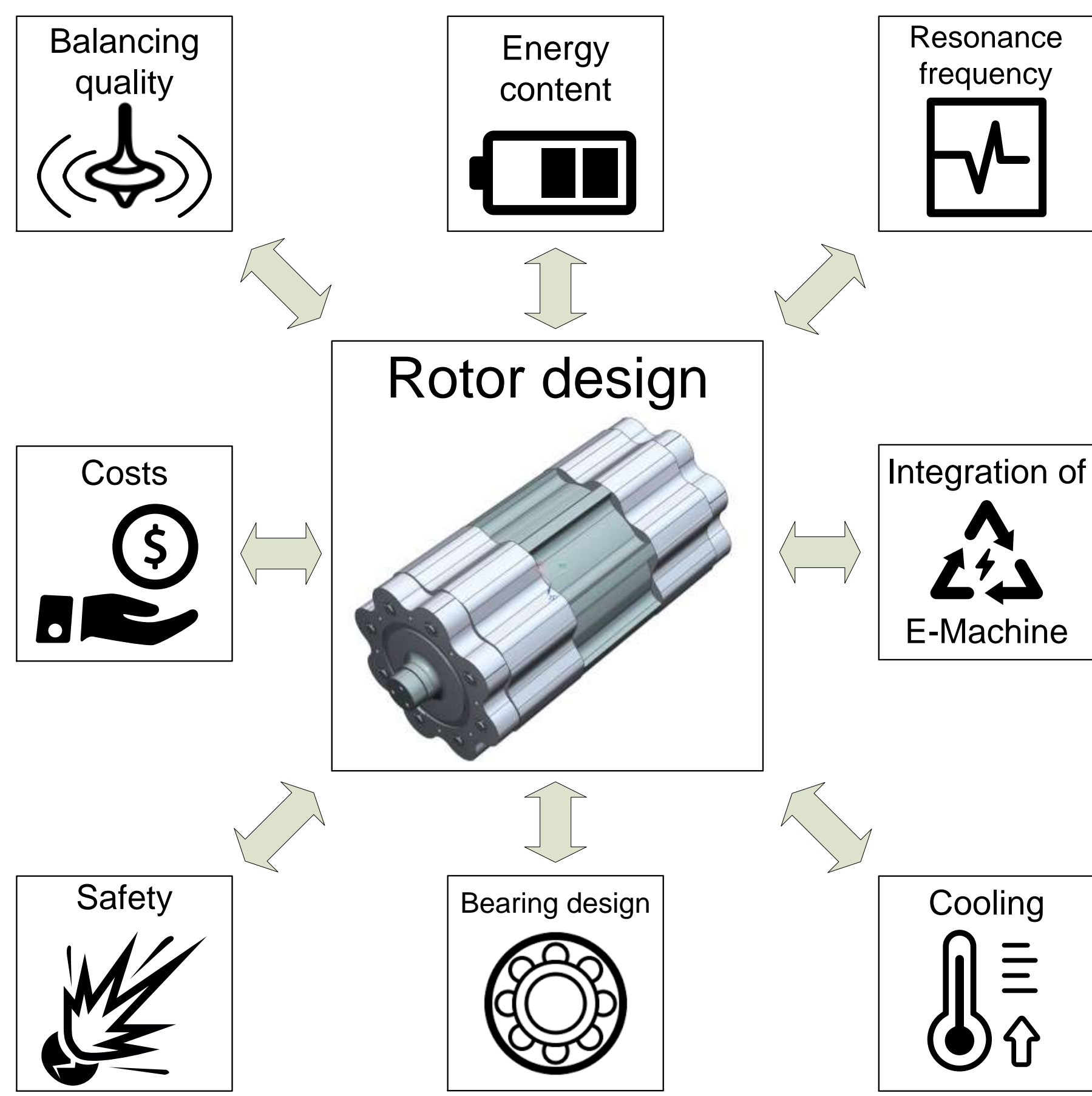


An Opportunity for the Automotive Industry and Beyond

