Flywheel Energy Storage

(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
2. Safety Behavior
3. Centripetal Stress

- (use of reluctance machines)
- (avoidance massive rotor parts)
- (use of high strength electrical sheets and fiber composite materials)

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

Contact

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

Subsystem Synthesis

- Critical Components
- Component Test Rigs
- Solutions

Vehicle + Environment

Energy Storage

Bearings

Rotor

Safety Housing

Resilient Bearing Seat

Metal Sheet Stack Rotor

Optimized Steel Containment