Guidelines and **R**ecommendations for **I**ntegrating **S**pecific **P**rofiled steel sheets in the **E**urocodes (**GRISPE**)

Test report

Liner Trays

Annex

31.05.2015
(Rev. 01)

Deliverable D 2.3

Guidelines and Recommendations for Integrating Specific Profiled Steels sheets in the Euro-codes (GRISPE)

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PU	*Public*	
PP	*Restricted to the Commission Services, the Coal and Steel Technical Groups and the European Committee for Standardisation (CEN)*	
RE	*Restricted to a group specified by the Beneficiaries*	
CO	*Confidential, only for Beneficiaries (including the Commission services)*	***X***

Verification and Approval
Coordinator:
WP2 Leader:
Other Beneficiaries

Deliverable	
D 2.3 Test report	***Due date: 31th May 2015*** ***Completion date: 31th May 2015***

Content

1 Annex A: Object of testing

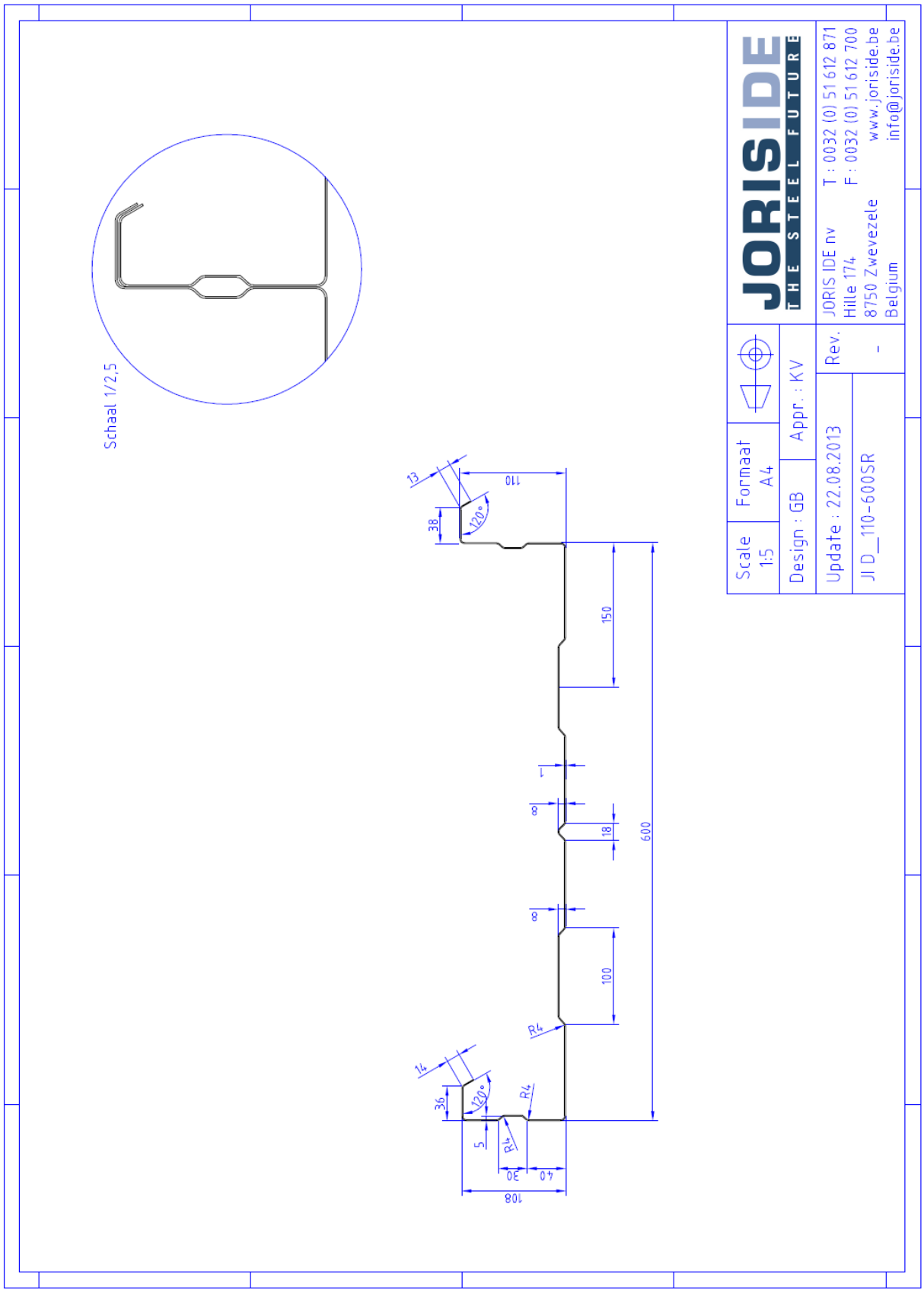


Figure A.1: Cross-section of Joris Ide JI D_110-600SR

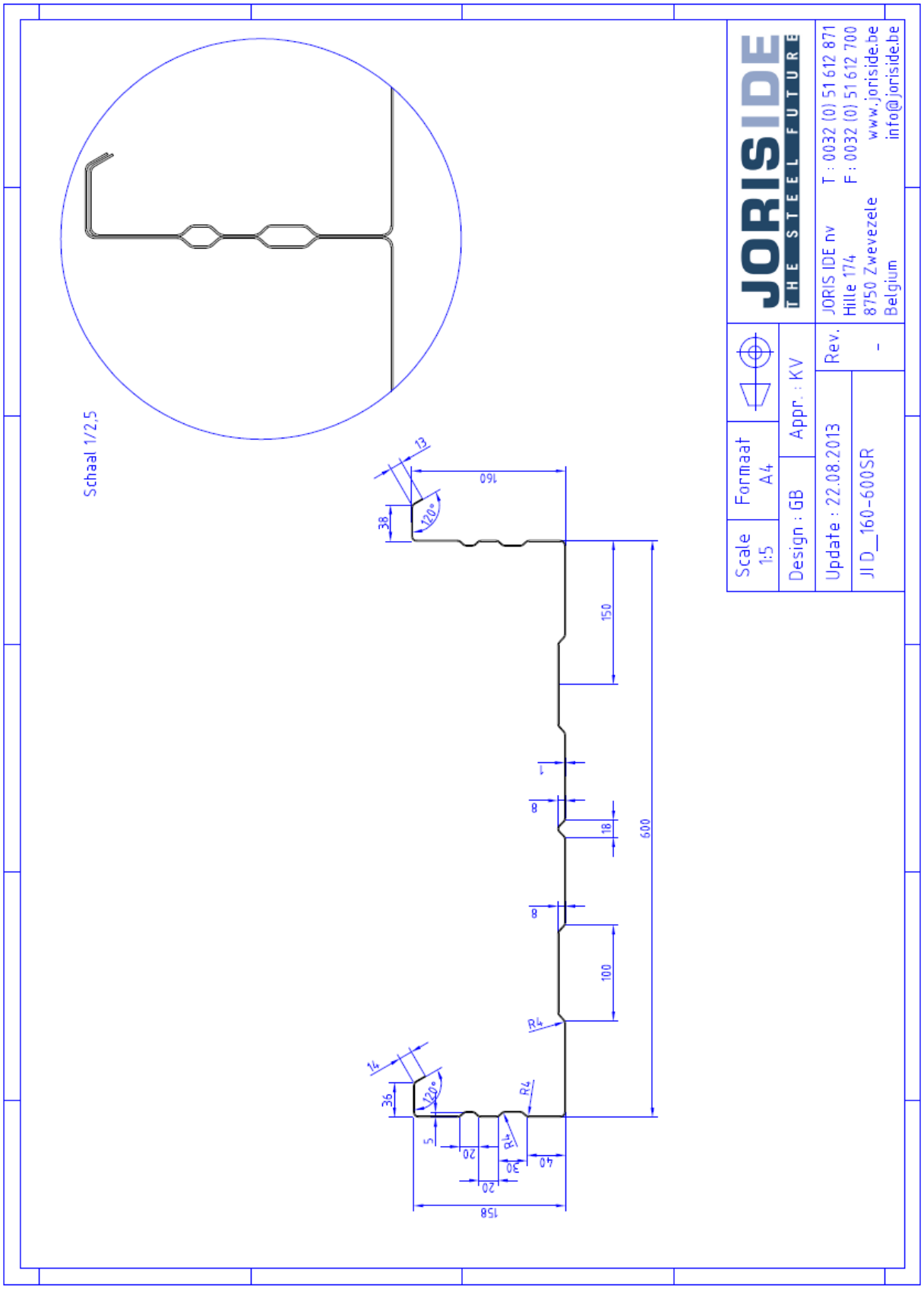