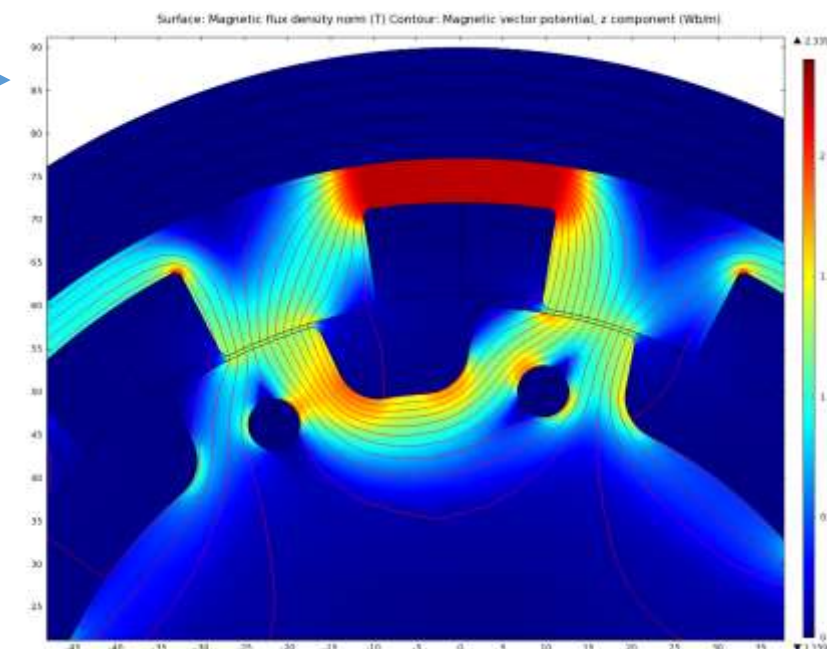
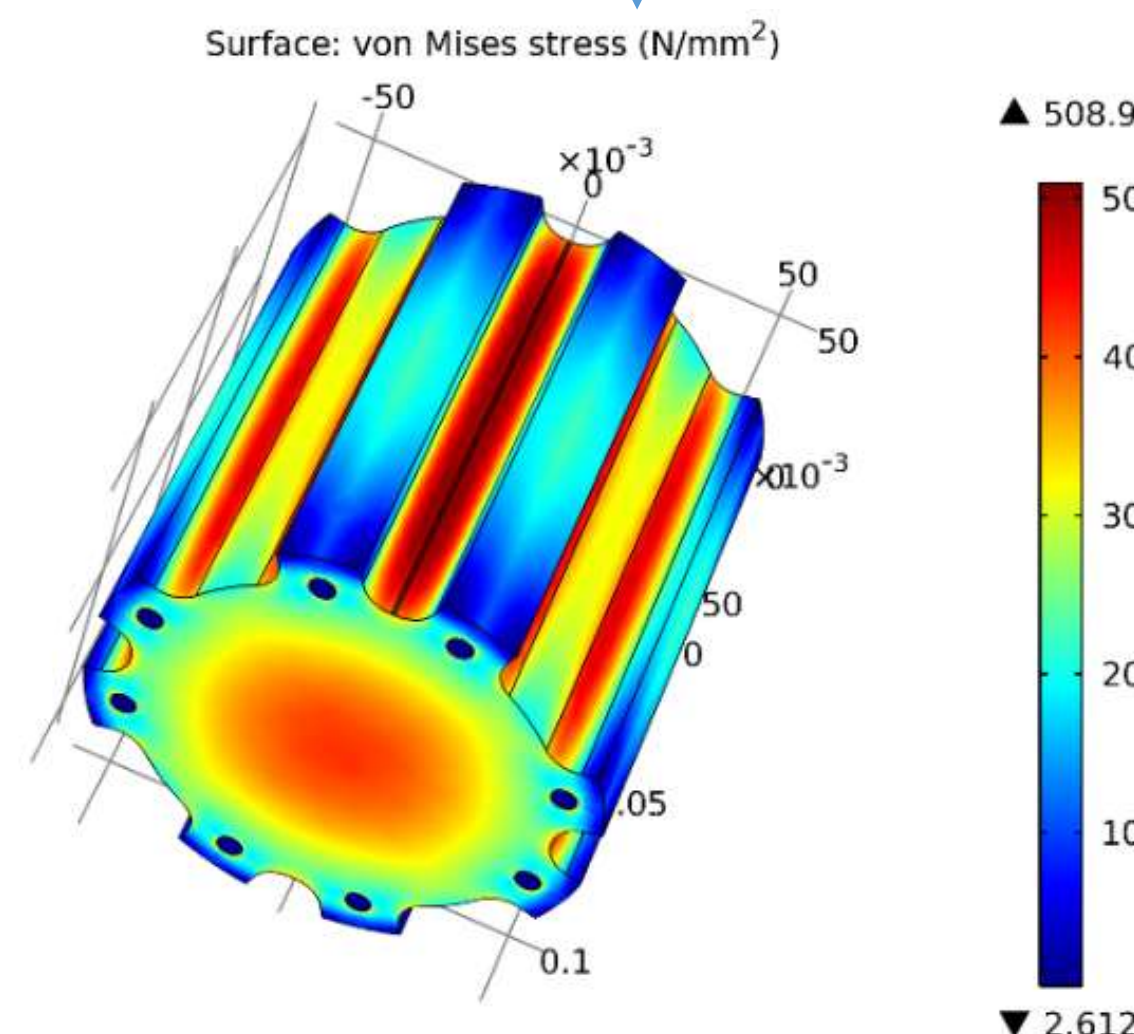
A. Buchroithner and Professor G. Jürgens

