



TEST DATA

Measurement point	0.0	Date	01-00-1900
Workpiece's reference	0	Location	Sint Lab
Customer name	Shoot Peening	Job number	0

MATERIAL DATA

Material type	EN AW 5186 H111			
Young modulus	71000.0	±	5.0%	
Poisson's ratio	0.33	±	5.0%	
Yield stress	125.0	MPa	Thickness	100.00 mm

AMPLIFIER / STRAIN GAGE DETAILS

Rosette	BE120-2CA-K	Rosette type	B
Rosette diameter	6.00 mm	Position	Grid A in axial direction
Gage factor - Grid A	2.23	±	1.5%
Gage factor - Grid B	2.23	±	1.5%
Gage factor - Grid C	2.23	±	1.5%

HOLE DATA

Total depth	1.200 mm	Number of steps	40
Hole diameter	1.91 mm	Hole eccentricity	0.000 mm
Hole radius X ₁	0.96 mm	Hole radius X ₂	0.96 mm
Hole radius Y ₁	0.95 mm	Hole radius Y ₂	0.95 mm

INSTRUMENT DATA

Hole drilling device	MTS3000-Restan	SINT n.	640	/	641
Strain gage amplifier	QuantumX MX440	SINT n.	1329		
Dial gauge	Mitutoyo 2046SB	SINT n.	992	/	993

The measurement uncertainties stated in this document were estimated as expanded uncertainty obtained multiplying the standard uncertainty by the coverage factor k=2, that for a normal distribution, corresponding to a confidence level of about 95%.

