High-Level Lifting

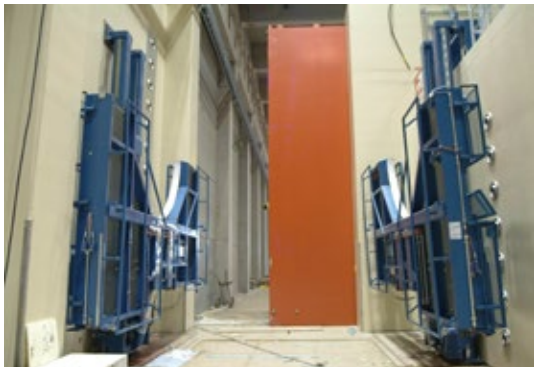
Solutions for cranes, transport systems and components for the nuclear industry
Expertise in planning, manufacture, erection and commissioning

www.steag-energyservices.com

steag

Crane systems, transport and lifting equipment and special components

The services portfolio of the Nuclear Technologies division of STEAG Energy Services GmbH includes the delivery of crane systems, transport and lifting equipment and special components. We offer complete, one-stop solutions: from conceptual/ final design and assistance in licensing procedures to delivery and erection, commissioning and servicing – all in conformity with the highest safety standards.

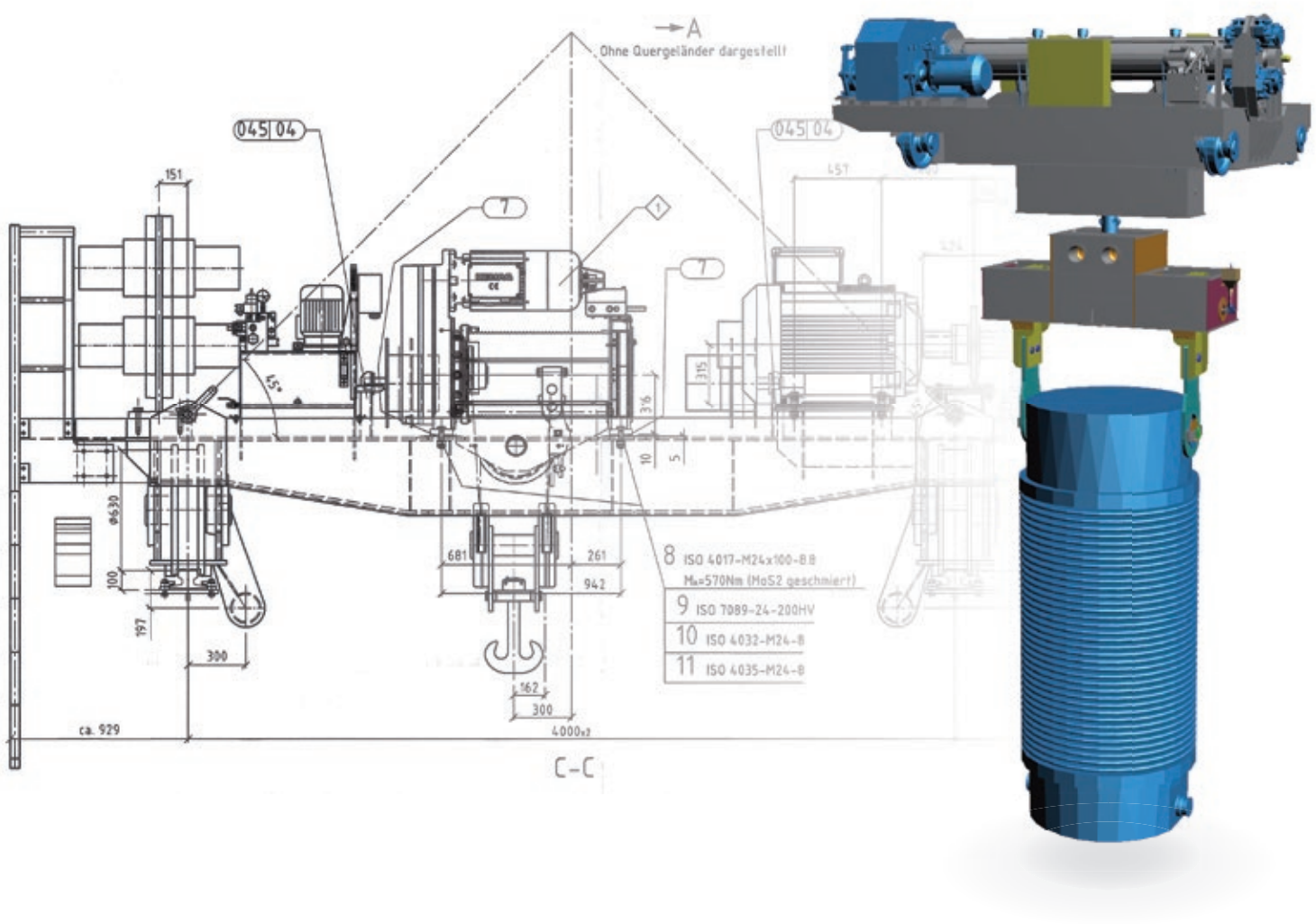


STEAG offers state-of-the-art technical and economic solutions that meet the highest safety requirements of nuclear applications. With a large number of successfully completed national and international projects to show for itself, STEAG is an experienced partner for the implementation