

TESTING AND CERTIFICATION OF PIPELINES – OFFSHORE AND ONSHORE –

As an independent, accredited testing, monitoring and certification body, we test your materials, components and complete systems according to the applicable standards and guidelines or individual test programs.

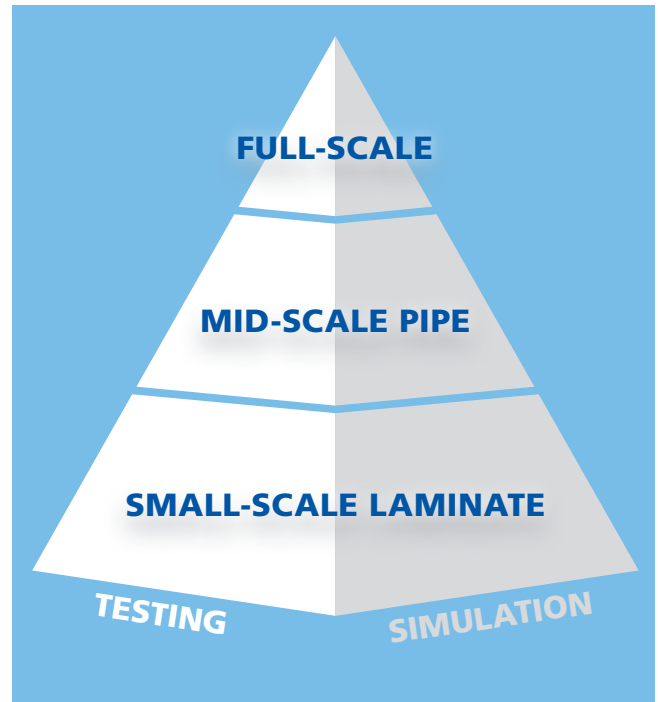
IN ACCREDITED HANDS

Pipelines transport oil and natural gas over long distances and make a more important contribution to a secure energy supply than ever before.

The pipes and systems used to extract fossil fuels are put under great stress every day. It must be ensured that energy sources can take be transported safely and without any risk to people or the environment – both offshore and onshore.

As a testing and simulation service provider, we are aware of this responsibility for manufacturers of materials, components and systems.

With us you are well advised – against the backdrop of globalization and regulation, we guide you through the requirements, testing procedures and specifications of the applicable standards, regulations and laws.



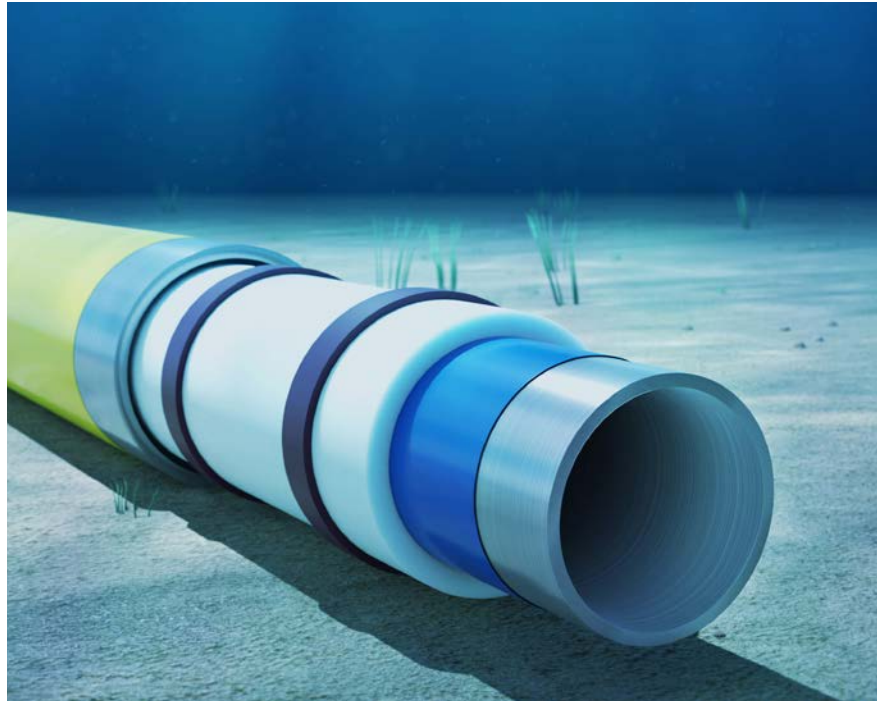
Accredited test laboratory according to ISO 17025 and ISO 17065