Test Owner

0

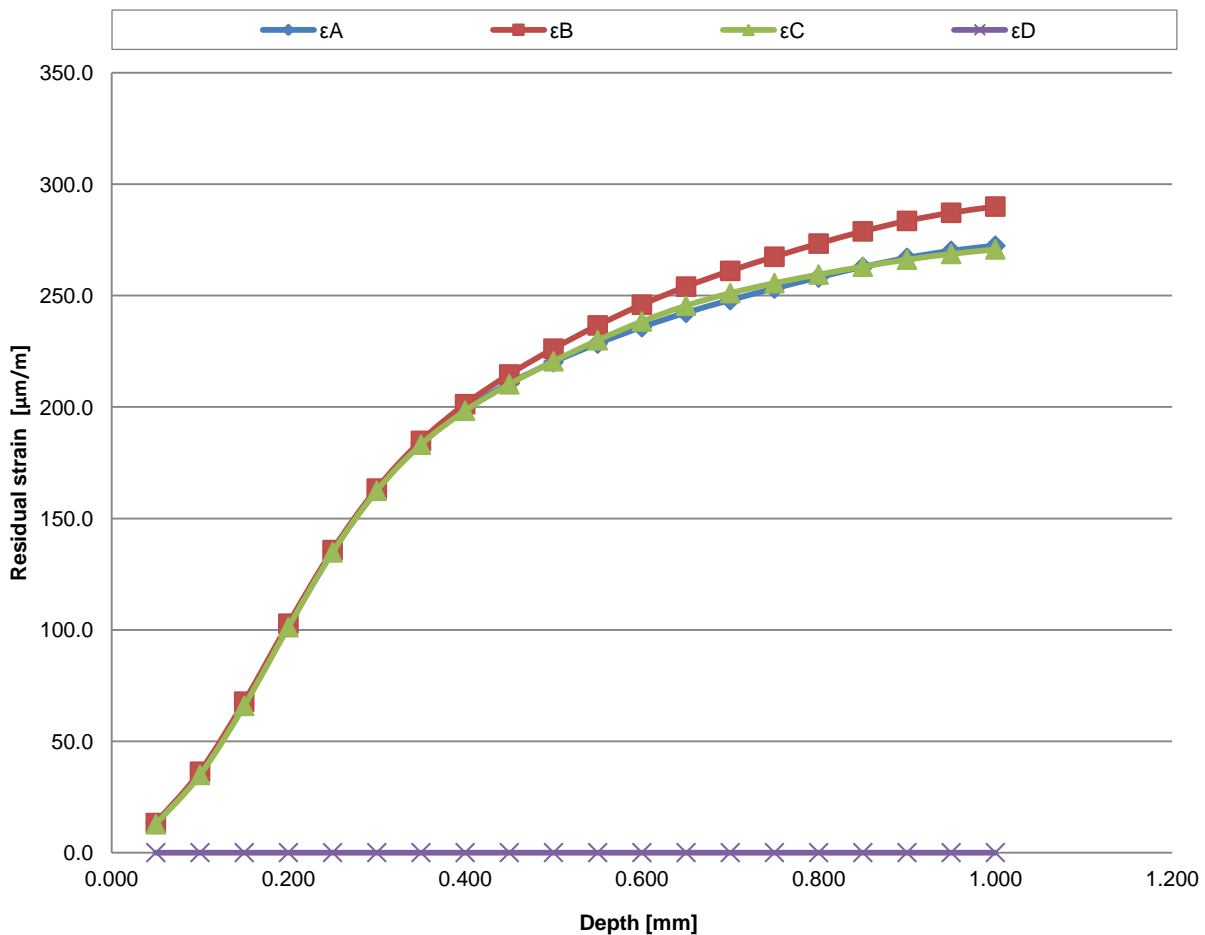
Head of Residual stress area

Ing. Alessio Benincasa



Depth [mm]	ϵ_A [$\mu\text{m}/\text{m}$]	$\pm U \epsilon_A$ [$\mu\text{m}/\text{m}$]	ϵ_B [$\mu\text{m}/\text{m}$]	$\pm U \epsilon_B$ [$\mu\text{m}/\text{m}$]	ϵ_C [$\mu\text{m}/\text{m}$]	$\pm U \epsilon_C$ [$\mu\text{m}/\text{m}$]	ϵ_D [$\mu\text{m}/\text{m}$]	$\pm U \epsilon_D$ [$\mu\text{m}/\text{m}$]
0.050	13.2	2.3	13.3	2.3	12.7	2.3	/	/
0.100	36.0	2.3	36.3	2.3	34.9	2.3	/	/
0.150	66.9	2.5	67.8	2.5	65.9	2.5	/	/
0.200	101.7	2.7	102.8	2.8	101.2	2.7	/	/
0.250	135.0	3.1	135.8	3.1	134.8	3.1	/	/
0.300	162.7	3.3	163.4	3.4	162.4	3.3	/	/
0.350	183.8	3.6	184.8	3.6	183.1	3.6	/	/
0.400	199.1	3.8	201.3	3.8	198.3	3.8	/	/
0.450	210.7	3.9	214.6	4.0	210.2	3.9	/	/
0.500	220.2	4.0	226.2	4.1	220.6	4.0	/	/
0.550	228.5	4.1	236.6	4.2	230.0	4.1	/	/
0.600	235.8	4.2	245.9	4.3	238.4	4.3	/	/
0.650	242.3	4.3	254.1	4.5	245.5	4.3	/	/
0.700	248.0	4.4	261.1	4.5	251.1	4.4	/	/
0.750	253.2	4.4	267.5	4.6	255.6	4.5	/	/
0.800	258.1	4.5	273.4	4.7	259.5	4.5	/	/
0.850	262.8	4.6	278.9	4.8	263.0	4.6	/	/
0.900	266.9	4.6	283.6	4.8	266.2	4.6	/	/
0.950	270.1	4.7	287.2	4.9	268.7	4.6	/	/
1.000	272.4	4.7	290.0	4.9	270.8	4.7	/	/

D_{std}^2	0.22	[$\mu\text{m}/\text{m}$]
Q_{std}^2	0.22	[$\mu\text{m}/\text{m}$]
t_{std}^2	0.26	[$\mu\text{m}/\text{m}$]





