

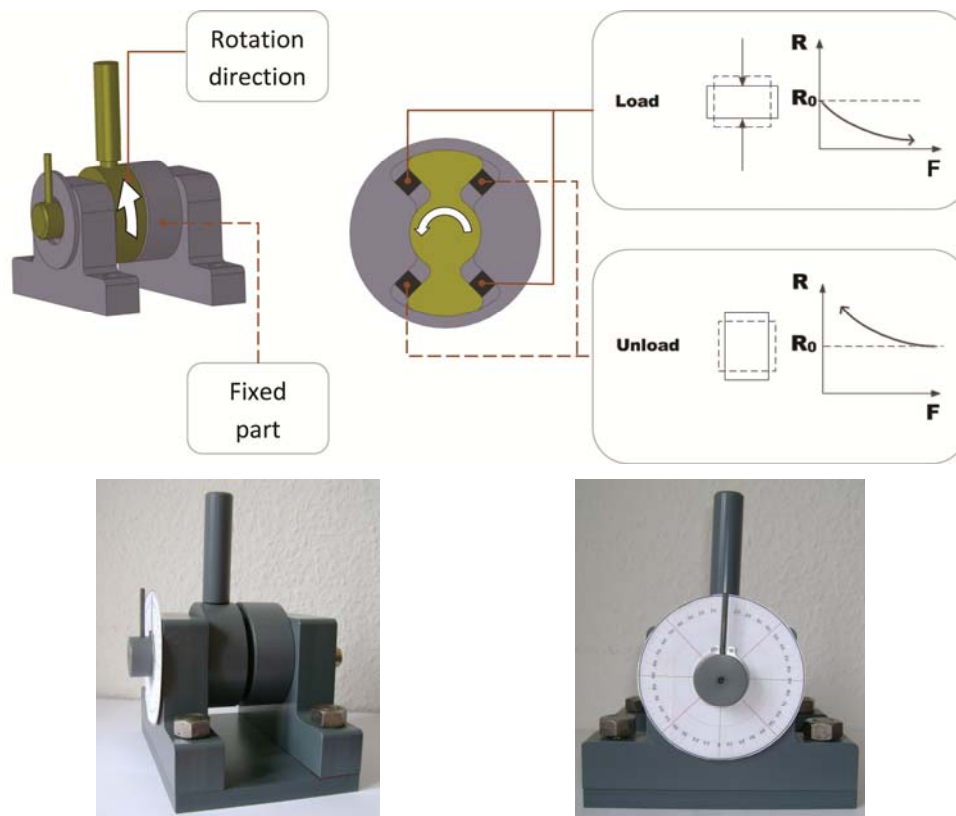
Compliant joining structure with embedded sensor elements

System:

compliant joining structure with embedded sensor elements made of conductive silicone rubber

Functional principle:

by means of a specific design of the structure, which includes elastic sensor elements, the risk of the impact is reduced thanks to the elastic properties of the sensor elements. The determination of the impact rotation direction of the joining structure during the collision by means of the sensor elements allows a reaction of the robot system in order to further reduction or avoidance of the impact force. The electrical resistance of the compliant sensors changes in dependence on the mechanical stress (the resistance decreases during the compression and increases during unloading). The sensor elements are installed in a compressed state. Two embedded sensors are further compressed during the collision and other two are unloaded. A comparison of the resistance values allows determining the rotation direction of the joining structure.



Characteristics and advantages:

- elasticity, damping and sensory properties are combined in one element
- compact design
- reducing the risk of the impact
- cost-effective

Application:

- for soft robotic joint

In collaboration with University of Nis, Serbia