2. FESS Rotor Design



The selection of the electric motor type is influenced by the following arguments:

1. Idle Losses (use of reluctance machines)
2. Safety Behavior (avoidance massive rotor parts)
3. Centripetal Stress (use of high strength electrical sheets and fiber composite materials)

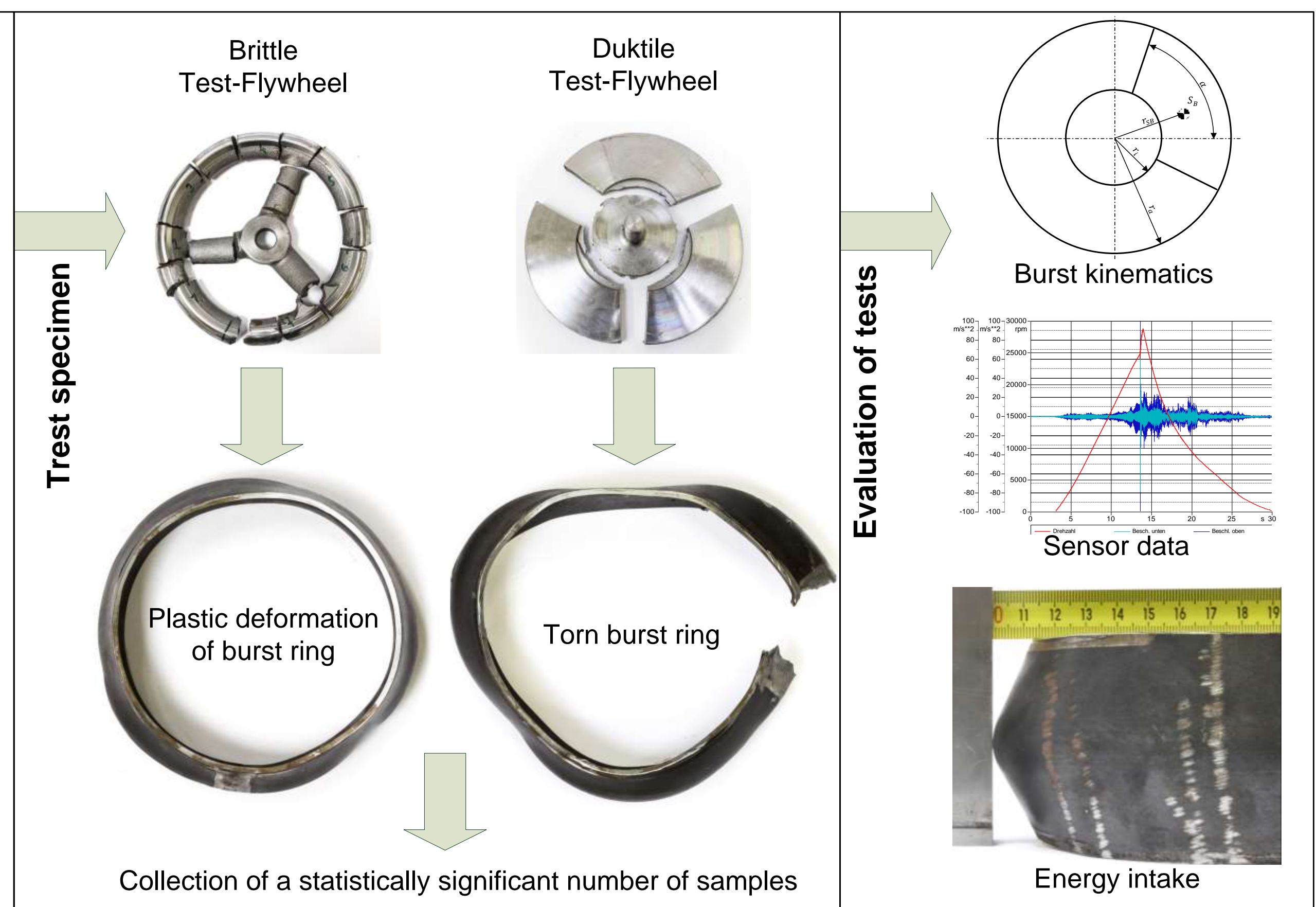
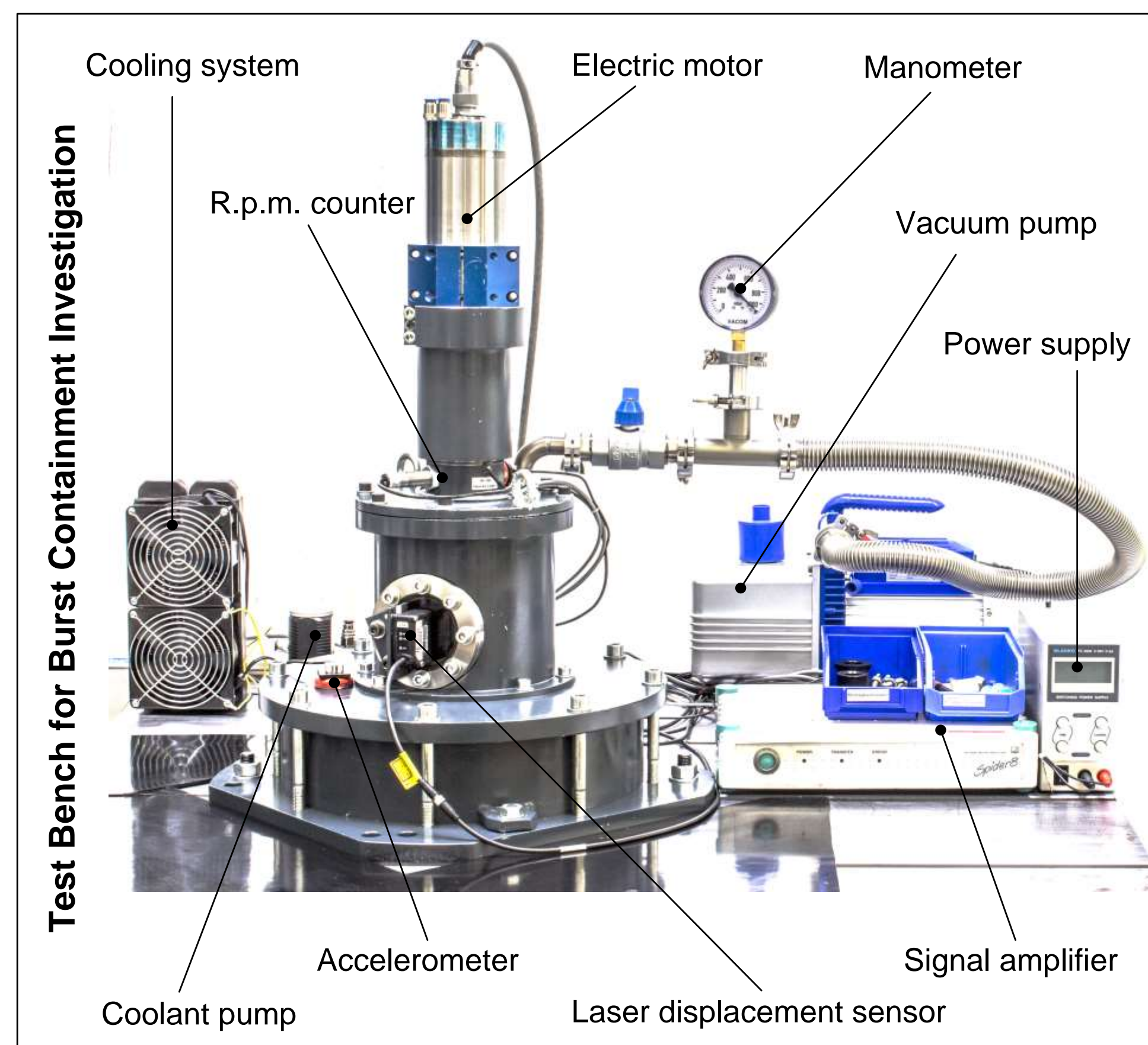


