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P2.138 Design of the K-DEMO in-vessel blanket arrangement blanket sector maintenance details and upper lever RM enclosure

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A number of blanket arrangements and maintenance options are being investigated within various fusion DEMO studies. The defined segmentation, general arrangement and maintenance approach for the vacuum vessel blankets has a major impact on the overall device configuration. The K-DEMO blanket arrangement is centered on an approach to minimize the number of blanket segments that are accessed through vertical maintenance ports. Minimizing the segment number reduces the number of piping services that interface with it and exit the vacuum vessel. The design definition of interfacing components was developed to enhance this plan. Concept design details of the prescribed K-DEMO machine configuration have evolved in sufficient detail to allow the merits (and shortcomings) of this design approach to be evaluated with respect to other blanket segmentation and maintenance options. Coupled with the defined in-vessel blanket arrangement and maintenance approach a conceptual design of an intermediary maintenance enclosure above the machine core has been developed to interface, handle and move blanket sectors from the device core through vertical ports without using individual cask enclosures located at each vertical port opening. A structural assessment has also been developed to determine how well the planned blanket support system design fairs with respect to a representative disruption load test case. The results of this activity along with an overview of the latest K-DEMO device general arrangement will be presented.

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