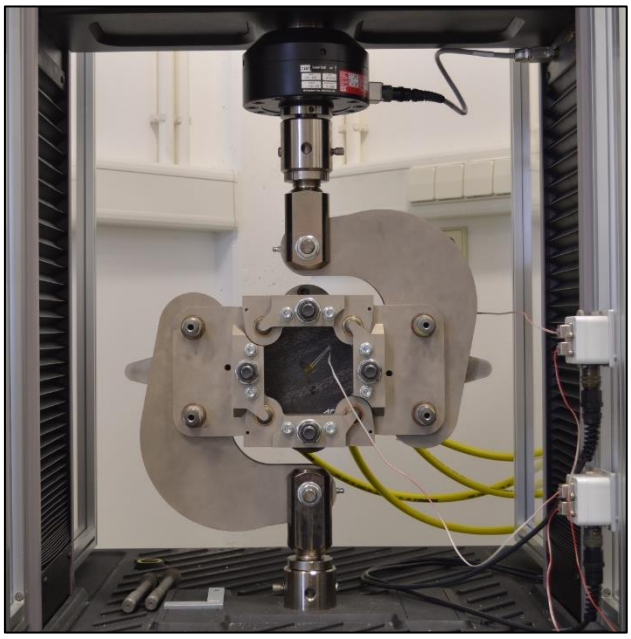

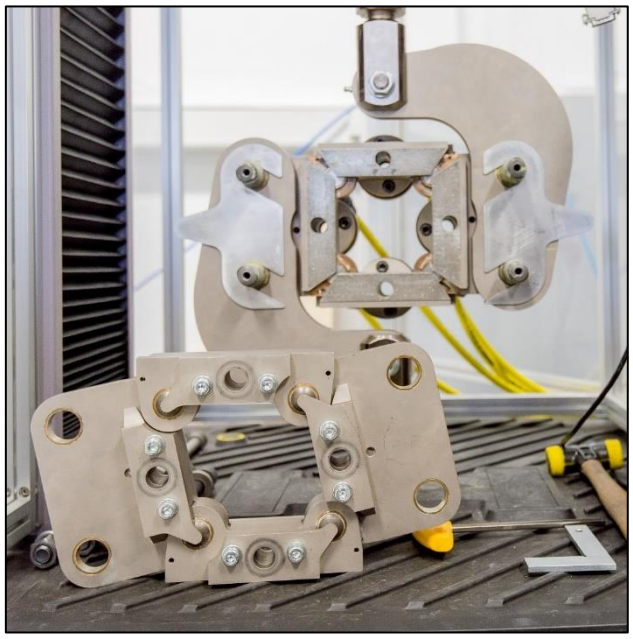

Scope of application

The picture frame test system is used to carry out shear tests according to DIN SPEC 4885 or DIN EN ISO 20337. This shear test system is suitable for the quasi-static characterisation of the shear properties of fibre-reinforced plastics and can be used in all common universal testing machines.

The following laminates can be tested:

- Unidirectional laminates with fibre orientation in 0°- or 0°/90°-direction
- Fabric laminates with fibre orientation in 0°/90° direction
- Short and long fibre reinforced plastics
- Isotropic materials, e.g. pure resin or adhesive resin materials

The shear test system GZ S-100 / GZ S-100 HT enables a very precise determination of the shear characteristics of fibre-reinforced plastics (shear strength, shear modulus and max. shear strain). This test method represents a significantly improved test method compared to all other shear test methods, as higher material properties are achieved with lower standard deviations.

The square specimen is hydraulically clamped in the picture frame. Strain gauges are used to determine the shear strain. Tabs are not necessary. Due to the split design of the shear test system, the specimens can be changed easily and quickly within a few minutes. The greatest advantage of this test method compared to other shear test methods is the non-existent limitation to max. shear strains of 5 %, whereby considerably higher shear strengths are achieved. The test method was developed at the Federal Institute for Materials Research and Testing (BAM) in Germany and has been scientifically validated.

Features & benefits

- Test method for the determination of intra-laminar shear properties (in-plane) with pure shear stress state
- No free specimen edges and no notch effects due to flat specimen clamping
- Testing of material failure and buckling behaviour (also for sandwich laminates)
- DNV GL approval for certification of rotor blades (ST-0376)
- Coated version made of high-alloy tool steel

Technical data

Characteristics	Values
Specimen geometry	165 mm x 165 mm x 1...10 mm
Max. test load	105 mm x 105 mm
Max. shear angle	20°
Max. displacement	+/-24 mm
Max. clamping force per hydraulic cylinder	120 kN
Max. test load	100 kN
Permitted temperature range	-40...+60 °C / -40...+150 °C
Dimensions (W x H x D)	460 mm x 500 mm x 220 mm
Weight	approx. 60 kg

Options

- Adapter for upper and lower mounting in universal testing machine according to customer specification
- Mobile hydraulic system GZ HP-700 M

Standards

- DIN SPEC 4885:2014-01
  Shear test method using a shear frame for the determination of the in-plane shear stress/shear strain response and shear modulus
- DIN EN ISO 20337:2018-11
  Shear test method using a shear frame for the determination of the in-plane shear stress/shear strain response and shear modulus

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