INSPECTION BODY

TEST BODY

IN FOCUS: TESTING ON THERMOPLASTIC COMPOSITE PIPES IN ACCORDANCE WITH THE DNV-ST-F119 GUIDELINE



The DNV-ST-F119 guideline describes the requirements and design rules for flexible thermoplastic composite pipes (TCPs) for offshore applications. The publisher is DNV, a global quality assurance and risk management company.

The purpose of the guideline is to increase confidence in the security and reliability of TCPs for offshore use. It also pursues the goal of promoting continuous innovation and technology development.

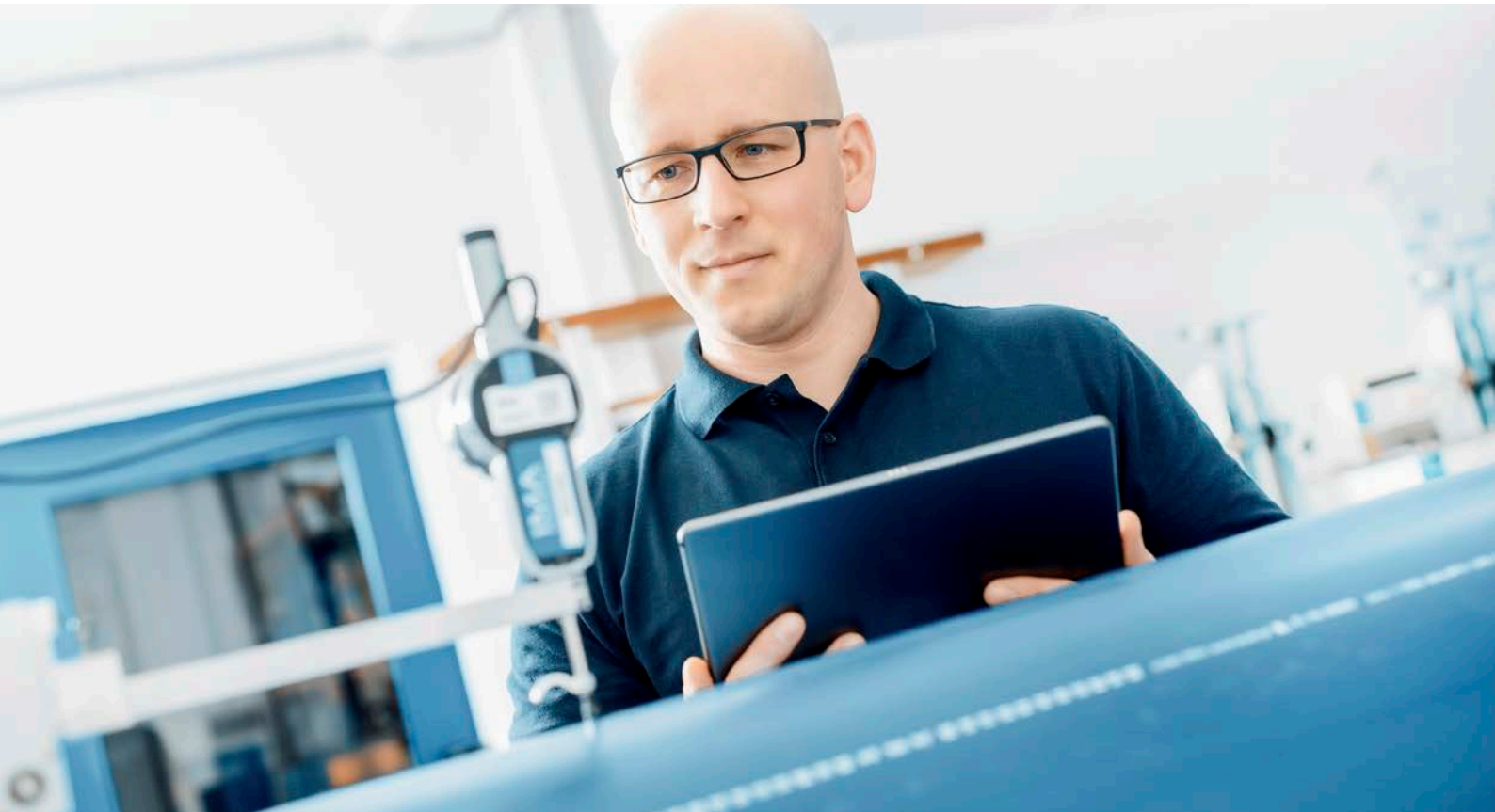
In order to regulate the strict requirements for quality, safety and reliability, the guideline describes the technical provisions and documentation requirements on the basis of applicable specifications for loads and global analyses.

