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P3.101 Welding technologies applied on casings for JT-60SA toroidal field magnet

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In the framework of the Broader Approach program, ENEA supplied the Toroidal Field (TF) coil casings for JT-60SA tokamak.
ENEA commissioned the manufacture of the full set of eighteen casings for the integration of the TF coils plus two additional spare casings to the company Walter Tosto (Chieti, Italy).
The casing is segmented in one outboard straight leg, an outboard curved leg and three inboard covers. The preliminary design of the casing components has been prepared under the coordination of Fusion for Energy. The detail design has been finalized involving industrial partners responsible for the subsequent integration of the coils
Contract started in 2012 with the design and fabrication of mock-ups representative of the most important cross sections of the casing complete with the relative chamfers. Detail design of the casing components was completed in 2013 and supported by qualification of welding processes and definition of manufacturing procedures. Casing production activities started in 2014 and the full procurement of the eighteen casings plus two additional spare casings was completed within August 2017.
This paper provides an overview of the welding technologies applied for the casing procurement such as the selection process, qualification activities, welding production, final checks and considerations.

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