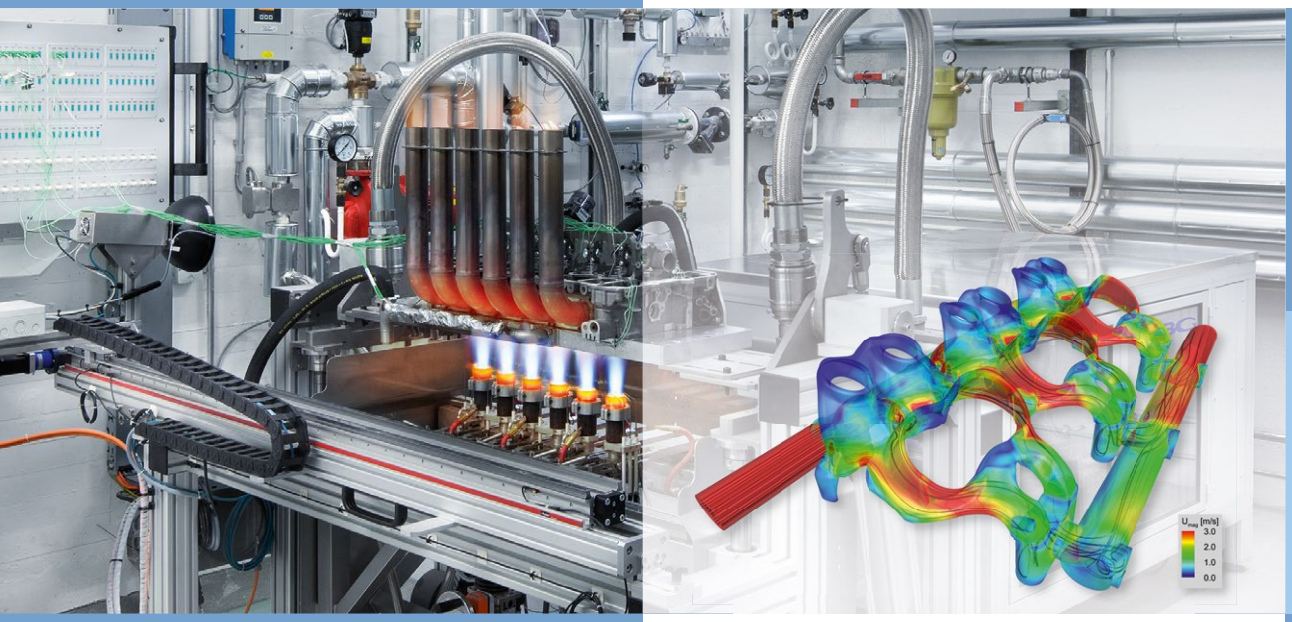
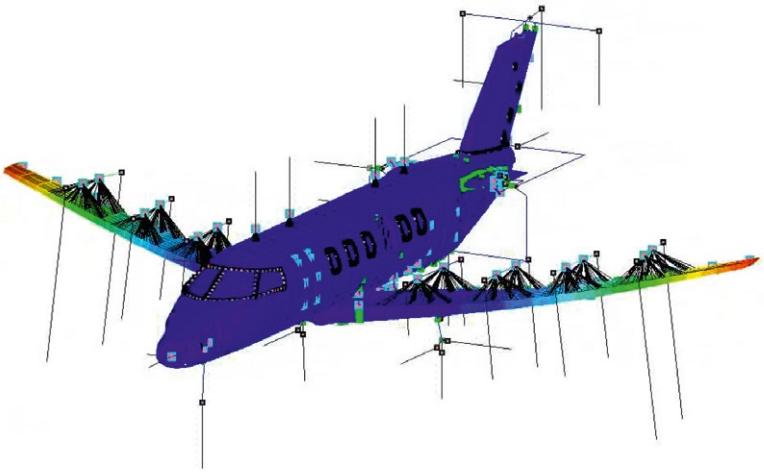
Intelligent Testing

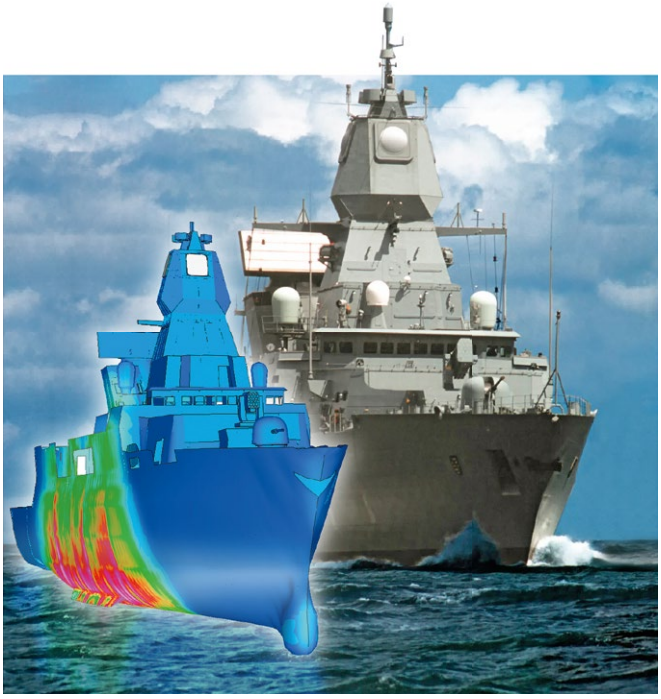


Virtual Testing

IABG



Test bench simulation for optimising structure tests



Simulation and validation of the fluid-structure interaction during an underwater detonation

