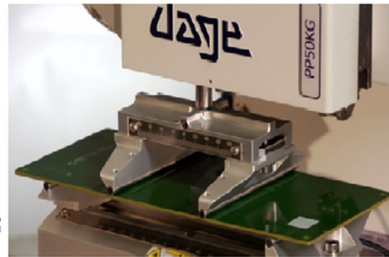
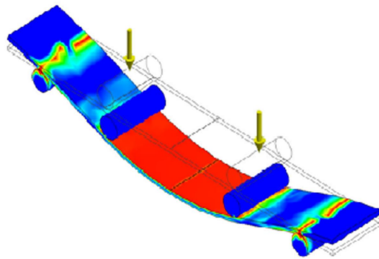


- SCOPE: What is 3/4 point bend testing and how does it work?

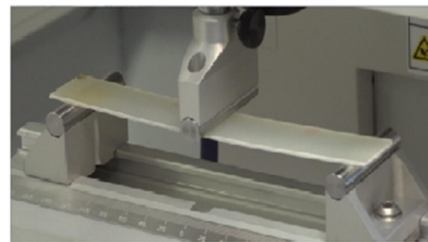
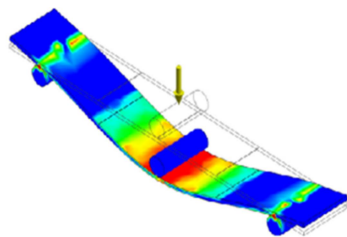
#### 4 Point Bend Testing

All bend testing is based on beam theory, which relates the stresses, strains and deflection of the sample to its dimensions and the applied load. The simplest form of bend is known as pure bend and this is what we aim to achieve in a four point bend test. Typically this form of the bend test is used to determine failure strain of interconnect on circuit boards. Four point bending can also be used to determine material parameters, such as flexural modulus, and for composites such as those used for circuit boards.



#### 3 Point Bend Testing

Three point bending is best understood by looking at the strains in a simple cantilever, where one end is fixed and the other end deflects with the applied load. In the three point bend the maximum stress occurs in the centre of the beam, under the loading anvil. The stress at this point is the same as that experienced at the fixed end of a cantilever, equal in length to the distance between the support and centre anvils. Increasing the span of the support anvils increases the maximum stress for a given applied load, and in this way large stresses can be developed for moderate applied loads.



Under load, the yellow square distorts such that the bottom is stretched (in tension) and the top contracts (in compression). The centre line of the square remains unchanged; this is the neutral surface and is at the mid thickness for a simple rectangular beam