of complex tasks. The focus of STEAG‘s services is on the construction of complete, new systems, and on the rehabilitation and repair of existing systems as well. At the same time we see to the upkeep of these systems with individual services such as maintenance and the performance of periodic in-service inspections and repairs throughout the entire lifecycle.

We are your competent partner.

Planning, design and detail engineering

Cranes, transport systems and special components for nuclear applications call for specific measures in terms of design elements, instrumentation and controls, analytical confirmation, documentation and licensing, to ensure compliance with the technical specifications and regulatory requirements. In addition to conceptual planning, STEAG handles the complete structural and mechanical calculations as well as the design-related engineering and implementation.



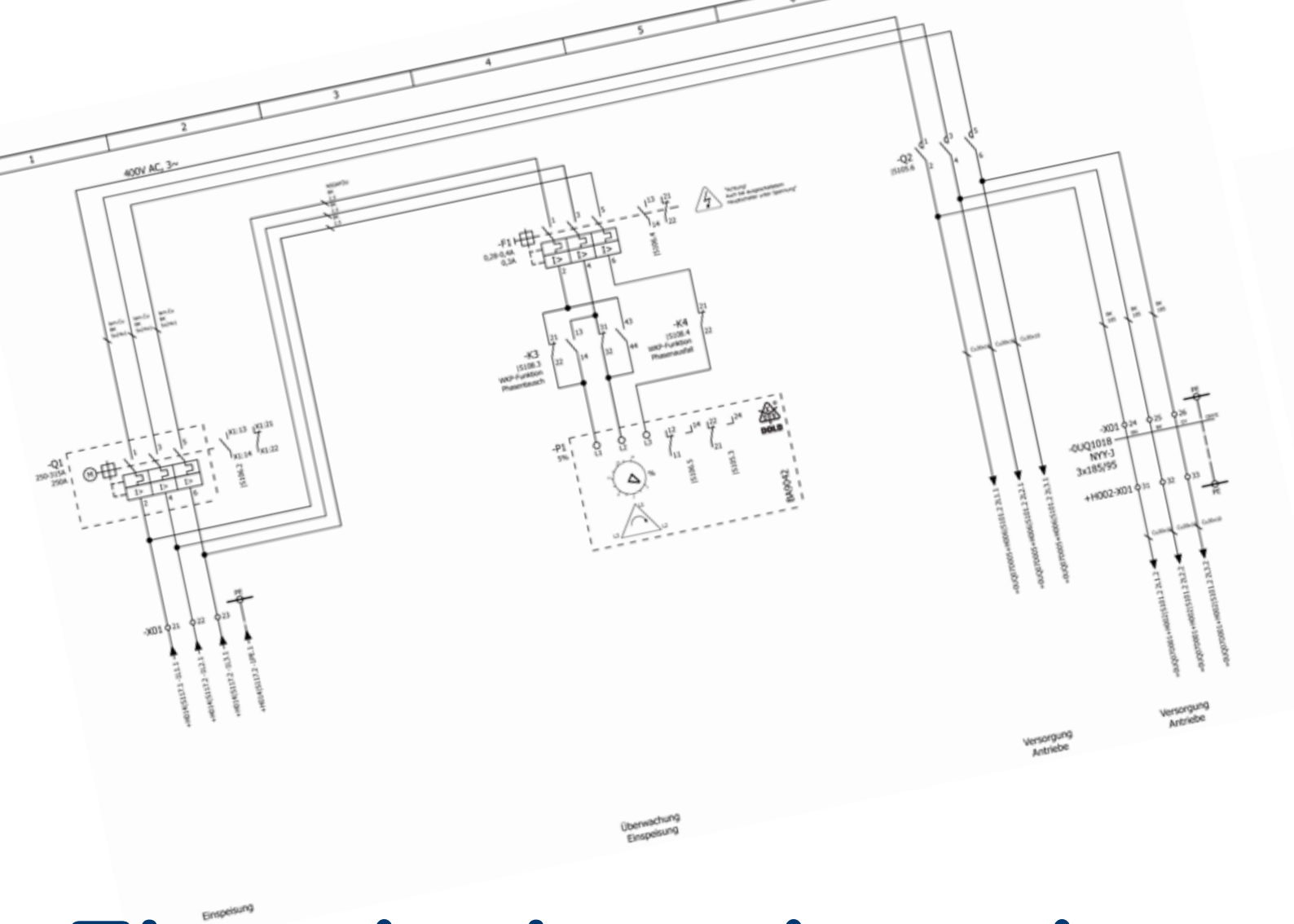
Mechanical engineering solutions in accordance with nuclear safety standards (e.g. KTA in Germany)