Figure A.2: Cross-section of Joris Ide JI D_160-600SR

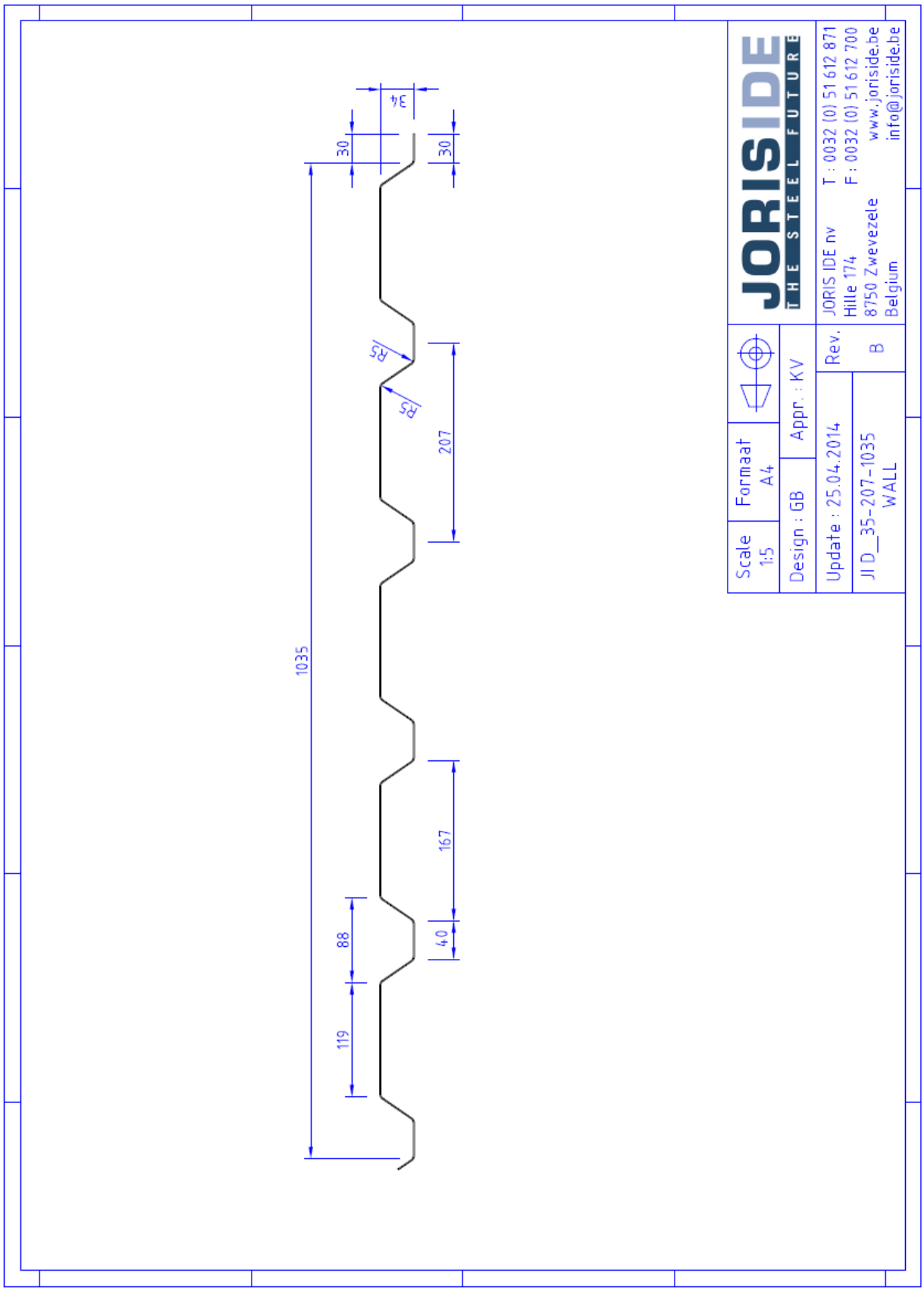


Figure A.3: Cross-section of Joris Ide JI D_35-207-1035

2 Annex B: Single span positive bending tests

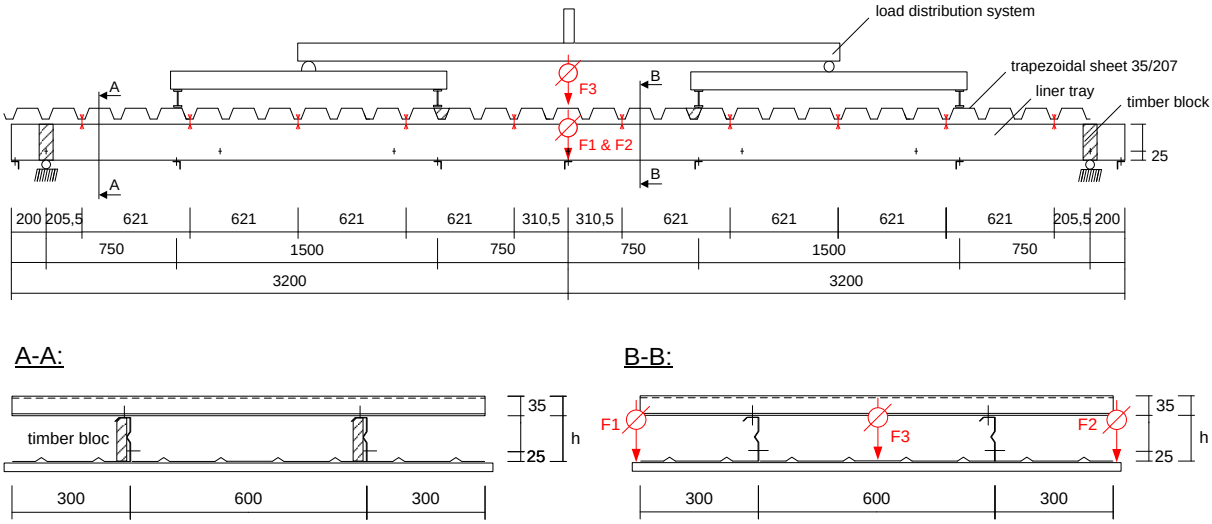


