

HIGH PERFORMANCE FLYWHEEL TECHNOLOGY FOR ELECTRIC ENERGY STORAGE USING MAGNETIC BEARINGS

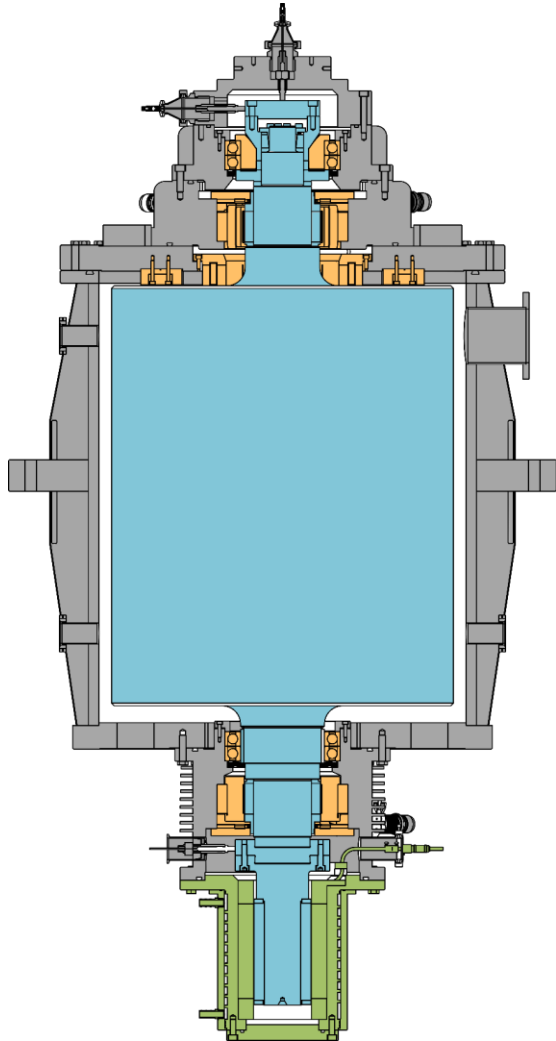
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FLYWHEEL DESIGN



Rotor
 Bearings
 Motor generator
 Vacuum containment

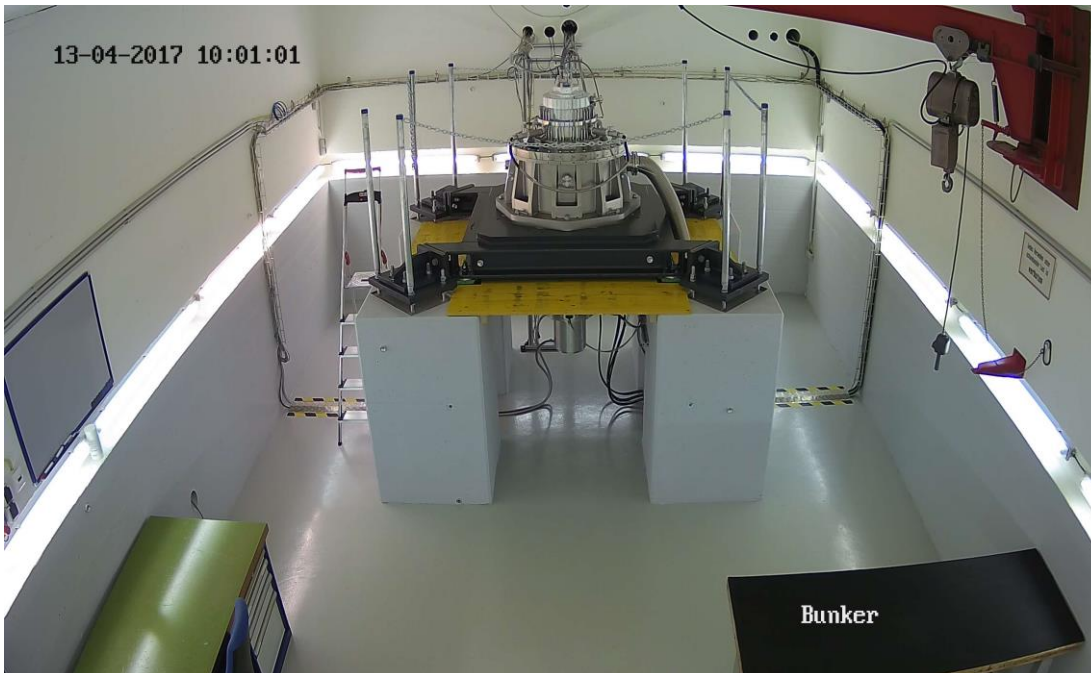
Flywheel principle:

- Kinetic energy is stored in a rotating mass
- Also known as “mechanical battery”
- Environmental clean, recyclable energy storage technology

Setup of the Flywheel Energy Storage System (FESS) and selection of the technical main data:

Rated power	20	kW
Capacity	20	kWh
Power/ Capacity ratio	1	-
Rotor mass	2.200	kg
Length/ Diameter ratio	1,23	-
Maximum speed	> 10.000	rpm
Minimal bearing air gap	0,15	mm

RESULTS AND CONCLUSIONS



Results

- Analytical and numerical design of a FEES
- Implementation of a safe test rig environment and installation of the FEES and all necessary auxiliary systems
- Commissioning and first endurance tests of the FEES

Conclusion

- Endurance tests showed excellent operation conditions of the FEES
- However, elaboration of optimization potentials are part of future investigation activities, to pave the way for a successful market entry

More information at the Poster ID 8080