We are experienced in the implementation of the nuclear safety requirements laid down e.g. in KTA 3902 for crane systems, winches, trolleys and load-attachment and load suspending devices.

Examples of requirements based on section 4.3 of the German KTA standard:

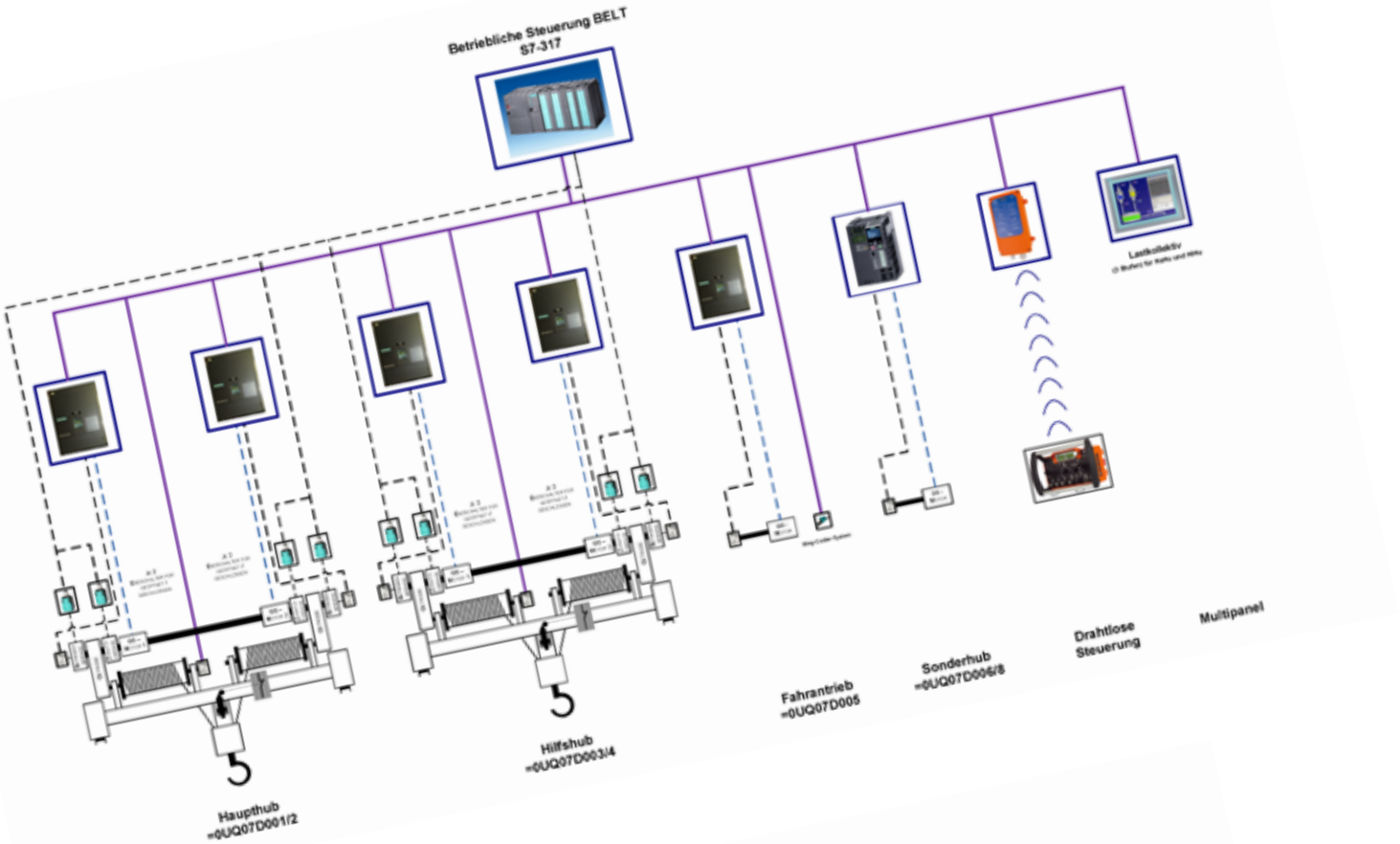
- Classification of cranes in lifting class H4 and loading level group B4
- Classification of lateral transport drives for cranes and trolleys and of main and auxiliary hoists in drive mechanism group 2m
- Classification of load hooks in drive mechanism group 3m
- Classification of load carrying means in lifting class H4 and loading level group B4
- Equipping of hoists with a double drive mechanism chain or a single drive mechanism chain with safety brake (output side)