- Impact marks
- Burst containment from mild steel
- Fragments of electric motor
- End plates from high strength steel

3. FESS Housing Design

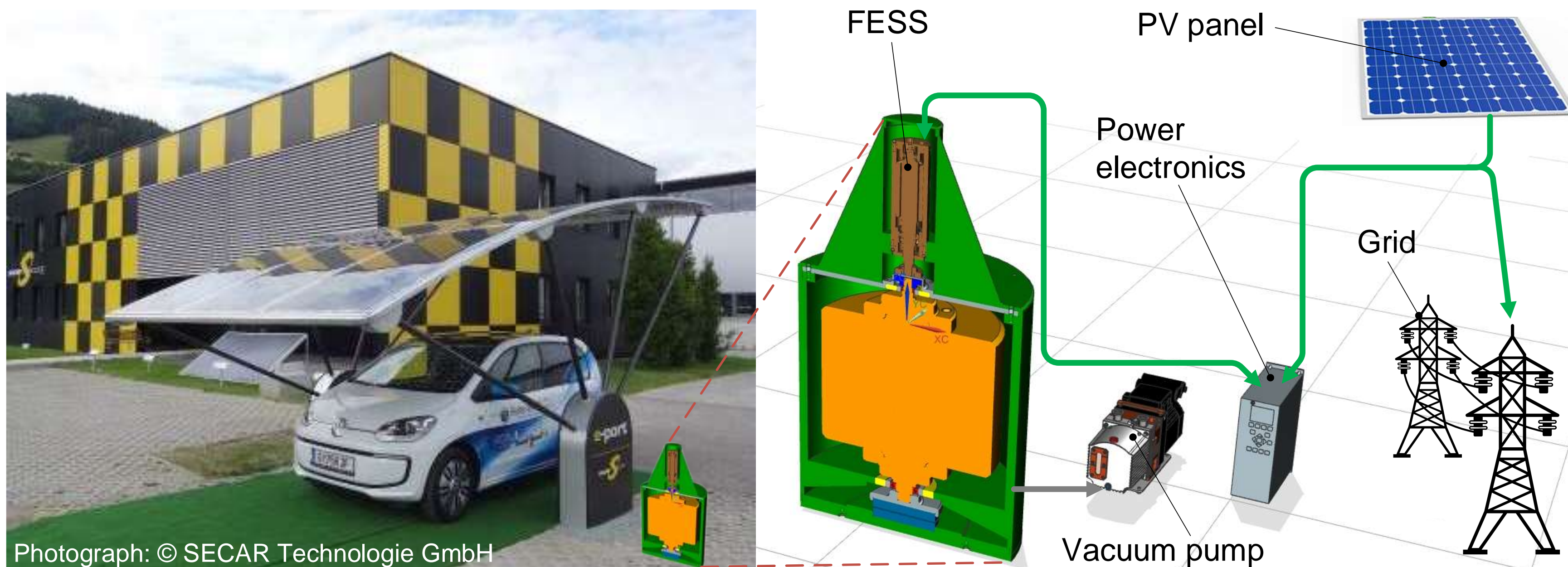
Burst containment design for high speed rotational machines is becoming increasingly important.