Simulation and realisation of an accelerated test method for rotor blades

Virtual Testing

Ever faster development processes call for enhanced methods to simulate real operating loads already at the design stage, also taking parametric variations of a structure into account. Powerful simulation tools and fast optimisation procedures enable the virtualisation of many important product qualification steps, which is essential for reducing development costs and times.

Especially when new materials or innovative structure designs are in play, it is crucial to identify material and structural parameters and calculate loads in advance in order to have prior knowledge of the sensitivity of a test item. Features such as the damage tolerance, residual load capacity and vulnerability of the primary structures must be scrutinised.

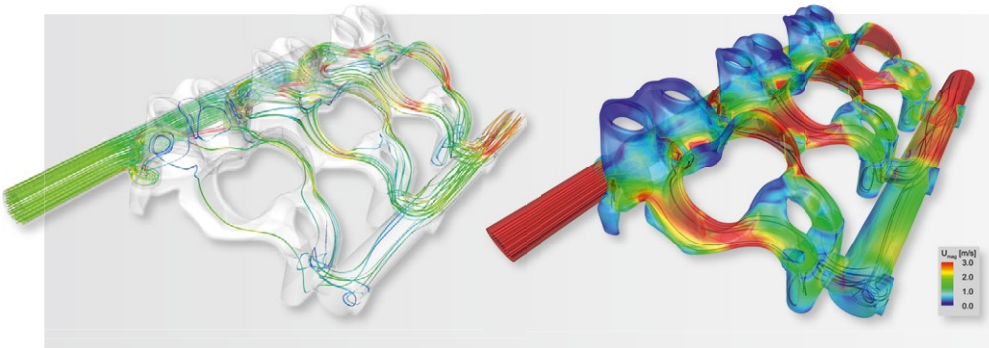
For this purpose, IABG offers to perform numerical experiments and analyses with virtual prototypes of substructures or complete structures on virtual test benches during the development and certification process. As the results might not always be reproducible with real test items during the experimental qualification and verification stage, IABG quantifies and evaluates the influence of potential constraints before conducting the actual test.

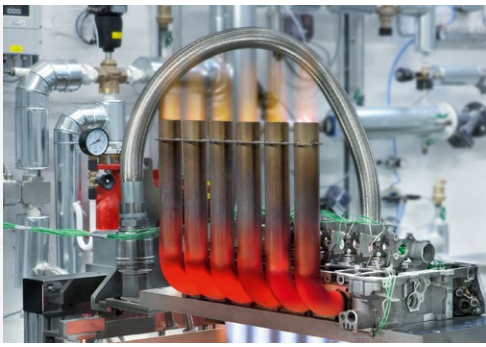
Services

- Reference test (selection and characterisation of materials, feasibility check, comparative data for simulations)
- Validation simulation (material model for static and dynamic loads, model simplification, virtualisation of the entire reference set-up, test environment or design load conditions)
- Virtual design (feasibility study, design optimisation, detailed analysis, preparation of the qualification)
- Product qualification (design specification, qualification, certification)

Benefits

- Fast virtual development of innovative structure solutions and evaluation of potential risks
- Optimisation of test procedure and test bench prior to the actual test
- Simulation of a test item's behaviour during the test and identification of a suitable test item
- Optional optimisation of the test item before time-consuming and costly tests begin
- Optional substitution of individual load cases
- Early determination of possible damage and consequent optimisation of the real test bench
- Reduction of component or full-scale structure tests





CFD flow simulations in a cylinder head and validation on the test bench

AUTOMOTIVE

INFOCOM

MOBILITY, ENERGY & ENVIRONMENT

AERONAUTICS

SPACE

DEFENCE & SECURITY

About IABG

We are a closely networked business group and offer integrated, future-oriented solutions in the sectors Automotive • InfoCom • Mobility, Energy & Environment • Aeronautics • Space • Defence & Security. We understand the requirements of our customers and support them independently and competently. We implement effectively, efficiently and with target orientation. We operate reliably and sustainably. Our international market presence and our success are based on technological excellence and a fair relationship to our customers and business partners.

As a development partner we provide quality control services and develop solutions in the areas of functional efficiency, quality, design, and materials. We offer a broad spectrum of products and services, ranging from numerical analysis to experimental testing to the realisation of turnkey, customised test systems that we operate for the customer.

For more information please contact:

Phone +49 89 6088-4454
Fax +49 89 6088-4066
automotive@iabg.de
www.iabg.de

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IABG
Einsteinstraße 20
85521 Ottobrunn
Germany
Phone +49 89 6088-2030
Fax +49 89 6088-4000
info@iabg.de
www.iabg.de