

INSPECTION OF BRAZED JOINTS BETWEEN COOLING TUBE AND HEAT SINK OF PFC FOR SST-1 TOKAMAK BY IR THERMOGRAPHY TECHNIQUE

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This paper presents the non-destructive testing of brazed joints between the cooling tube and the heat sink by Infrared (IR) thermography. IR thermography is becoming useful and recognised technique now a days to evaluate the quality of joints which allows the assessment of surface temperature variations by means of a sensitive IR camera. It generates an image of the surface based on the temperature of each point on the surface and sufficient to evaluate the overall quality of the thermal contact of brazed joints. In SST-1 tokamak, the plasma facing components (PFC) are actively cooled during plasma operation. The cooling tubes are brazed on the heat sink. The IR image is used to visualize the heat transfer between the cooling tube and the heat sink, which enables to identify the significant faults in thermal contact. Three-dimensional thermal finite element (FE) analyses have been performed to simulate the brazing defects. The experimental observations obtained from IR thermography have confirmed the FE simulations. Additional non-destructive investigations such as X-ray images of the test section also confirm the observations.