The guideline applies to all new TCP systems to be built and can also be applied to the modification, operation and upgrading of existing pipelines and risers.

The required tests are carried out at Applus+ IMA Dresden based on the test pyramid principle. Most properties are tested on small test specimens or material samples. We use representative larger-scale pipe samples to confirm that the small-scale samples are relevant to the application. Complete or large-scale testing is performed to provide final confirmation of the design analysis.

The testing services of Applus + IMA (IMA Materialforschung und Anwendungstechnik GmbH) are accredited in accordance with the DAkkS accreditation certificate.

FOR MANUFACTURERS OF THERMOPLASTIC COMPOSITE PIPES



With the DNV-ST-F119 guideline, DNV lays the foundation for the manufacture, assembly and application of thermoplastic pipes for offshore use. The guideline also aids manufacturers as well as users, owners and system integrators of pipes, load-bearing fibers, thermoplastic polymer materials, belts and connectors in applying or complying with the necessary process for quality, safety and functionality.

Applus+ IMA Dresden accompanies you from product development and initial sample testing to quality assurance, approval and, if necessary, certification. We will guide you through the requirements, testing procedures and specifications of DNV-ST-F119.

Tests from Applus+ IMA Dresden independently prove the quality of your products. With us, our customers reliably take the final step towards safeguarding the placement of their products on the market.

Applus+ IMA Dresden is accredited and recognized by numerous institutions – this is also a mark of excellence for your products.

MATERIAL TESTING OF PLASTICS AND METALS

Determining the failure limits of a material under different load types in order to verify the service life of a component is a demanding task – and it's one of our core competences.

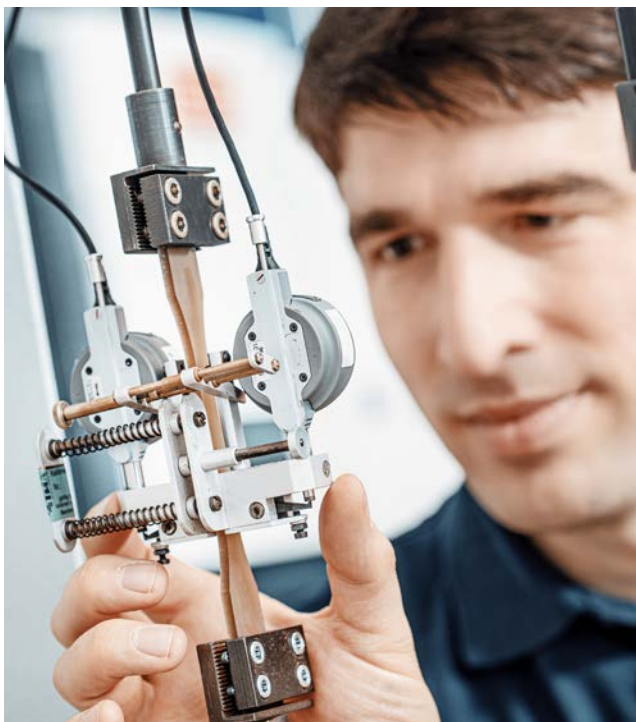
We handle the comprehensive determination of material parameters for you as well as the determination of the load-bearing capacity of metallic and non-metallic materials, joints or hybrid material combinations.



