

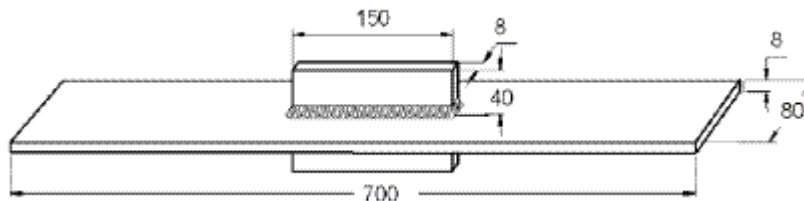


## INTERNATIONAL INSTITUTE OF WELDING

### IIW Round Robin Fatigue Testing Results on Improvement Treatments

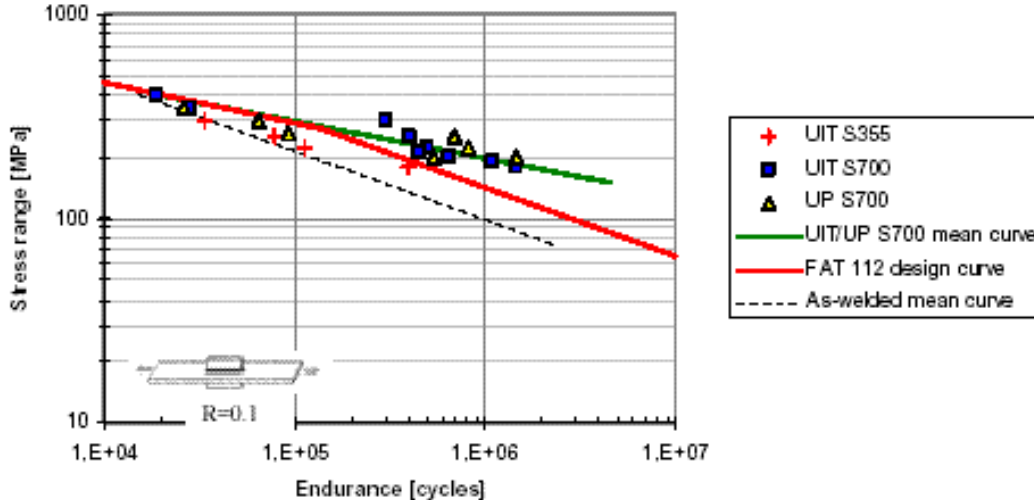
Data from Document XIII-2081-05 “Progress Report on IIW WG2 Round Robin Fatigue Testing Program on 700 MPa and 350 MPa YS Steels” presented by Prof. P. Haagenen at the IIW Assembly in Prague, Czech Republic, 10-15 July, 2005.

An independent comparison of improvement treatment techniques was conducted that included the Ultrasonic Peening Process that is used by Integrity Testing Laboratory Inc. in its UltraPeen™ instruments for fatigue life improvements.



Specimen for fatigue testing. Steel grades: YS = 350 and 700 MPa

#### UIT/UP specimens



NTNU UIT/UP test results compared to IIW FAT 112 design curve

Table. Summary of preliminary NTNU test result design curves

S-N-curve	Slope m	Intercept C	Standard deviation	FAT value [MPa]	Improvement at FAT-value [%]
As-welded S355 and S700	-3 (fixed)	$7.259 \times 10^{11}$	0.050	71.3	-
UIT/UP S700	-5 (fixed)	$7.256 \times 10^{16}$	0.247	129.4	81
Robotized TIG-dressing S700	-3 (fixed)	$1.826 \times 10^{12}$	0.102	97.0	36.0