

D-T fuel system of DEMO-FNS tokamak with



FIP/P7-33 tritium breeding blanket

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A conceptual scheme of a steady-state DT-fuel cycle of fusion neutron source (DEMO-FNS) is presented. Recent estimations of tritium distribution in fusion reactor systems and components "tritium plant" is made. The calculations for the neutral injection systems TC module and tritium breeding is presented.

The fuel cycle conception is designed to maintain **steady state** fuel circulation. All FNS systems use the **50:50% DT-mixture** \Rightarrow **the isotope separation system is used only for removal of protium from the DT-fuel**. The deuterium loop without tritium for a neutral beam injection system was considered. In the case of non-tritium NBI the total amount of tritium will be less than 1.5 times.

Computer code "FC-FNS" for estimating the hydrogen isotopes distribution in the systems FNS and "tritium plant" elements was developed.

Tritium inventories in the blanket, processing systems, and storage containment for 1 year after startup for DEMO-FNS hybrid reactor were produced.