LAMINATE AND SAMPLE PRODUCTION

Our laboratory offers versatile options for producing test laminates: from textile semi-finished products, pre-impregnated semi-finished products, fiber yarns and resin systems.

Benefit from our experience in thermoplastic processing as well as laminate production with vacuum infusion, RTM and winding processes. We produce high-quality test specimens from the test laminates in accordance with national and international test standards.



TEST SPECTRUM

- Physical tests
- Static-mechanical material testing
- Material fatigue testing
- Material creep test
- Thermal analyses
- Environmental testing
- Fracture mechanics test
- Corrosion test
- Impact test

COMPONENT TESTING

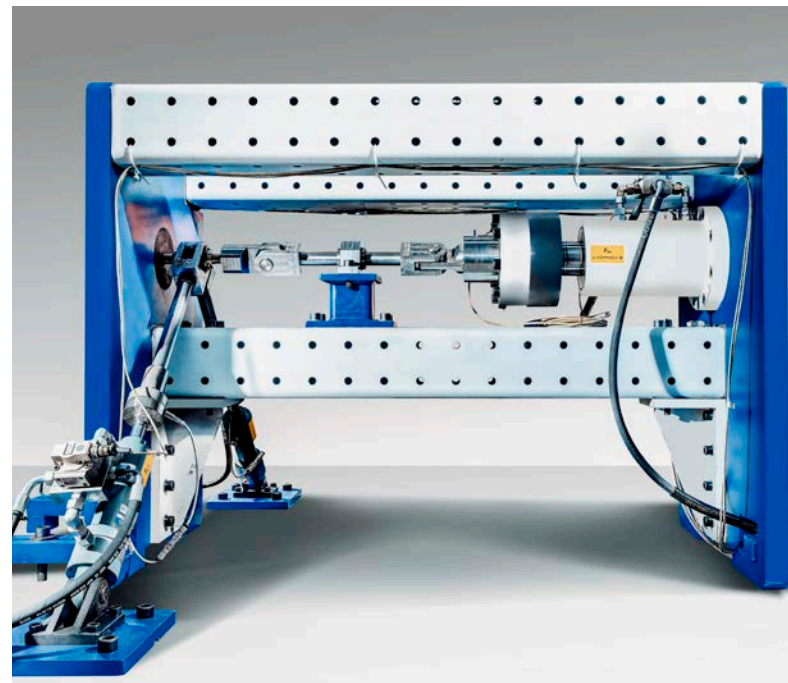
Each component within the entire pipeline system plays a major role. Some must withstand higher forces or more uses than others, and yet the failure of one components can often bring part of or even the entire system to a standstill.

We put your components to the test under normal and extreme conditions and critically assess them according to the applicable standards and guidelines. We are also happy to support you in product optimization.



TEST SPECTRUM

- Burst test: Test at typical operating temperature, maximum temperature and minimum temperature
- Axial test: The load is applied the same way as for the burst tests, except that the pressure is replaced by the axial load. Optionally with or without internal pressure
- Bursting test under bending
- Cyclic fatigue test
- Creep rupture test with stress fracture (axial force fracture test, bending stress fracture tests, internal pressure fracture tests)
- Torsional twist
- Impact test (when empty and under pressure)

