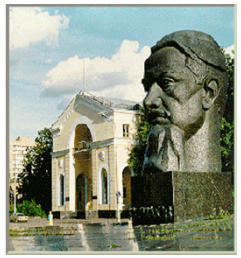
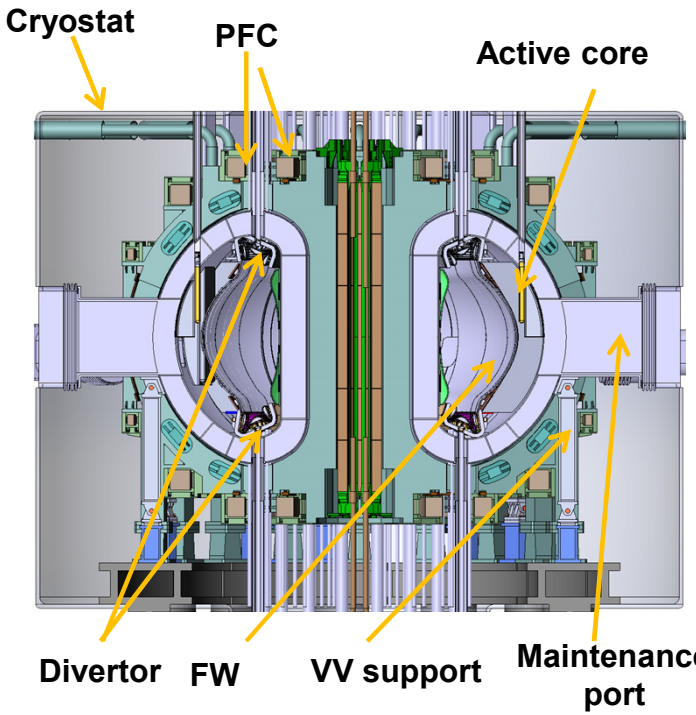


NATIONAL RESEARCH CENTER
KURCHATOV INSTITUTE

НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ ЦЕНТР
«КУРЧАТОВСКИЙ ИНСТИТУТ»

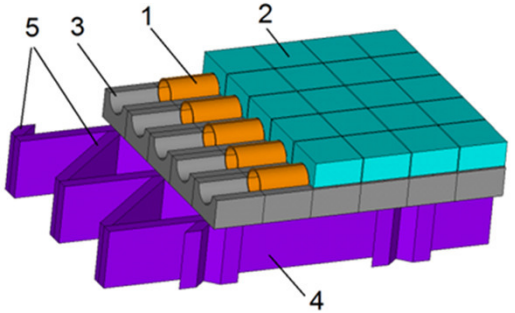
PROGRESS IN DESIGN OF DEMO-FNS HYBRID FACILITY

Yu.S. Shpanskiy et al. FIP/P7-7



Aspect ratio R/a, m	3.2/1
Toroidal magnetic field	5 T
Electron/ion Temperature, keV	11.5/10.7
Beta normalized β_N	2.1
Plasma current I_{pl},	5 MA
Neutron yield G_N	$1.3 \cdot 10^{19}$/s
Neutral injection power	30 MW
ECR heating power	6 MW
Neutron wall loading	~ 0.2 MW/m^2
Lifetime n_0 fluence	~ 2 MWa/m^2
Consumed/ generated power	200 MW

- Simulations showed that maximum total fusion power is achieved when tritium fraction is equal to 0.7.



- The FW load-bearing unit was developed capable of withstanding dynamic forces.

- **Development of a fusion-fission hybrid facility based on superconducting tokamak DEMO-FNS continues in Russia for integrated commissioning the steady-state and nuclear fusion technologies at the power level up to 40 MW fusion and 400 MW fission reactions.**

- The NB injector geometry for DEMO-FNS is chosen and optimized for the reduced dimensions of injector window to 0.4x0.8 m^2.
- Analyses of the interaction of DEMO-FNS facility with the nuclear fuel cycle of Russia's nuclear power industry was performed.

Shpanskiy_YS@nrcki.ru