

Operating Experience of ISIS Targets

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As part of the ISIS TS1 Project, a new design of spallation target was installed on the first target station (TS1), which has now been operating for almost a year. Detailed Finite Element Analysis (FEA) simulations were carried out, and compared to measured operating data. FEA has also been used to investigate unexpected observations on some target plates. Attempts were made to measure radiation-induced changes in the thermal conductivity of tungsten in-situ on a working spallation target.

ISIS TS2 targets continue to be replaced ~1.5 years into their nominally 5-year design lifetime. The achievable life is limited by increasing activation of the cooling water, thought to be due to tungsten in direct contact with water. Recent irradiated property data combined with detailed FEA now predicts target lifetimes which are consistent with the observed failures. This raises the possibility that such failures could be predicted and avoided in future.

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