Development of high-current power supplies for the TCABR tokamak

- Brazil is moving towards the establishing of a national laboratory to coordinate and concentrate studies in nuclear fusion across the country
  - A compact (spherical), high toroidal field tokamak is envisaged

- An upgrade of the TCABR tokamak is being conducted
  - The main purpose of this upgrade is the development of human resources with the "know how" required to operate the facility
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• A versatile plasma control system is being designed for TCABR to allow for a wide range of plasma configurations

• To create the plasma configurations envisaged for TCABR (see P/1-12 / 525), 17 high-current power supplies will be built

• Various power electronics topologies are being considered
  - Thyristor-based
  - IGBT full bridge
  - Resonant converters (Low EMI)

• Objective is to identify the most adequate solution considering the modern topologies available nowadays

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- PLECS simulations of the thyristor-based topology are in progress
  - Preliminary simulations are based on a 12-pulse rectifier topology

*Power electronics topology based on those used on TCV and on ASDEX-Upgrade