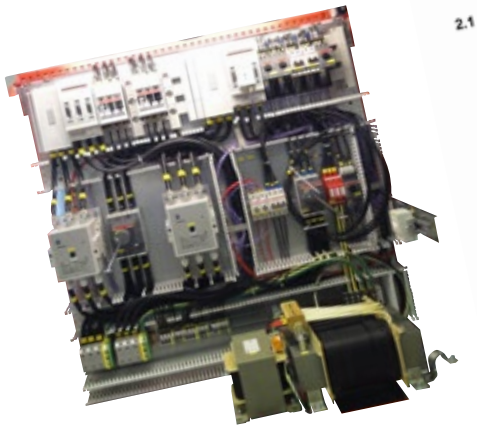
For individual solutions, STEAG has developed expert-validated concepts which are combined with the plant-specific requirements to produce an economical solution. A combination of various measures provides a safeguard against the drop of load which the KTA standards are designed to prevent, and the lifting operation can be carried out safely.

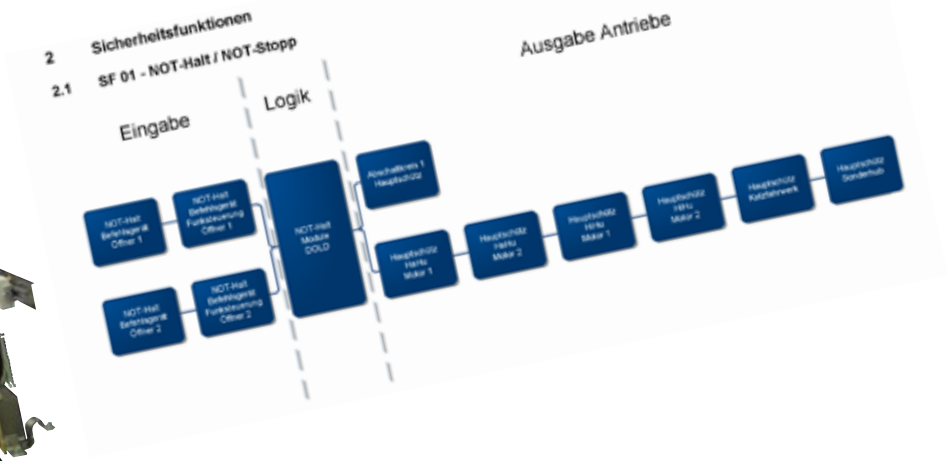


Electrical engineering, instrumentation and control

The requirements posed by nuclear technology in the area of functional safety and failsafe control go far beyond the design principles formulated in the DIN, EN and/or ISO standards. In particular, high requirements are placed on traceability and documentation of the realization of hardware and software solutions.





