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P3.108 Manufacturing of the First Wall Panel-prototype for the ITER First Wall normal heat flux design

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This poster describes the main steps realized for the manufacturing of a full scale First Wall panel to ITER. This full scale prototype (FSP) is foreseen to be delivered in 2019 to F4E in order to perform high heat flux tests. The dimensions of this prototype are 1360 mm x 850 mm x 500 mm. It consists of a bi-metallic support structure made from 15-25 mm thick CuCrZr alloy embedded with 316L(N)-IG tubes and bonded to a 40-50 mm thick 316L(N)-IG backing plate with cooling channels. Moreover, the CuCrZr surface is coated with 784 Beryllium tiles.

The Technical Center of Framatome in Le Creusot used its competencies in conception, manufacturing engineering and lessons learned with the previous mocks-up to successfully manufacture and assemble this FSP. Many technologies were carried out : diffusion bonding in solid state by Hot Isostatic Pressing (stainless steel to stainless steel, stainless steel to CuCrZr alloy), stainless steel and CuCrZr alloy machining (deep drilling, milling, etc.), welding, bending...

Currently, the FSP reaches a new stage : the entire structure is finalised and joined. The progress of the assembly which is now in its final shape will be presented. Also, the previous steps of the manufacturing will be shown. Finally, control stages : helium leak test, ultrasonic tests and specially 3D scan measurements will be described.

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