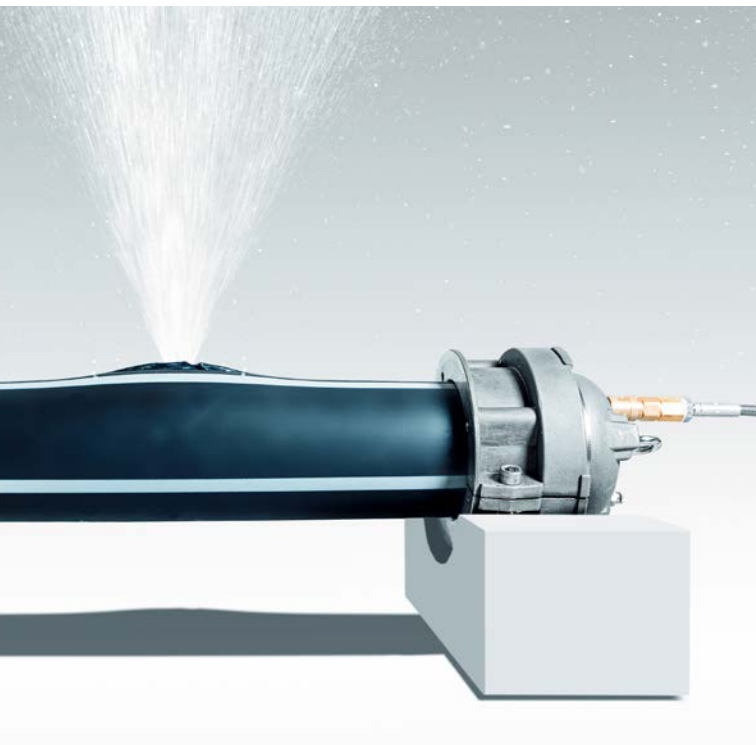




TESTING UNDER MEDIA INFLUENCES

Verification of the component's compatibility with the fluids and the environment:

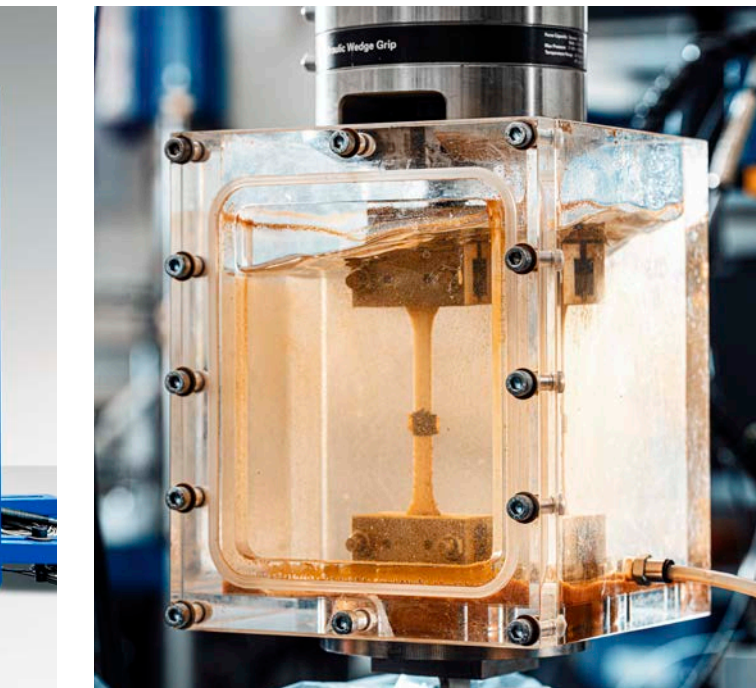
- Determination of the permeability rate of volatile liquids (ISO 6179)
- Determination of the gas permeability of plastic films and foils (ASTM D1434)
- Rubber and plastic hoses with and without insert
- Determination of the diffusion of liquids through tube walls (ISO 8308)



MEDIA

Liquids and gases such as:

- hydrocarbons
- water
- air
- nitrogen
- injection chemicals



TEST AREAS

- Flow lines
- Risers
- Throttle and blocking lines
- Expansion coils
- Borehole access lines
- Chemical injection lines
- Downpipes for pre-commissioning pipelines
- Intervention management
- Dynamic riser systems in accordance with DNVGL-ST-F201
- Subsea pipelines according to DNVGL-ST-F101
- Fittings

SYSTEM TEST

The pipeline system is complex. Constant security of supply must be ensured at all times. The pipes for the extraction of fossil raw materials often reach a length of several thousand kilometers and are connected to pumps and storage facilities by various modules.

Applus+ IMA Dresden checks the interaction of the individual components and points out critical units in the system.

