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P2.199 Overview of the Current Status of IFMIF-DONES Secondary Heat Removal System Design

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The present paper summarizes the current status of the Secondary Heat Removal System (SHRS) of the IFMIF-DONES (International Fusion Material Irradiation Facility- Demo Oriented Neutron Source). As part of the Lithium systems (LS) in IFMIF-DONES, SHRS is the responsible sub-system for the removal of the heat which develops in the LS-Test Assembly (TA) during the Li - DT reaction. In this way, it has an important role in maintaining the stable lithium flow by providing controlled temperature at the inlet of TA.

In SHRS, a somewhat conventional hot oil system serves as an intermediate heat removal sub-system between the main liquid lithium loop and the water cooling system. The later serves as the final heat sink. During the preliminary design phase, the concept developed during the IFMIF-EVEDA phase served as a basis, but its applicability was studied with special regard to the effect of the difference in the transferred heat of IFMIF and IFMIF-DONES on the selection of the thermal layout, from point of view of cost, complexity and safety. The selected thermal layout consists of two intermediate oil loops with three heat exchangers and two different organic oils as heat transfer mediums. Following the definition of the thermal layout, the main units were selected, a conceptual pipeline layout was designed which corresponds to the current building configuration and a preliminary thermal-mechanical assessment was performed in order to assist the design of the supporting structures.

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