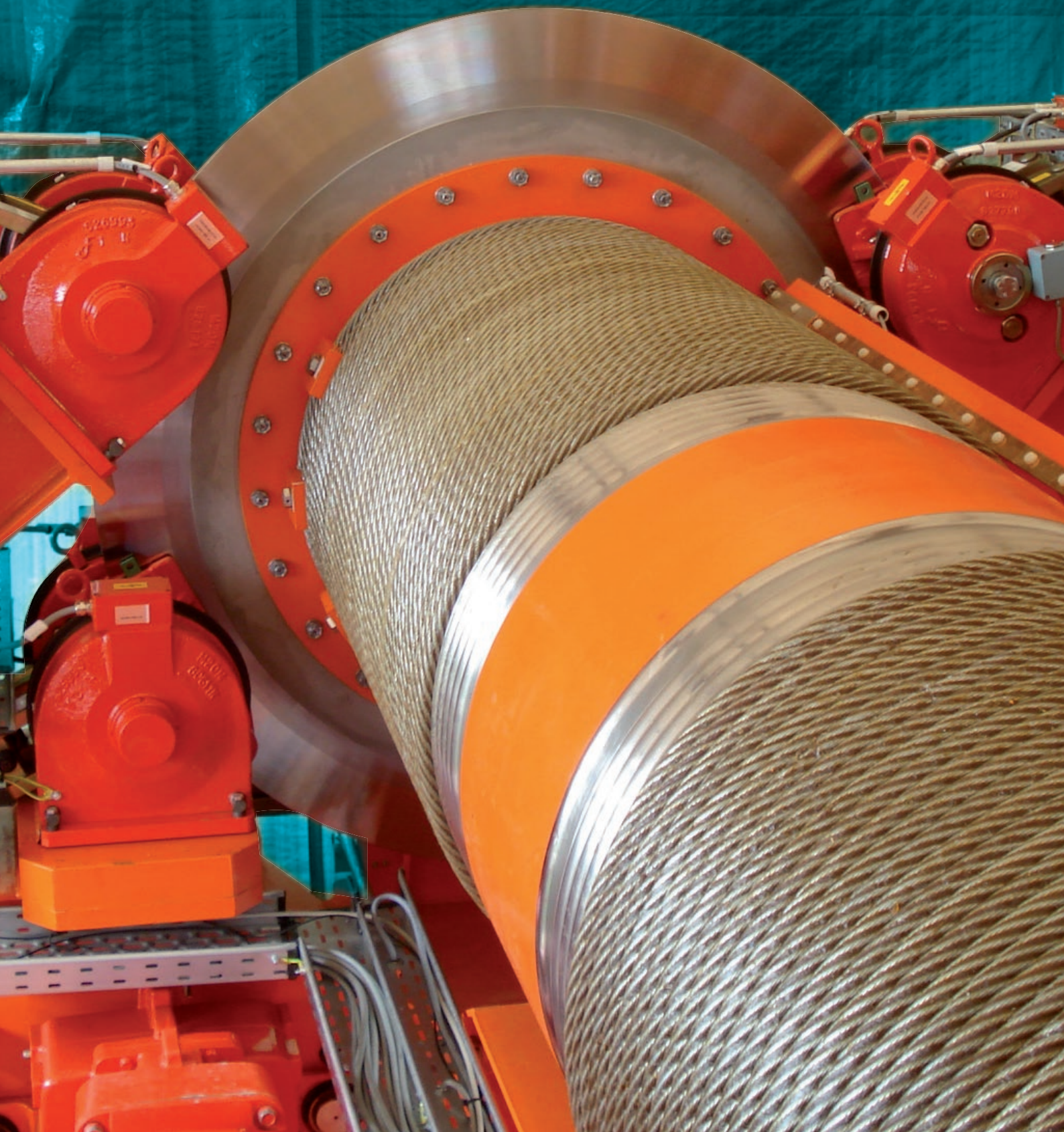


STEAG develops safe instrumentation and control systems, from initial conceptual design through to the complete operational system, including all required proofs and calculations as well as verification by authorized inspection agencies.
Starting from the initial concept, risk studies and verifications, during the detail engineering phase complete final design and manufacturing documents are prepared. Software development and validation plus module and integration tests performed prior to commissioning are keys to a safe, effectively operating system.

