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CENF target thermo-mechanical study

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The design of the target assembly for the proposed CENF neutrino facility is a challenging task due to the very strict physics requirements. The material chosen for the target is graphite, while a beryllium double pipe configuration is foreseen for the external containing structure. The assembly must be supported in cantilever and has to fully fit inside a focusing horn featuring a very narrow neck (24 mm diameter). A helium cooling system has been designed to insure reasonably low temperatures for the external structures (350-400 K) and to keep the target at a temperature of around 700-800 K in order to minimize the modifications of the mechanical properties due to radiation damage. A second design, adapted for a possible larger horn neck of 30 mm diameter has also been studied in order to evaluate and improve the feasibility as well as the working conditions identified in the first design.

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