

# BASIC AND ADVANCED REMOTE PARTICIPATION MODE OF THE GOLEM TOKAMAK

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The GOLEM tokamak at the Czech Technical University (former CASTOR) became an educational device for domestic as well as for foreign students. The reinstalled tokamak ( $R = 0.4$  m,  $a = 0.085$  m), operates currently at a modest range of parameters,  $B_t < 0.5$  T,  $I_p < 8$  kA, pulse length  $< 10$  ms, and with a basic set of diagnostics.

A unique feature of this facility is a possibility of a complete remote participation and control through the internet access. The setup of the experiment, sketched in the figure, outlines the plasma generation arrangement and data acquisition system, both PC controlled and connected via web server to the internet. Basic remote control regime is possible either in the online mode via WWW or SSH interface or in the offline mode with the batch processing code, allowing to setup necessary discharge parameters and to perform shots.

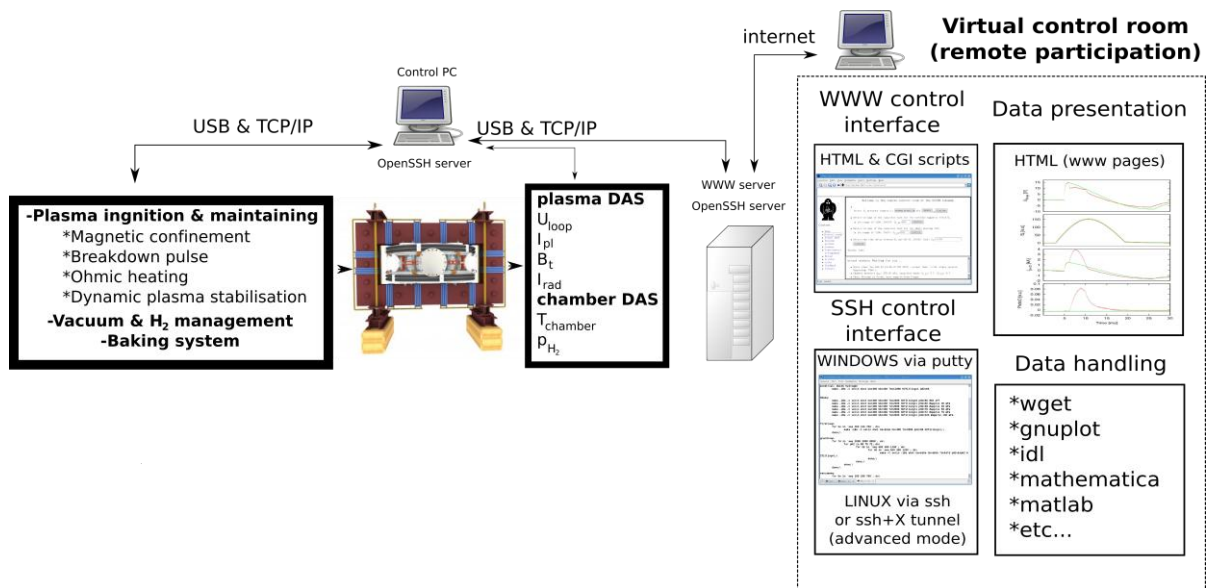


Figure 1: The tokamak GOLEM remote operation arrangement

Advanced mode with the help of the X11 protocol offers the possibility to fully control all the technological aspects of the tokamak operation - vacuum management initialization, chamber baking, charging power supplies, shot scenario, DAS system etc.

The remote participation of several foreign universities in Hungary, Belgium, Poland and Costa Rica was successfully performed. Further upgrade of GOLEM is envisaged in a near future (an increase of  $B_t$ ,  $I_p$ , the discharge duration and the number of diagnostics).

References:

[1] Tokamak GOLEM at the Czech Technical Univ. <http://golem.fffi.cvut.cz>, [online].