



Quality underpins change

Quality, which comes from the Latin word "qualis" meaning "what kind of", refers in daily use to characteristics that clearly exceed a balanced measure of general minimum expectations, especially as regards how these characteristics change over time. It is the clear objective of Buderus Edelstahl GmbH to significantly exceed the minimum expectations of the market and to successfully support the developments and innovations of our customers. In order to satisfy this objective now and in the future, the Quality Control department, the Quality Planning departments for engineering steel, open-die forgings and tool steel, and the Process Engineering and Development department have now been combined to form the Quality function.

Classic quality assurance

The Quality Control department is managed by Friedrich-Eckhard Keunecke, and is principally concerned with classic quality assurance tasks. This includes maintaining the quality assurance handbooks that were

compiled more than 30 years ago in Wetzlar. The parameters for quality assurance were set in the light of the rapid developments in core technology and ever more demanding applications, and further aspects followed with the arrival of ISO 9000. Grad-

ually the customary certifications became necessary for Buderus Edelstahl too, resulting in the first ISO 9002 certification in 1992. When Edelstahlwerke Buderus AG was reorganised into three companies there was a Change to Approval in 2006 of the existing certification to ISO/TS 16949. Since Buderus Edelstahl GmbH production is principally one-off and small batch production, it was logical to stipulate ISO 9001:2000 together with the environment standard ISO 14001 as the basis of the management system.

In addition to the requirements of these basic standards, Buderus Edelstahl undertakes to satisfy additional more compre-

hensive quality requirements set by classification societies such as Lloyd's Register, Det Norske Veritas and Germanischer Lloyd for shipbuilding and offshore work. All the necessary approvals are in place for the special products produced in Wetzlar, as are all the destructive materials testing incorporated in the Quality Control department. In addition to the customary testing procedures for metallic materials, special procedures such as fracturing mechanics tests for high-tensile steels, determining dynamic impact force to ZF standard for gear steels, hot tensile tests, permeability measurements on materials for power generation equipment and dilatometric measurements for investigating the conversion behaviour of steels are carried out.

Buderus Edelstahl plays a pioneering role in investigating microscopic inclusion ratings. A process for detecting and evaluating non-metallic inclusions with an automatic image analysis system has been operating for a long time. This image analysis system is also used to determine



Image analysis systems support daily work in Metallography

enhanced visual display of material defects. It is now possible to display various views of defects in digital form, and provide a better image of spatial position and extent. Buderus Edelstahl has been using the Saphirplus ultrasonic testing system since 2002. Investment in this kind of test equipment is made with regard to customers' interests, so it is also regarded as a contribution to customer satisfaction, and thus an investment in the future.

| Customer communication channel

The Quality Planning departments act as an interface between customers and the production workshop. One function is providing customer support in technical matters, and another is converting customer requirements into production processes. This is the only way to ensure that the correct material or the right product is produced, and our customers can benefit in full from the capability of steel as a material. The Engineering Steel Quality Planning division covers the area of rolled billets and forged



Automated ultrasonic testing of a generator shaft

bar in stock engineering steel grades, and is headed by Rainer Caspari. This division also deals with materials-related technical questions with its sister companies at the Wetzlar location. The Open-die Forgings division includes all forgings for power generation equipment and general machine building, and is headed by Uwe Bartzsch. The third division deals with tool steel, and is the responsibility of Volker Lubich. All quality planning departments operate application-oriented material and product development projects in close cooperation with customers, and are available for appli-

| Process monitoring

cation consultancy that extends well beyond pure material questions. Process monitoring is a high priority in the Process Engineering and Development department. Recognising and minimising process dispersion is a decisive milestone in the ongoing development of quality at Buderus Edelstahl. This requires not only finding reliable correlations between relevant process parameters and product characteristics using advanced data collection and processing, but also supporting certain steel production and processing processes on-site at plant level. This involves carrying out numerous works trials that always have the objective of improving the product and the manufacturing process.

The results of these works trials feed constantly into task instructions for the production workshops. This already covers part of "knowledge management". Recording and distributing knowledge is of



Fracture mechanics testing of low-temperature engineering steels

austenitic grain size. One major advantage of the system is that the results can be prepared statistically, ensuring comparability. Buderus Edelstahl is moving with the times in the field of non-destructive materials testing as well. Whereas ultrasonic testing was previously carried out only manually by suitably trained personnel, increased demands arising from product liability have now resulted in more and more automated testing methods being used. The development of medical technology has also prompted advances in non-destructive materials testing, in order to provide

overriding importance for highly complex products, so Buderus Edelstahl has set itself the task of introducing knowledge management to cover this. As well as modifying existing products, it is equally necessary to develop new products and materials to ensure the company's future. For example 24 R&D projects are currently being managed and progressed in the company. The Process Engineering and Development department is headed by Dr Frank Hippenstiel, who also heads the Quality function.