

## Supplementary Material

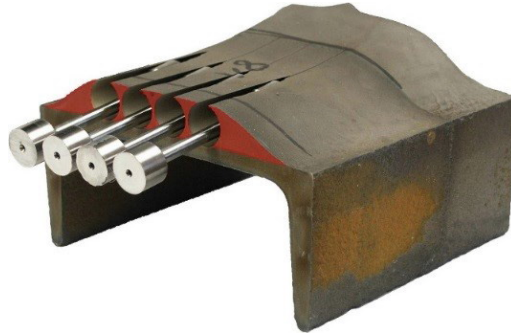


FIG. S1: Bulk material of the IN625mod coating (marked in red) on the U-shaped steel profile.

TABLE S1: Test parameters for the uniaxial isothermal and thermo-mechanical fatigue tests of the coating material IN625mod and the coated steel 16Mo3.

Material	Test type	Temperature [°C]	Total or mechanical strain amplitude [%]	Temperature phase shift [°]
bulk IN625mod	IN LCF 500	500	0.25, 0.3	–
coated specimen	LCF 200	200	0.4	–
coated specimen	LCF 500	500	0.2, 0.3, 0.4, 0.6	–
coated specimen	TMF IP	200–500	0.4, 0.45, 0.5	0
coated specimen	TMF OP	200–500	0.4	180

TABLE S2: Test parameters for the biaxial-planar isothermal fatigue tests of the IN625mod coated substrate material 16Mo3.

Test type	Temperature [°C]	Total strain in both axes $\epsilon_1^{tot}$ & $\epsilon_2^{tot}$ [%]	von Mises equivalent strain ampli- tude $\Delta\epsilon_{eq}/2$ [%]
biax 200	200	0.236	0.393
biax 200	200	0.35	0.602
biax 500	500	0.236	0.392
biax 500	500	0.35	0.602