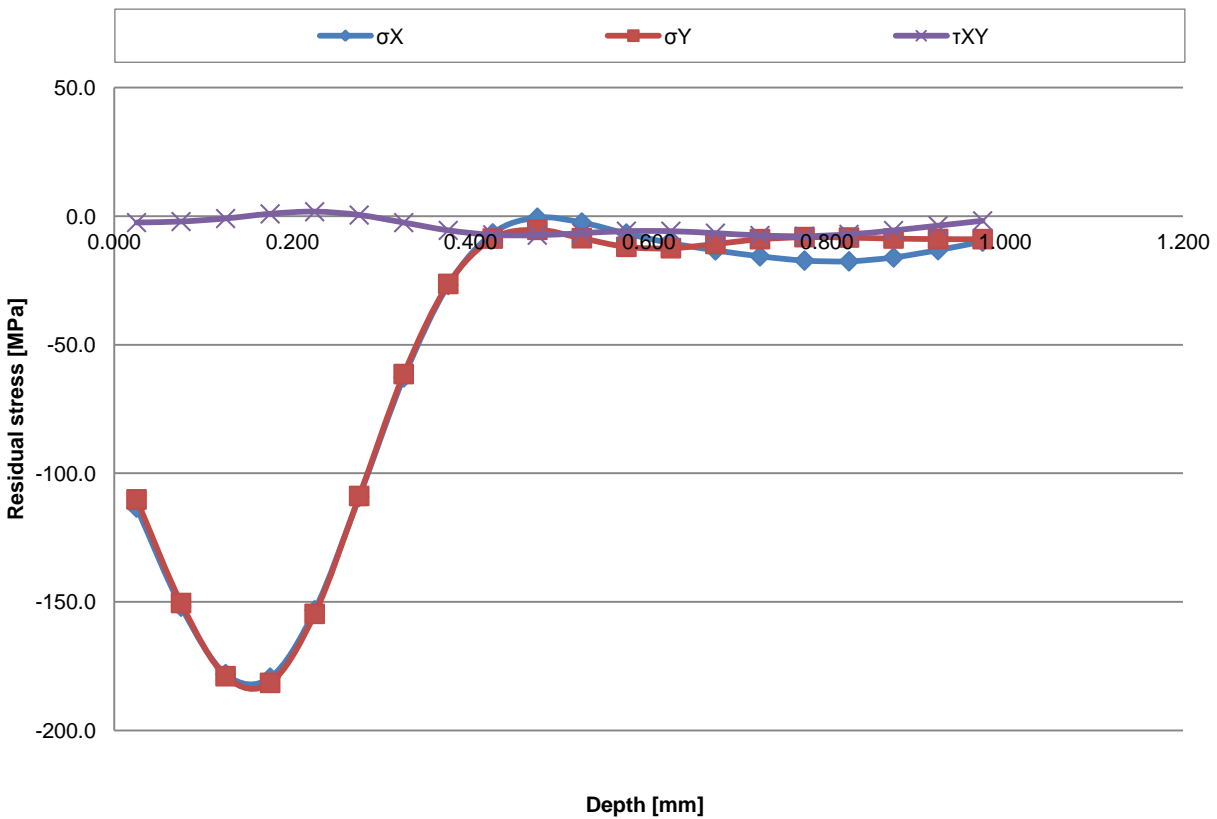