1. Containment has significant effect on specific energy of FESS.
2. Safety and image of technology is critical for market penetration.
3. So far no design guidelines available in literature.

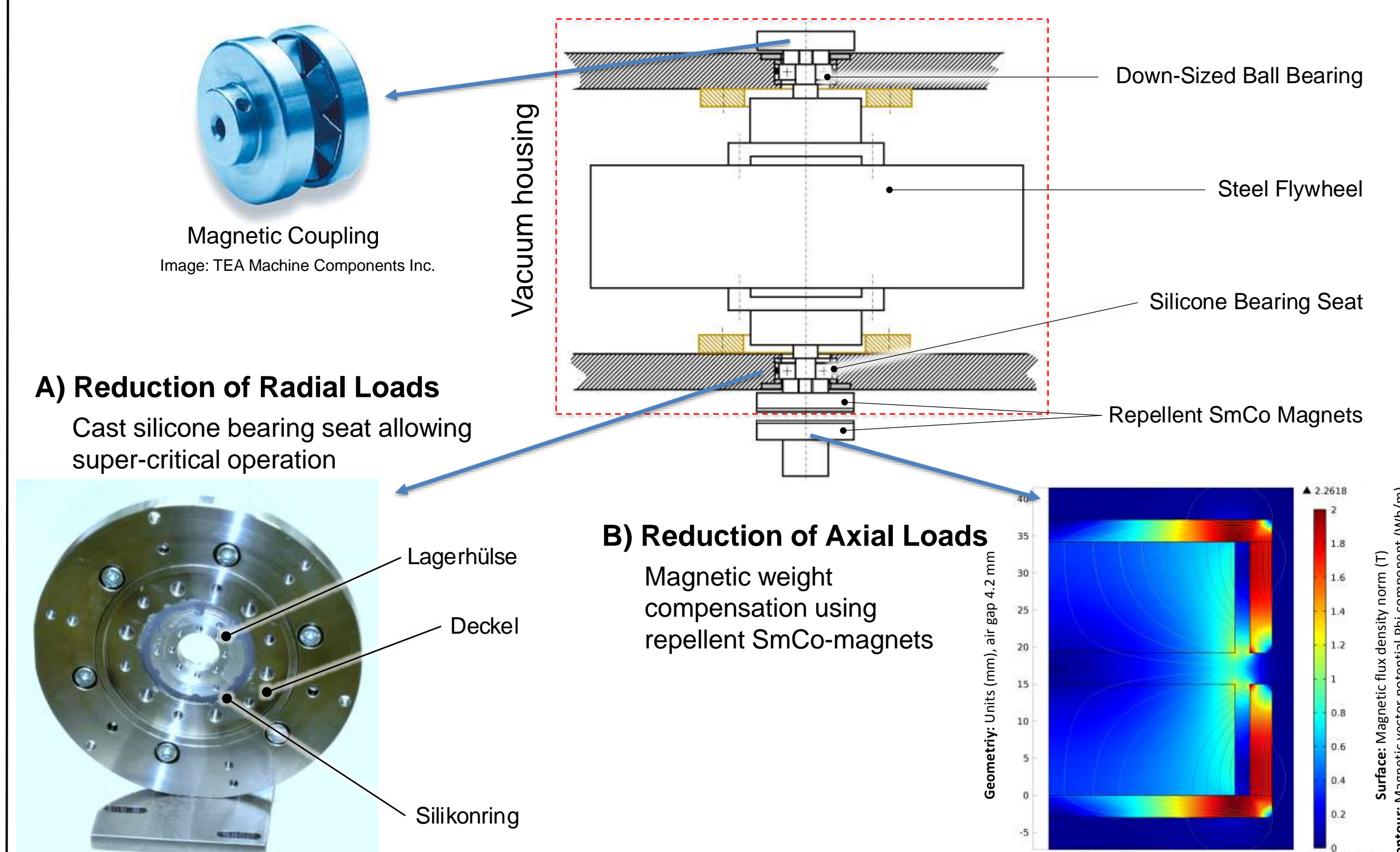


Alternatives: FESS for Renewable Energy

To avoid problems of mobile FESS such as *gyroscopic bearing loads*, *low energy density* and *safety issues* → Stationary FESS:



Low-Loss Bearing Design



Summary

The benefits of FESS for mobile applications lead to the development of prototypes and component test beds :

Supersystem Analysis

Subsystem Synthesis

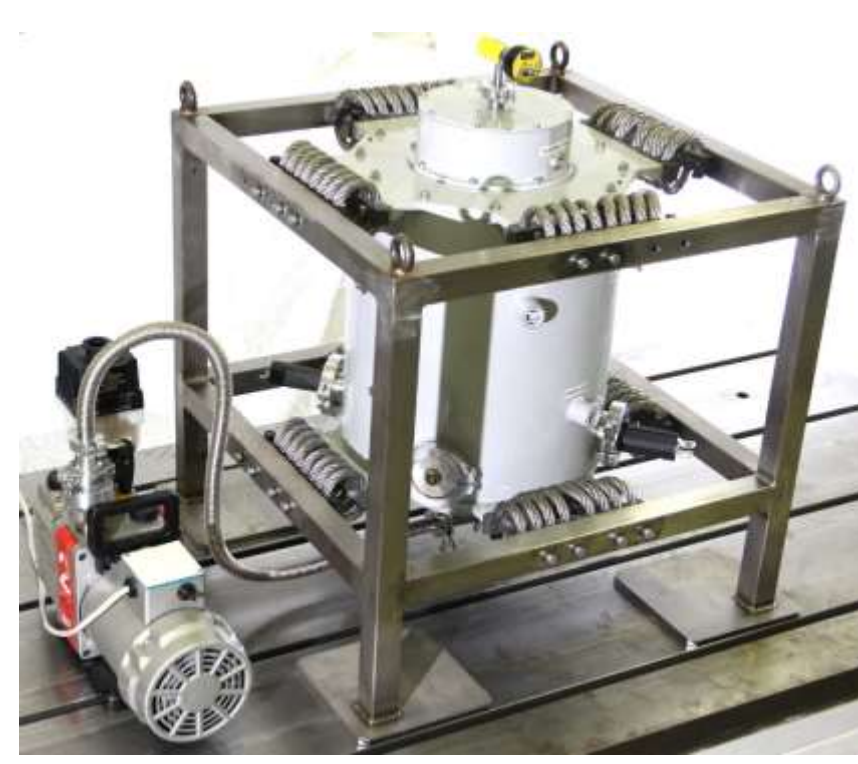
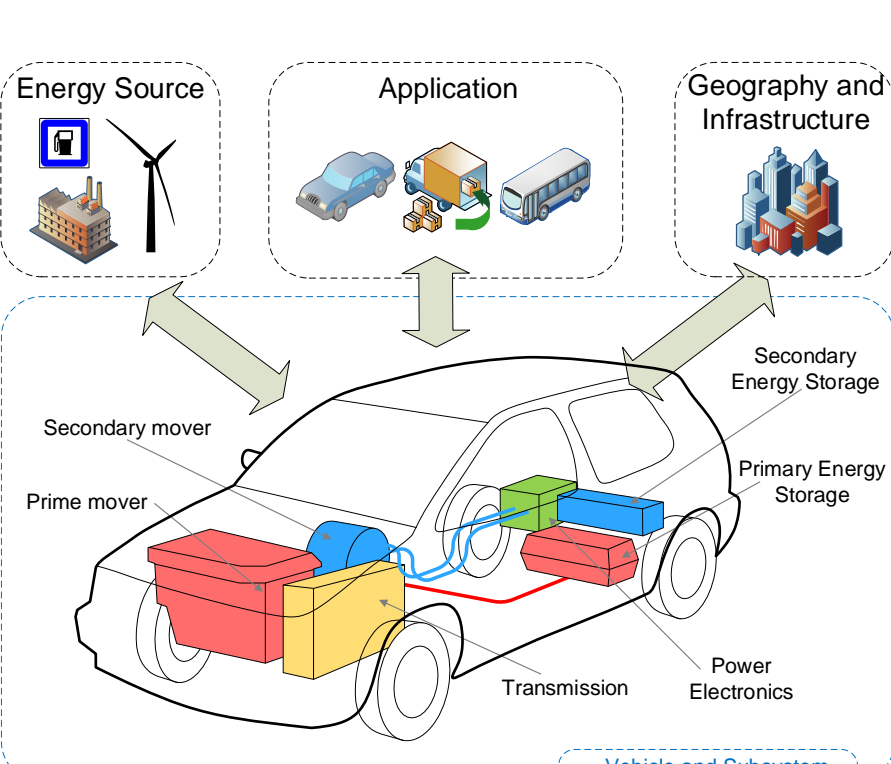
Vehicle + Environment