Figure B.1: Schematic test setup

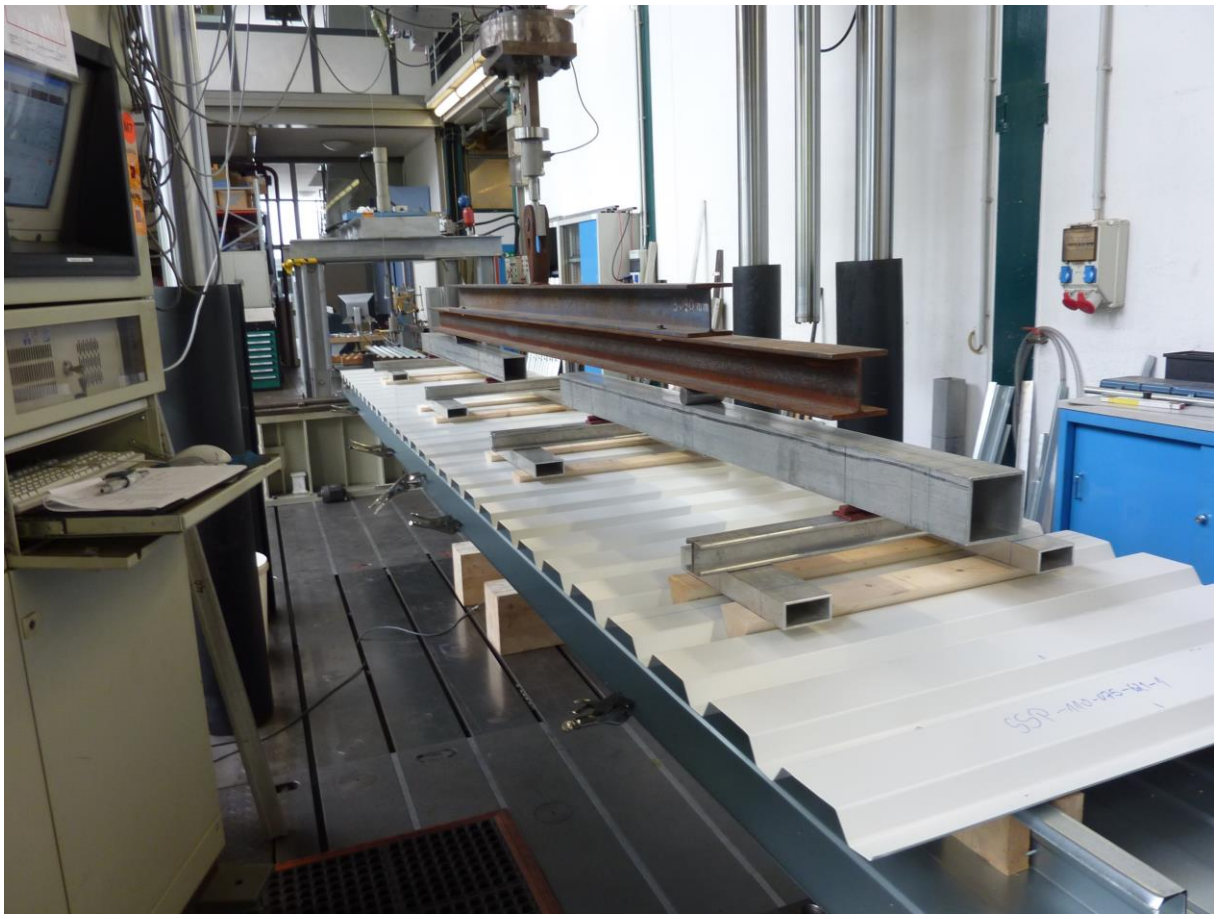


Figure B.2: Test setup, side view

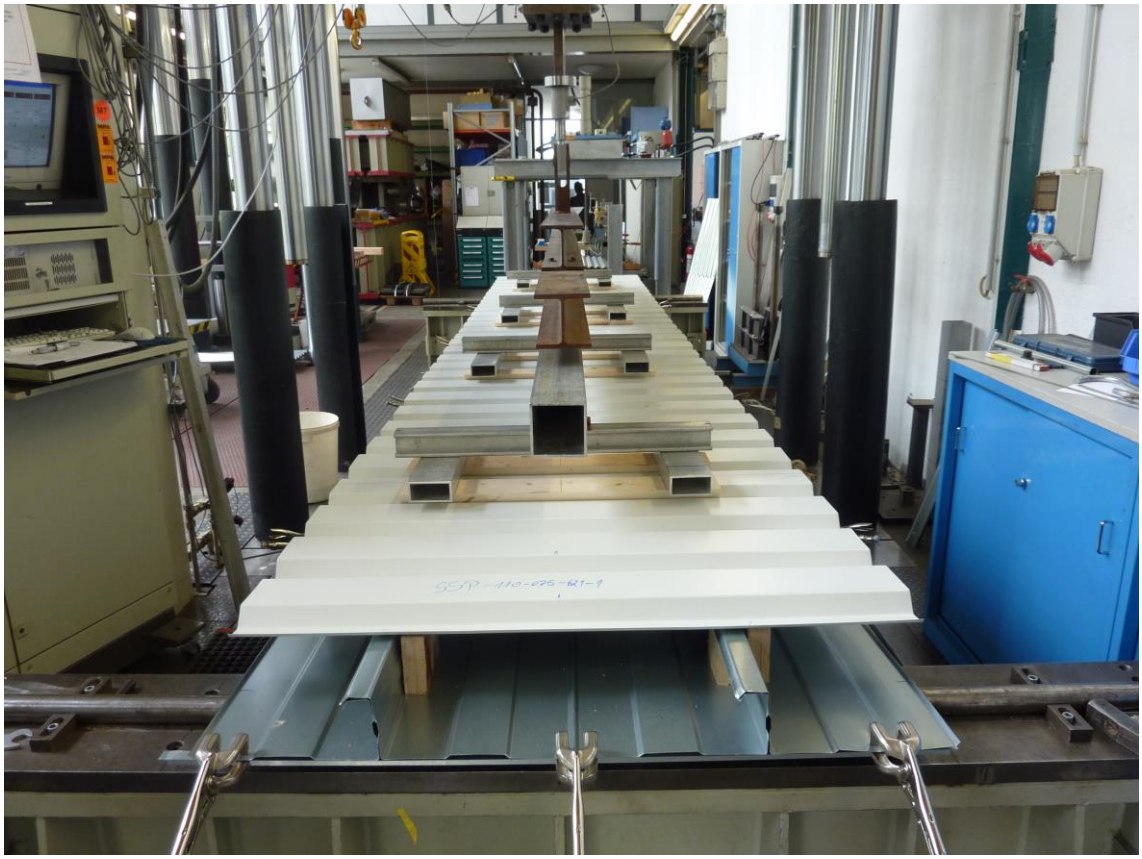


Figure B.3: Test setup, front view

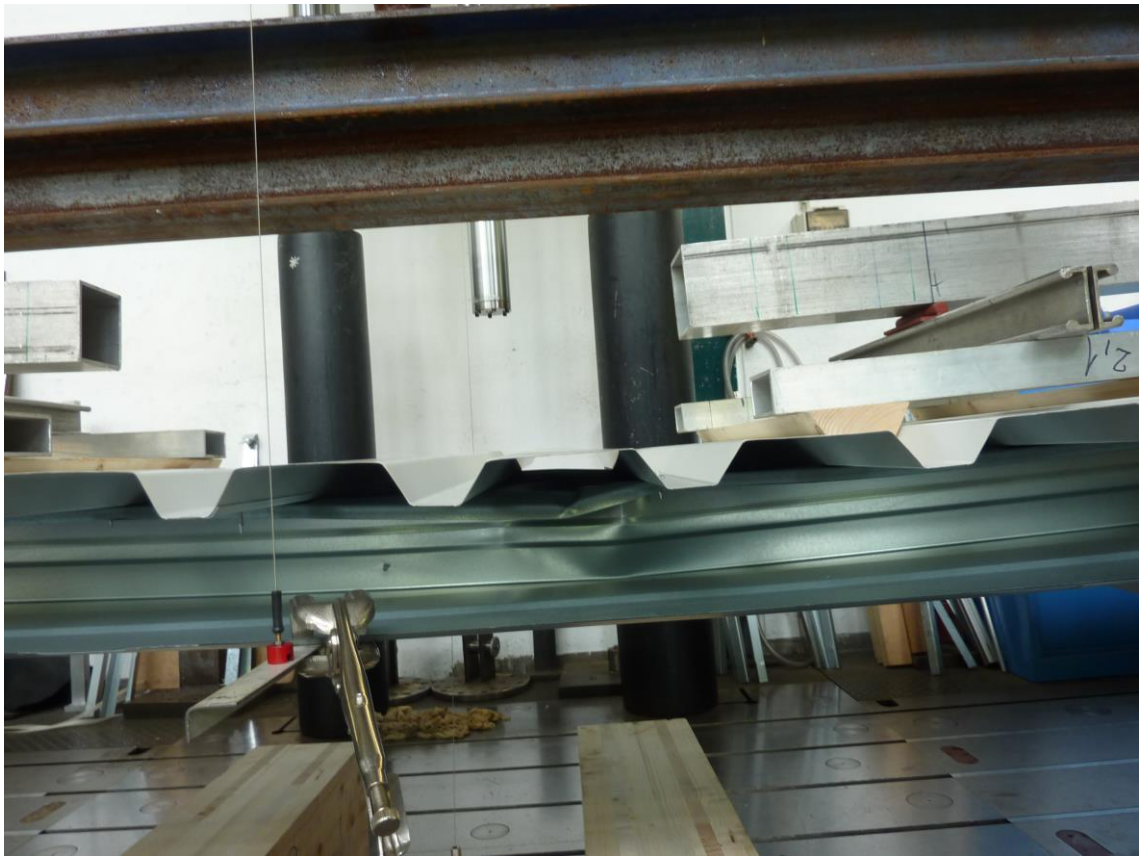


