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P2.135 Study on the Endoscopic Inspection of ITER Thermal Shield Cooling Pipes

Tuesday, 18 September 2018 11:00 (2 hours)

A novel endoscope has been developed for the inspection of long and complex-shaped cooling pipe of ITER Thermal Shield (TS). The mechanical design has been improved and its endoscopic images are clarified for various pipe surface conditions. Main break-through is to reduce the cable friction against metal pipe inner surface as well as to maintain the elastic rigidity of the cable for insertion into long cooling pipe. Spacers are attached on both the camera head and the cable to reduce the friction. Plate spring tube is used for the cable for the elastic rigidity. The conceived endoscope is tested to the TS pipe routing mock-up, which is longest and most complex among the TS pipe routings. Special device is also presented for making the endoscope insertion be easier. The insertion test result is compared with that of a conventional endoscope. The difference between the images from the endoscope and the real pipe surfaces are also discussed for various kinds of samples.

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