

# Holistic Qualification

## Realistic qualification of products with customer-specific requirements Structural Integrity and Functionality

In the development of transport systems for the transport of hazardous material (e. g. nuclear, biological, chemical), the structural integrity and operational functionality must be ensured. This applies in particular to vibration, shock and climatic loads during transport on road, rail or sea. Due to the special conditions of such transports, the occurring loads may be unclear.

IABG therefore provide support in determining the load specifications for virtual or experimental qualification steps, by selecting appropriate standards or by individually tailored test programs and loads. We combine a wide range of computational and experimental qualification services for you, particularly in the absence of test options, and integrate them into your qualification process on demand:

### 1 REAL-TIME MEASUREMENTS

- Measurement campaigns & sensor application
- Measurement of loads and responses (e.g. on prototypes)

### 2 EXTRACTION OF QUALIFICATION LOADS

- Generation of damage-equivalent load signals and test programs
- Comparison with standards

### 3 DETERMINATION OF STRENGTH PROPERTIES

- Material tests
- Component tests
- Joining technology

### 4 FINITE-ELEMENT AND MULTI-BODY-SIMULATION

- Model building and updating by measurements
- Modelling concepts for mechanical joints
- Iterative design optimisations

### 5 COMPUTATIONAL QUALIFICATION

- Finite-Element response analyses
- Fatigue strength assessment
- Final strength proof according to standards

### 6 EXPERIMENTAL QUALIFICATION

- Experimental durability tests
- Vibration, shock and drop testing
- Environmental tests (temperature, humidity, extreme conditions)

## Challenges

- Determination of realistic requirements for the entire qualification process
- Suitability verification of standardised tested purchased components
- Holistic component qualification across all test requirements
- Non-testable test specimen masses and dimensions require individual qualification concepts

## Service

- Consultancy for the entire qualification process
- Determination of damage-equivalent loads by measurements and computational methods
- Holistic qualification for all environmental requirements including hybrid concepts

## Your added value

- All services from a single source: virtual and experimental analyses as complementary synergies.
- We provide comprehensive advice on the selection of necessary qualification steps – in all phases of product development, product optimisation and approval issues.
- Our independent and accredited laboratories provide you with individual support with optimisation and approval.

For further information please contact:

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