

Vacuum vessel

0.0.1 Basic info

The GOLEM tokamak has a stainless steel toroidally shaped chamber with major radius (from the central column axis to the center of the vessel) $R_0 = 0.4$ m, the minor radius (the maximum radius of the plasma from the vessel center) $r_0 = 0.1$ m) with 18 diagnostic ports, which are organized in six groups of three ports as shown in figure ???. Each group consists of a top, bottom and a mid plane port. The main (*i.e.*, the largest) ports are located on the North and on the South side of the torus; 45° from them to each side, are the other groups: South-East, South-West, North-East and North-West.

The vessel is made of two layers with a free space in between:

- The inner layer, which contains the plasma column, is called liner. It is made of melted cylindrical waved tin- plate segments, 0.2 mm strong, with diameter of 200-230 mm. Besides to serve as a vacuum chamber, liner is used to stabilize the plasma column position by inducing Foucault currents.
- The second layer of the vessel is called copper coating, which covers the liner. The coating is about 10 mm strong and was water cooled in the CASTOR era. Its historical purpose is to serve as the second vacuum layer, however this function is not used anymore.

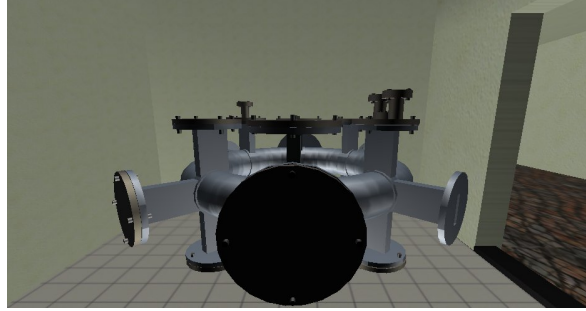


Figure 1: Diagnostic ports of the GOLEM tokamak.
Tokamak/VacuumVesselFig:Tokamak/VacuumVessel/BasicInfo

0.0.2 Liner

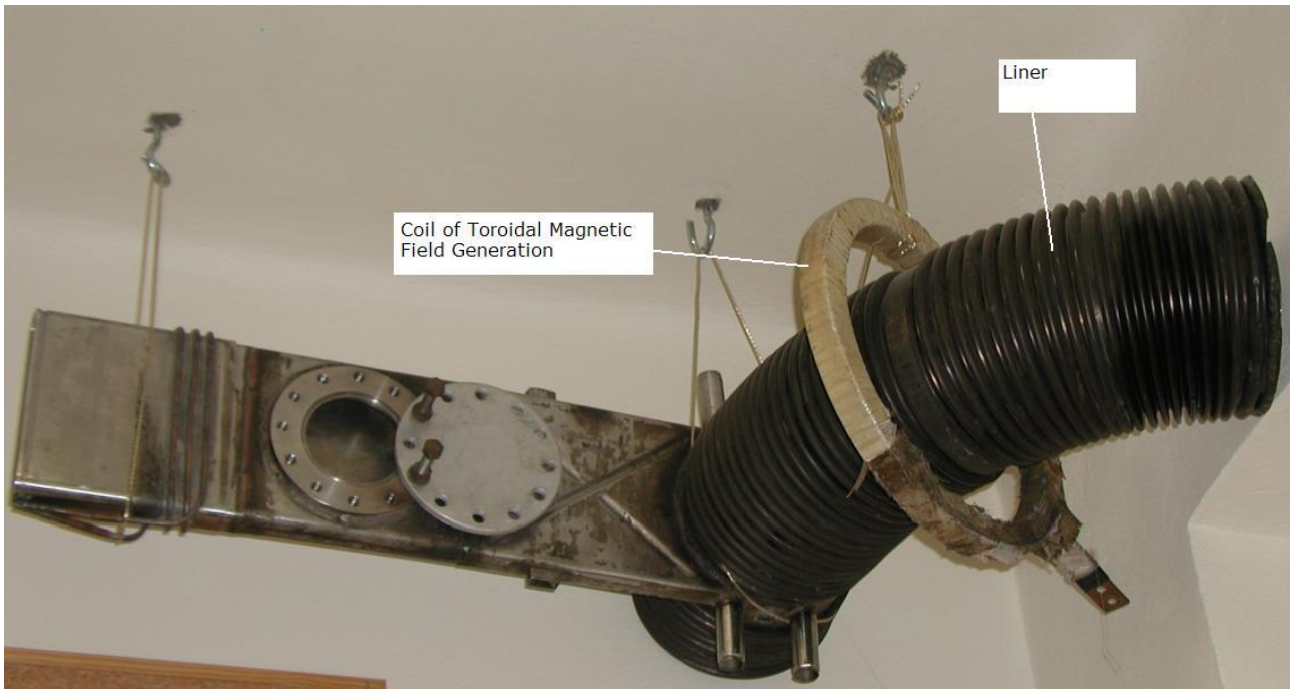


Figure 2: Liner
Tokamak/VacuumVesselFig:Tokamak/VacuumVessel/Liner/liner.png

Liner is term used for central toroid of the chamber which contains plasma column. Liner of the GOLEM tokamak is of classical toroidal shape with circular cross section made from stainless steel. Main geometrical parameters of the liner are: Vessel major radius $R_0 = 0.4$ m, Vessel minor radius $r_0 = 0.1$ m. This determines

tokamak GOLEM to be tokamak of small class and large Aspect ratio $\varepsilon = 0.25$ -. The original liner from when this tokamak was named TM-1 was replaced in 1984, however its dimensions did not change. A sample of the replaced liner can be seen in ??

0.0.3 Limiter

The poloidal limiter (Limiter radius $r_a = 0.085$ m) made of molybdenum is located 40° to the West from the North port.

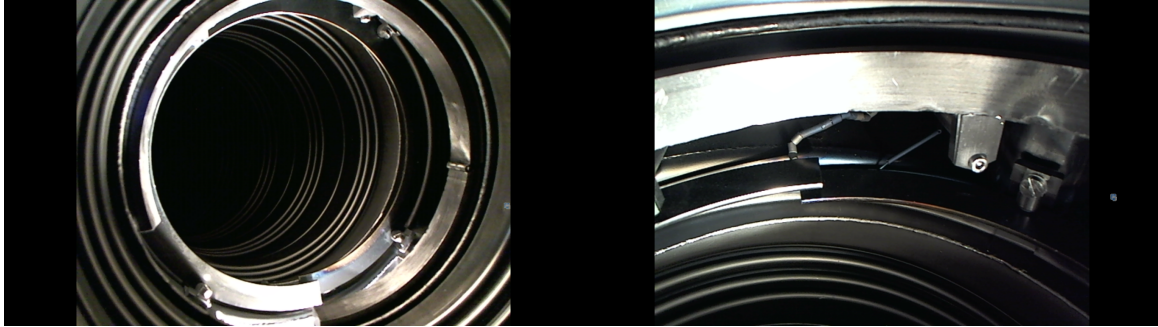


Figure 3: The inner photo of the limiter. Left: Overview, right: Detail
Tokamak/VacuumVessel/Tokamak/VacuumVessel/Limiter/dfig