



LABORATORY SERVICES

Laboratory work

During their working life materials can change in their properties. This change in properties is often based on a change or deterioration of the microstructure. Eventually, such changes can lead to failure of components. Changes can be induced to the internal material through for example heat or high, applied forces. Other deteriorations are related to the surface by e.g. corrosion or erosion. The study of such changes is the core business of DEKRA's laboratory service. Beside metallography, the laboratories also perform extensive mechanical testing. Through our internal workshops the material can be handled in-house from the delivery through the specimen preparation to the testing itself.

OUR SERVICES:

- ▶ Replica application and analysis, including assessment of microstructural changes of operating components
- ▶ Metallographic specimen sampling and specimen preparation
- ▶ Optical microscopy of polished and etched surfaces including microstructural image analysis
- ▶ Scanning electron microscopy
- ▶ Macrostructure preparation and analysis
- ▶ Analysis of welds and welded components
- ▶ Examination of surface layers and coatings
- ▶ Failure analysis of components and fractography
- ▶ Mechanical and technical testing including tensile, fatigue and impact toughness tests
- ▶ Corrosion testing and analysis
- ▶ Simulation of technical thermal treatments
- ▶ Stress analysis with DMS

Metallurgy is a part of material science and deals with the study of metals and alloys whereas metallography is the knowledge about how to study and analyse metallic materials. A vast theoretical and practical knowledge is the base for successful work with material related tasks. DEKRA has an extensive experience in material science and particularly in metallurgy and metallography through its 9 laboratories across Europe.

Material consulting

The other part of the business within the field of material science is consultancy. Within consultancy the material specialists work together with the customer for finding solutions for encountered questions. This work includes materials sciences as vast as corrosion and high temperature behaviour. Often, material consulting is based on laboratory services and the results of those studies. The two areas are, therefore, intimately coupled to each other. Also education is part of our consultancy service. The extensive knowledge in material science permits to arrange tailor-made courses for our customers.

OUR SERVICES:

- ▶ Support and guidance for material selection in customer applications
- ▶ Compile inspection plans for serviced materials
- ▶ Calculation of remaining life based on microstructure analysis
- ▶ Instructions for heat-treatment cycles for materials and components as well as post-welding heat-treatments
- ▶ Education in material science for customer selected areas
- ▶ Welding support regarding welding method, parameters and shielding gas
- ▶ Second opinion on reports for customers

LABORATORY SERVICES

Laboratory addresses

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References

- Czech Republic: Brück AM, spol s.r.o., DOM – ZO13 s.r.o., Svaratest s.r.o., VPS (Východočeské plynárenské strojířny, a.s.), MICO (Společnost MICO, spol. s r.o.)
- Finland: Technip Norge AS, Neste Jacobs OY, BHR Hochdruck-Rohrleitungsbau GmbH, Babcock Noell GmbH, Kraftanlagen ARGE, SIAG Stahlbau Ruhland GmbH & Co. KG, Bouygues Travaux Publics
- France: AFCAB, Buhlmann Tube Solution, Eiffage, Eiffel Deutschland Stahltechnologie, Michelin, Renault, Total, Vanatome
- Germany: AXA, Eberspächer, Bosch, Thyssen Krupp, Mercedes Benz, Siemens AG, Arcelor Mittal Services GmbH, E.ON Anlagenservice GmbH, Buderus Feinguss GmbH, Wilh. Schulz GmbH, Babcock Giesserei GmbH
- Lithuania: AB ORLEN Lietuva, SIA East Metal, Ignalina Nuclear Power Plant
- Sweden: Borealis AB, Sandvik Rock Processing, Kemira Kemi, EKA Chemicals, Perstorp Specialty Chemicals, Absolut Spirits