In designing the components, special attention is paid to electromagnetic compatibility.

- DIN EN 60204-32
- Safety-related instrumentation and control systems complying with EN ISO 13849
- Safe application software complying with DIN EN 62138
- EMC Directive 2001/108/EC

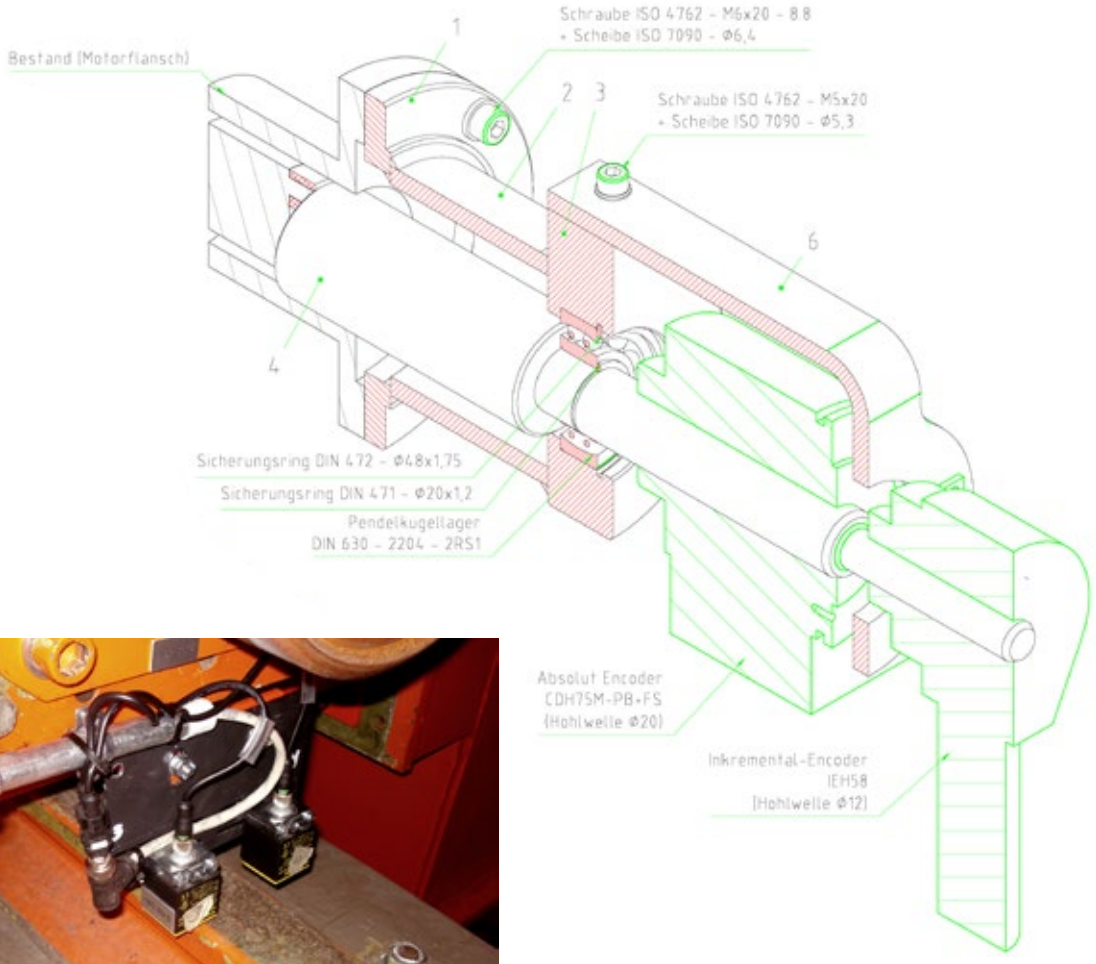
Crane system rehabilitation



Besides delivering crane systems, STEAG boasts extensive experience in the rehabilitation of the mechanical and electrical equipment of existing crane systems, upgrading them to reflect the latest state of the art.

