

This thesis presents the magnetic fields of the COMPASS tokamak and work done during the COMPASS reinstallation in the Czech Republic.

The geometry, vacuum magnetic fields and Power Supplies for the poloidal field coils circuits are described in the technical part of the thesis. The design of Power Supplies filters and improvements in the controller algorithm are also introduced.

The MHD equilibrium reconstruction code EFIT++ and implementation of the induced currents model are described in the physical part of the thesis. The EFIT++ code was adapted for COMPASS. The utilization of the EFIT++ code for the COMPASS operation is shown. The global power balance in the non-stationary phases of the tokamak discharge is explained and examples are shown.

The attached articles describe Power Supplies and tokamak feedback system developed for the COMPASS plasma control.