THE MAIN PURPOSE OF THE SYSTEM CHECK IS TWOFOLD

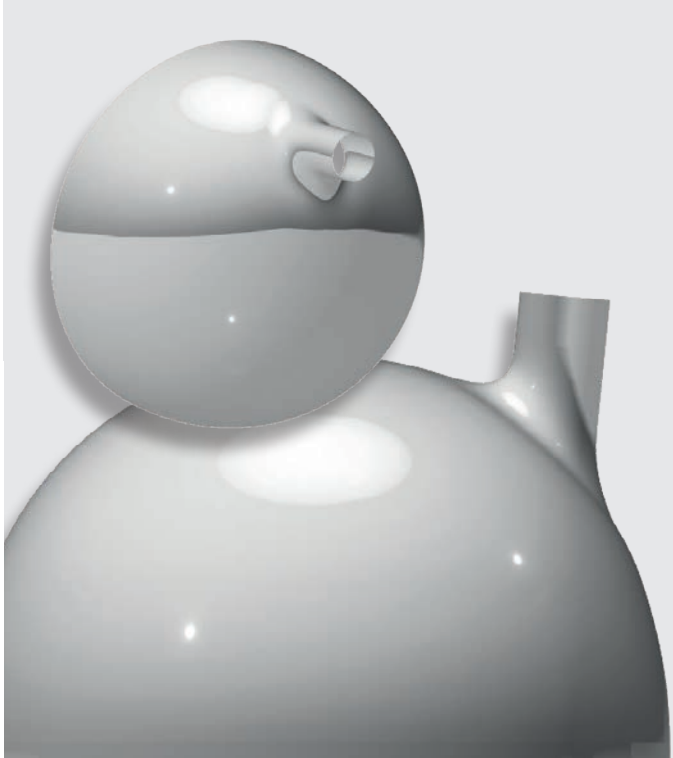
- Performance verification under key load conditions
- Verification of the design analysis



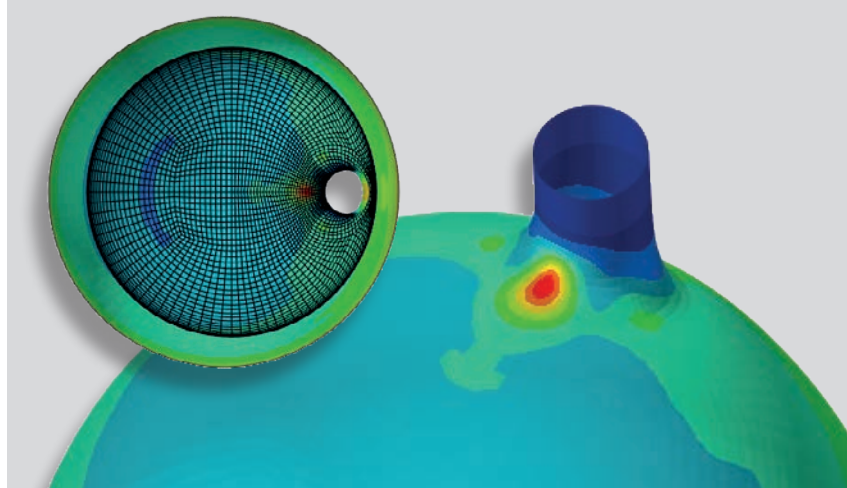
TEST SPECTRUM

- Leak tightness tests
- Internal pressure test
- Vacuum test
- Temperature cycle tests
- Pressure swing test
- Bending fatigue strength test
- Pull-out resistance

