AC losses deposited in the magnets during JT-60SA commissioning and operation will both affect the local stability of the conductor and act as a load on the cryogenic system.

Our objective is thus to develop an accurate modeling of the AC losses generated in the magnets by different current scenarios.

Since the TF coils have been tested in the Cold Test Facility (CTF) and will be the first ones to be fully energized during the commissioning, we have chosen to first focus our work on the AC losses deposited in the TF coil.

This allows us to confront our modeling to the CTF data.

We also present a pseudo-3D thermo-hydraulic simulations to estimate the impact on the helium temperature of the AC losses generated during fast discharge of the TF coil current foreseen during the commissioning process.

**COMPARISON WITH CTF DATA**

- CTF = facility at CEA Saclay, France where JT-60SA tokamak TF coils have been tested in self-field configuration before the delivery to QST in Naka, Japan [9].
- TFC02 coil had additional thermal sensors on the pancakes outlets for advanced tests activity, or ATAs.
- Calorimetric analysis from Helium T, P, dm/dt sensors at inlet and outlet of the winding pack (WP) and casing leads to 214 kJ deposited by hysteresis, coupling and casing eddy current losses during TFC02 fast discharge.

**CONCLUSION**

- Ac losses in JT-60SA TF winding pack much lower than losses in casing.
- Ac losses modeling in fair agreement with CTF experimental results.
- Simulations in tokamak configuration to be compared (commissioning).

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