which require special welding processes," explains Bruno Grieger, Works Manager in Dortmund. "These techniques and the quality assurance that goes with them are constantly being refined in cooperation with other companies." To construct pipework, Bilfinger Berger processes a wide variety of ferritic and austenitic materials. Each part is individually designed to meet the customer's needs. The company installs its components all over the world – frequently unique solutions for both conventional power stations and nuclear plants. When it comes to production, Bruno Grieger and his colleagues are equally at home with both European and US quality standards.

Natural gas is gaining ground

The industry expects natural gas to play an increasingly important role in generating electric power. Natural gas is regarded as the most environmentally friendly of fossil fuels with the lowest CO_2 emissions. Modern gas-fired plants are achieving the highest efficiency levels, and even the costs of a new station are relatively low in comparison with other energy sources. Bilfinger Berger Power Services is also applying its comprehensive knowledge to rehabilitation measures and new construction projects, thereby providing a dynamic push to technical advances. The company is currently involved in the development of a burner which emits exceptionally low levels of nitrogen – one of many contributions being made to satisfy worldwide demand for energy in a more environmentally friendly and efficient manner.

Tibor Paulovics' gaze switches from one stretch of road to the next. It's just after midnight. Before the dispatcher's eyes, four screens show four rain-washed sections of the new M6 motorway that leads south from Budapest to the lowland plains of Hungary. Paulovics is also watching the temperature of the asphalt and the forecasts from the seven weather stations along the route. "The road surface is getting steadily colder, there's a risk the rain might turn to ice," explains István Fricska, the man responsible for motorway operations.

His team at the Operations & Maintenance Center (O&M) monitors the route by video camera around the clock. They record every accident, every instance of damage – and every change in the weather. Especially in winter, their surveillance is essential to keep traffic moving freely despite the ice and snow.

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