SIMULATION AND STRENGTH ASSESSMENT

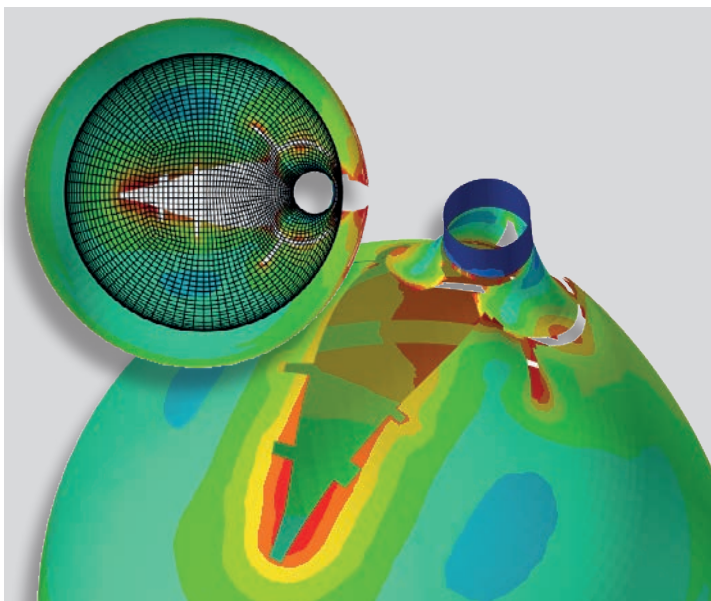


virtual bursting pressure test on a pressure vessel



FE analysis: Degree of utilization of the Material in the area at risk

Our goal is the structural and cost optimization of your products right from the development stage.



FE analysis: Degree of utilization of the material after failure

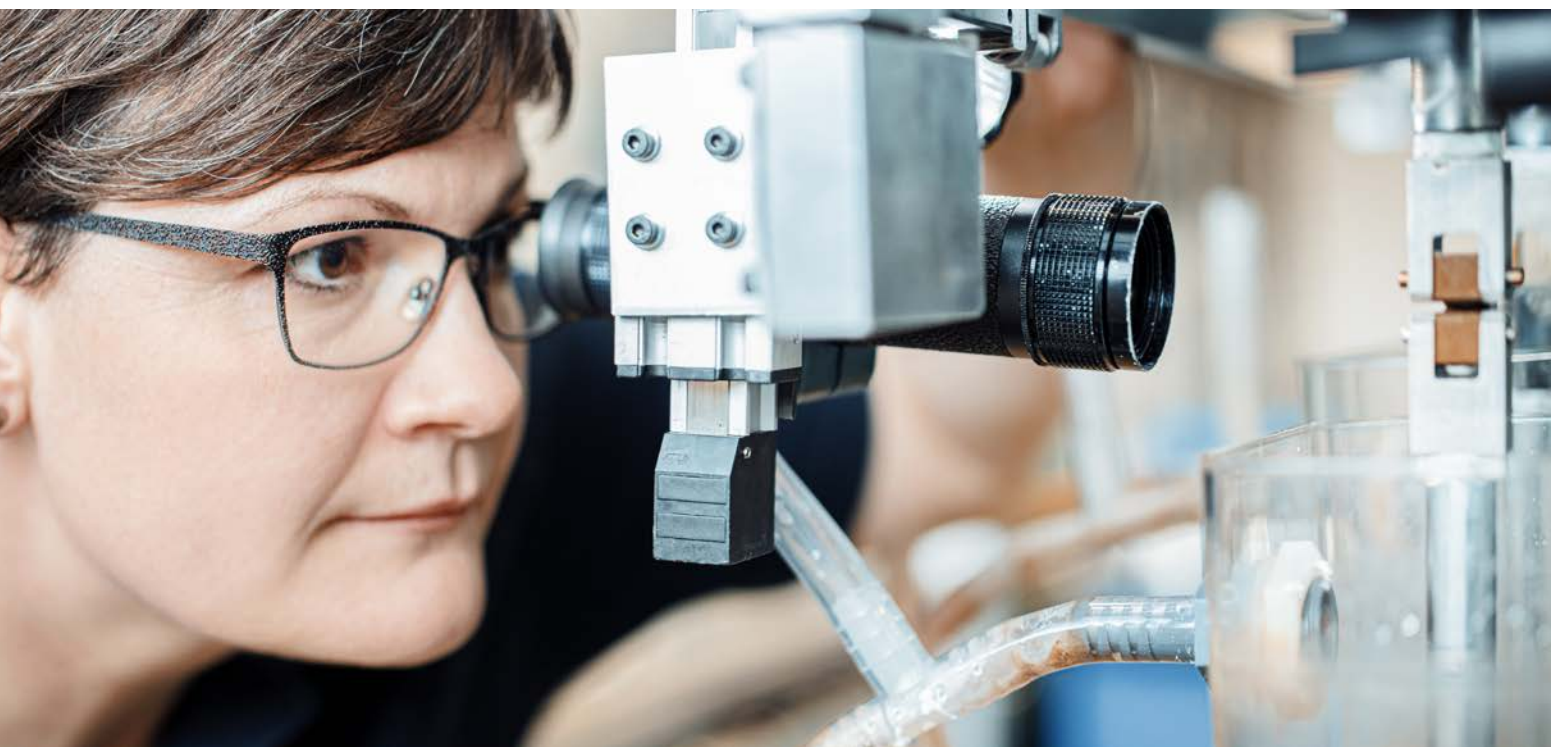
Applus+ IMA Dresden supports you in optimizing your designs with calculated strength assessment and versatile simulation options in order to bring product developments to market faster.