As a complete package STEAG offers the analysis/ evaluation of the existing system along with the planning and implementation of necessary upgrading measures, including technical support during licensing procedures. In addition to dismantling entire plant sections and components and handling new-build projects, STEAG reengineers (retrofits) existing components. For example, the mechanical rail-wheel system is subject to significant wear due to dynamic loads and structural influences, resulting in a need for retrofit activities especially when increased loads must be handled. With the aim of avoiding construction measures wherever possible, STEAG offers innovative concepts for the rehabilitation of lateral transport drives. They include in particular the adaption and integration of new sensors in the existing system and the connection of existing components to the new I&C system.

STEAG can draw on a wealth of experience and ensures short changeover times to guarantee a high level of plant availability.



Competent manufacture

For the provision of important safety-related products and services in nuclear facilities, STEAG has its system- and product-related quality assurance measures verified periodically as suitable for meeting the requirements of nuclear safety standard KTA 1401.

Manufacturing support and in-process inspection

In the area of manufacture, STEAG works together with qualified partners who are familiar with nuclear safety requirements and have suitable facilities for manufacturing and testing. In the context of operational quality assurance STEAG monitors the manufacturing processes in the production plants through responsible test supervisory personnel certified to DIN EN ISO 9712.

Before the start of fabrication

- Review of production prerequisites (confirmation/proof of qualification, certificates)
- Checking of the test certificates and personal certificates of the test supervisory bodies and testers/inspectors
- Verification of the adequacy of the production, measuring and testing equipment
- Analysis of production processes
- Advice and support for selection of suitable semi-finished products and bought-in parts
- Checking of material certificates for compliance with the approved documents and/or KTA requirements
- Operational quality assurance on supplier premises

During fabrication

- On-site material inspections
- Monitoring of welding processes
- Support and supervision of nondestructive material tests
- Testing of corrosion- and surface-protection
- Recording and checking of climatic data in the course of preservation work
- Checking of suppliers‘ manufacturing documentation

After fabrication

- Final inspection on manufacturer‘s premises
- Preparing of a quality-assured final documentation
- Factory tests and acceptance with customer/independent expert

Erection and commissioning

The erection and commissioning of the components in nuclear facilities is carried out by STEAG employing experienced staff who, of course, meet the requirements for work in third-party nuclear installations.

STEAG handles site and erection management during the erection phase and performs functional testing and acceptance inspections during commissioning. In the commissioning phase STEAG sets special store by punctual implementation, including comprehensive quality assurance. The acceptance inspection together with the customer and the official examiners is an integral element of the scope of services.

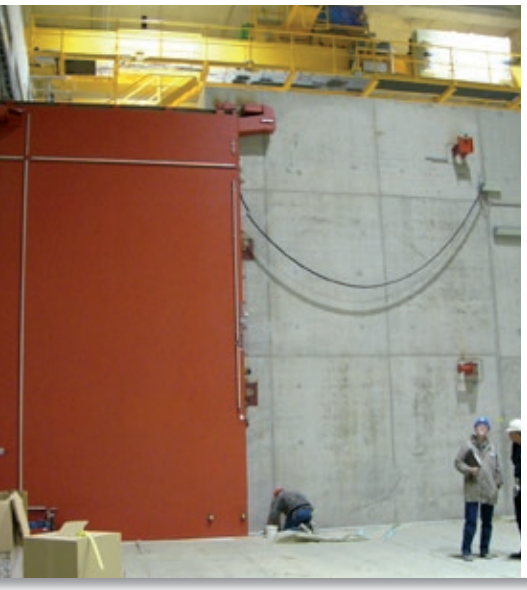
After handover of the facility STEAG carries out maintenance and fault clearance in compliance with the customers‘ requests and performs in-service inspections based on regulatory requirements.











In-house expertise

Our interdisciplinary teams are always knowledgeable and familiar with the current requirements and have certified expertise to offer in everything from planning to acceptance.

Dipl.-Ing. Holger Birr,
Official Crane Inspection Expert

With our official crane expert we see our projects through from the planning phase to the approval of commissioning and startup, making our expertise available to the customers during the licensing procedure.

The planning and implementation of functional safety call for a great deal of continuous training and qualificaton. This is reflected in the certification as functional safety engineer.

Dipl.-Ing. Ralf Krajnc,
Functional Safety Engineer

It goes without saying that STEAG is in possession of the required certifications, including qualification certificates.

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