Energy Storage

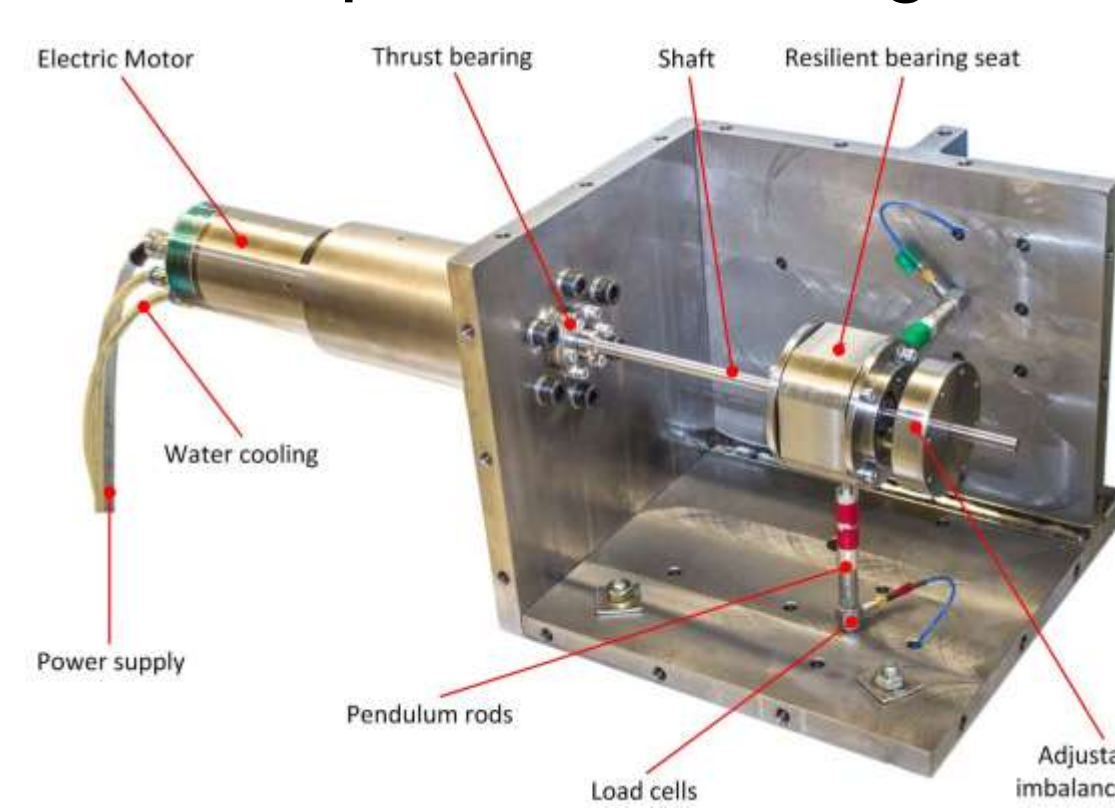
Critical Components

Component Test Rigs

Solutions



- Bearings
- Rotor
- Safety Housing



- Resilient Bearing Seat
- Metal Sheet Stack Rotor
- Optimized Steel Containment

Contact

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