- In the development phase, we make statements on the dimensioning of components and enable you to compare different design variants.
- We project service life by making load assumptions, determining concrete production process-dependent component strengths and investigating stress, deformation and stability.
- Through computational and experimental verification of the operational and fatigue strength, we determine how much dynamic stress a structure can withstand, which dimensioning achieves the best strength values, or how the natural vibration and resonance behavior affects the structural strength.

DAMAGE ANALYSIS AND RECOMMENDATIONS

Not every change of state can be planned. Unfortunately, loads on the components, also in combination with quality defects, can lead to damage and spontaneous events.

We support you in recording and evaluating such damage.



TEST SPECTRUM

- Damage type identification
- Damage classification
- Condition assessment of the material or component
- Determination of cause
- Deriving suggestions for repairs
- Help to prevent future damage of the same origin

Together with our cooperating surveyors and experts, we will find the optimal solution for you to eliminate problems and increase operational safety.



DAMAGE TOLERANCE ANALYSIS

Damage does not always lead to total failure or render a product inoperable. In many areas, there is a damage tolerance limit.

This means that damage to a system can be tolerated up to a defined extent and quantity of damage. This requires well-founded estimates and damage investigations in the event of a possible failure.

Applus+ IMA Dresden has in-depth knowledge and extensive experience in design and durability in order to determine the respective damage tolerance limits for your product.



EXPERT ASSESSOR ACTIVITY

Are you looking for an appropriate expert for your damage analysis?

We can support you to the full extent in the preparation of a legally sound expert opinion through working with us.

- Individual creation of test or verification programs for damage investigations
- Interdisciplinary implementation of all necessary verifications
- Professional and independent assessment of the current position and recommendations using the damage documentation, component history, inspection and testing reports, etc.
- Preparation of a legally sound expert opinion - private and court - by experts cooperating with us

Let us advise you. We can draw on extensive experience in the fields of construction, plant engineering, installation technology and mechanical engineering.



BENEFIT FROM THE COMPETENCE OF APPLUS+ IMA DRESDEN FOR YOUR TESTS AND CERTIFICATIONS.

IMA Materialforschung und Anwendungstechnik GmbH, in short Applus+ IMA Dresden, is the development and test centre which can speed up the process for your new developments and ensure that they are suitable for the market. As an independent test provider we guarantee reliable results and strict confidentiality.

Whenever it comes down to strength, resistance, validation or material characteristic data, then Applus+ IMA Dresden can combine the efforts with regard to test standards, approval and certification tests as well as experimental investigations. We have over 10,000m² of test area in certified and accredited testing laboratories where we can test innovative products and technologies from aerospace, rail vehicle, automotive and medical technologies, shipbuilding, plastic, metal and electrical industries and other industrial branches. You can rely on us: the testing tasks at Applus+ IMA Dresden will be processed according to the current state of the art technology and enjoy worldwide acceptance and trust.

Since May 2021, IMA Dresden is part of Applus Laboratories.
Please do not hesitate to contact us for any questions or inquiries at sales@ima-dresden.de

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