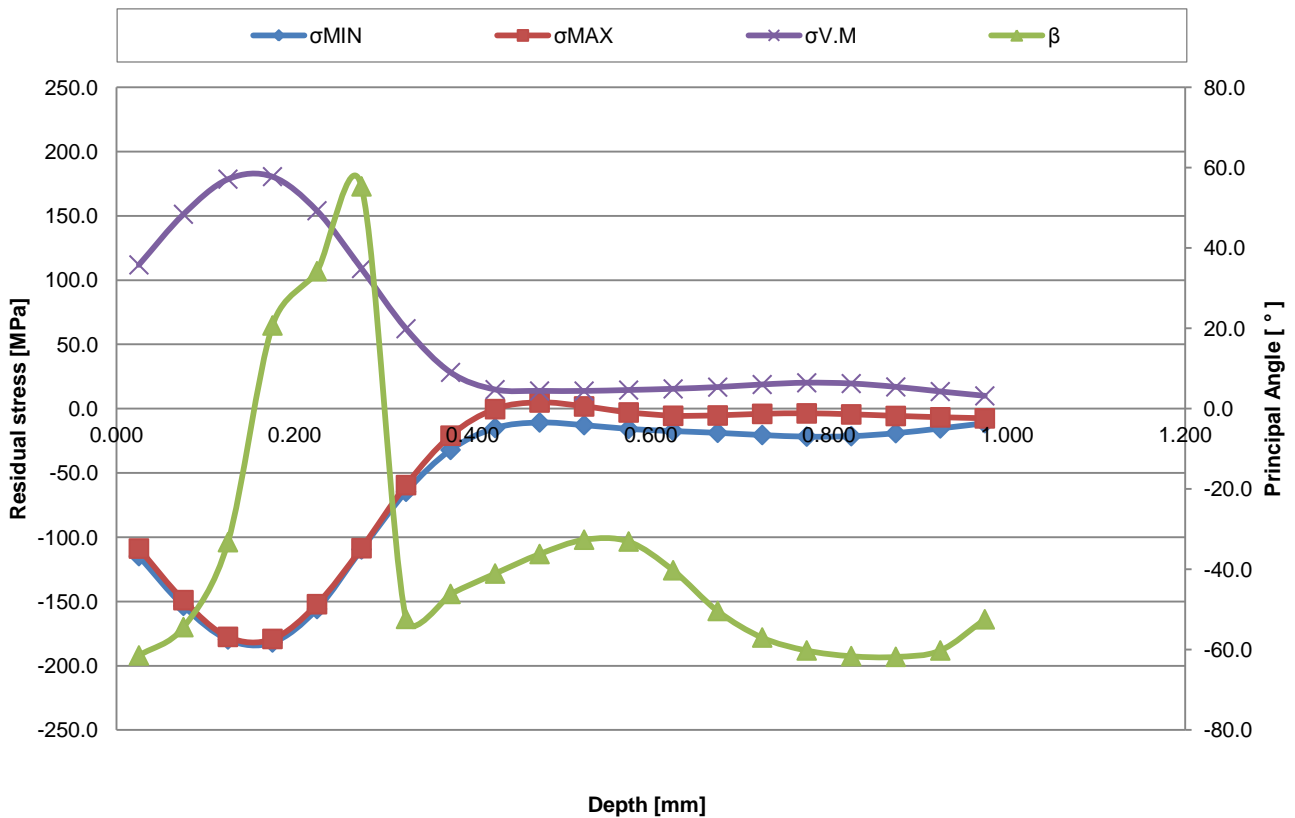
ASTM E837-13: UNIFORM STRESS

Type:	Blind			$\sigma_{V,M}$ [MPa]	106.4	±	9.6
σ_{MIN} [MPa]	-109.1	±	9.7	σ_X [MPa]	-106.2	±	9.6
σ_{MAX} [MPa]	-103.5	±	9.6	σ_Y [MPa]	-106.3	±	9.6
β [°]	-44.5	±	2.9	τ_{XY} [MPa]	-2.8	±	7.8

ASTM E837-13: NOT UNIFORM STRESS

Depth [mm]	σ_{MIN} [MPa]	$\pm U \sigma_{MIN}$ [MPa]	σ_{MAX} [MPa]	$\pm U \sigma_{MAX}$ [MPa]	β [°]	$\pm U \beta$ [°]	$\sigma_{V,M}$ [MPa]	$\pm U \sigma_{V,M}$ [MPa]
0.025	-114.7	9.9	-108.8	9.7	-61.4	3.9	111.9	9.8
0.075	-153.4	11.3	-149.0	11.1	-54.4	3.5	151.2	11.2
0.125	-179.5	12.3	-177.5	12.3	-33.2	2.1	178.5	12.3
0.175	-181.9	12.4	-179.1	12.4	20.7	1.3	180.5	12.4
0.225	-155.9	11.4	-152.1	11.3	34.2	2.2	154.0	11.3
0.275	-109.5	9.7	-108.5	9.7	55.4	3.5	109.0	9.7
0.325	-64.6	8.5	-59.5	8.4	-52.3	3.4	62.2	8.5
0.375	-32.1	8.0	-21.0	7.9	-46.1	3.0	28.2	7.9
0.425	-15.0	7.8	-0.4	7.8	-41.0	2.6	14.8	7.8
0.475	-10.7	7.8	4.8	7.8	-36.2	2.3	13.8	7.8
0.525	-12.8	7.8	1.7	7.8	-32.6	2.1	13.7	7.8
0.575	-15.7	7.8	-2.9	7.8	-33.1	2.1	14.5	7.8
0.625	-17.4	7.9	-5.5	7.8	-40.2	2.6	15.4	7.8
0.675	-18.8	7.9	-5.3	7.8	-50.4	3.2	16.7	7.9
0.725	-20.5	7.9	-4.1	7.8	-57.0	3.6	18.8	7.9
0.775	-21.7	7.9	-3.7	7.8	-60.2	3.9	20.1	7.9
0.825	-21.4	7.9	-4.5	7.8	-61.6	3.9	19.5	7.9
0.875	-19.0	7.9	-5.7	7.8	-61.8	4.0	16.9	7.9
0.925	-15.3	7.8	-6.8	7.8	-60.2	3.9	13.3	7.8
0.975	-11.3	7.8	-7.5	7.8	-52.4	3.4	9.9	7.8

Depth [mm]	σ_X [MPa]	$\pm U \sigma_X$ [MPa]	σ_Y [MPa]	$\pm U \sigma_Y$ [MPa]	τ_{XY} [MPa]	$\pm U \tau_{XY}$ [MPa]
0.025	-113.4	9.9	-110.1	9.8	-2.5	7.8
0.075	-151.9	11.2	-150.5	11.2	-2.1	7.8
0.125	-178.1	12.3	-178.9	12.3	-0.9	7.8
0.175	-179.5	12.3	-181.5	12.4	0.9	7.8
0.225	-153.3	11.3	-154.7	11.3	1.7	7.8
0.275	-109.2	9.7	-108.8	9.7	0.4	7.8
0.325	-62.7	8.5	-61.4	8.5	-2.5	7.8
0.375	-26.8	7.9	-26.3	7.9	-5.5	7.9
0.425	-6.7	7.8	-8.7	7.8	-7.3	7.9
0.475	-0.6	7.8	-5.3	7.8	-7.4	7.9
0.525	-2.5	7.8	-8.6	7.8	-6.6	7.9
0.575	-6.7	7.8	-11.9	7.8	-5.8	7.9
0.625	-10.5	7.8	-12.4	7.8	-5.8	7.9
0.675	-13.3	7.8	-10.8	7.8	-6.6	7.9
0.725	-15.6	7.8	-8.9	7.8	-7.5	7.9
0.775	-17.3	7.9	-8.1	7.8	-7.8	7.9
0.825	-17.6	7.9	-8.3	7.8	-7.1	7.9
0.875	-16.0	7.8	-8.7	7.8	-5.6	7.9
0.925	-13.2	7.8	-8.9	7.8	-3.7	7.8
0.975	-9.9	7.8	-8.9	7.8	-1.8	7.8



NOTE Several computed stresses significantly exceed 80 % of the material yield stress, then the results are considered as indicative only. In general, the computed stresses whose values exceed 80 % of the material yield stress tend to be overestimated.