Figure B.4: Failure mode (buckling of the upper flange in the middle of the span)

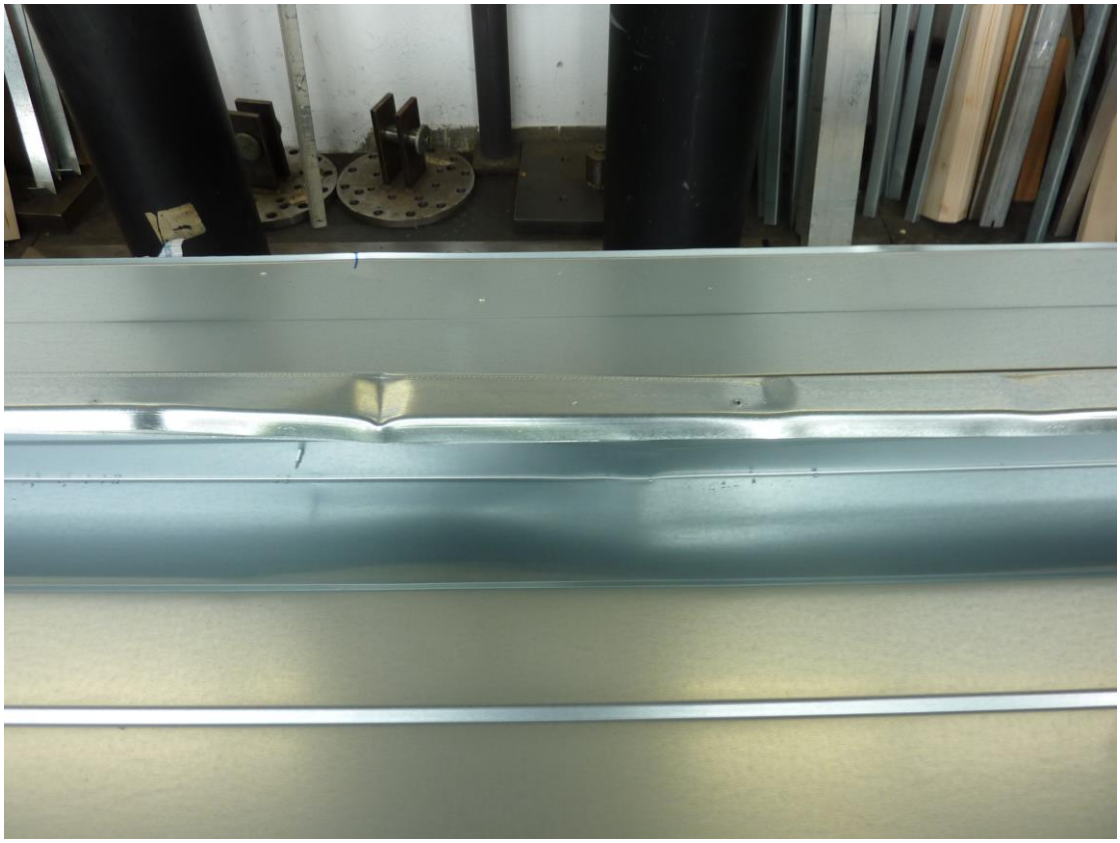


Figure B.5: Failure mode (buckling of the upper flange in the middle of the span, between two fixations of the flange)

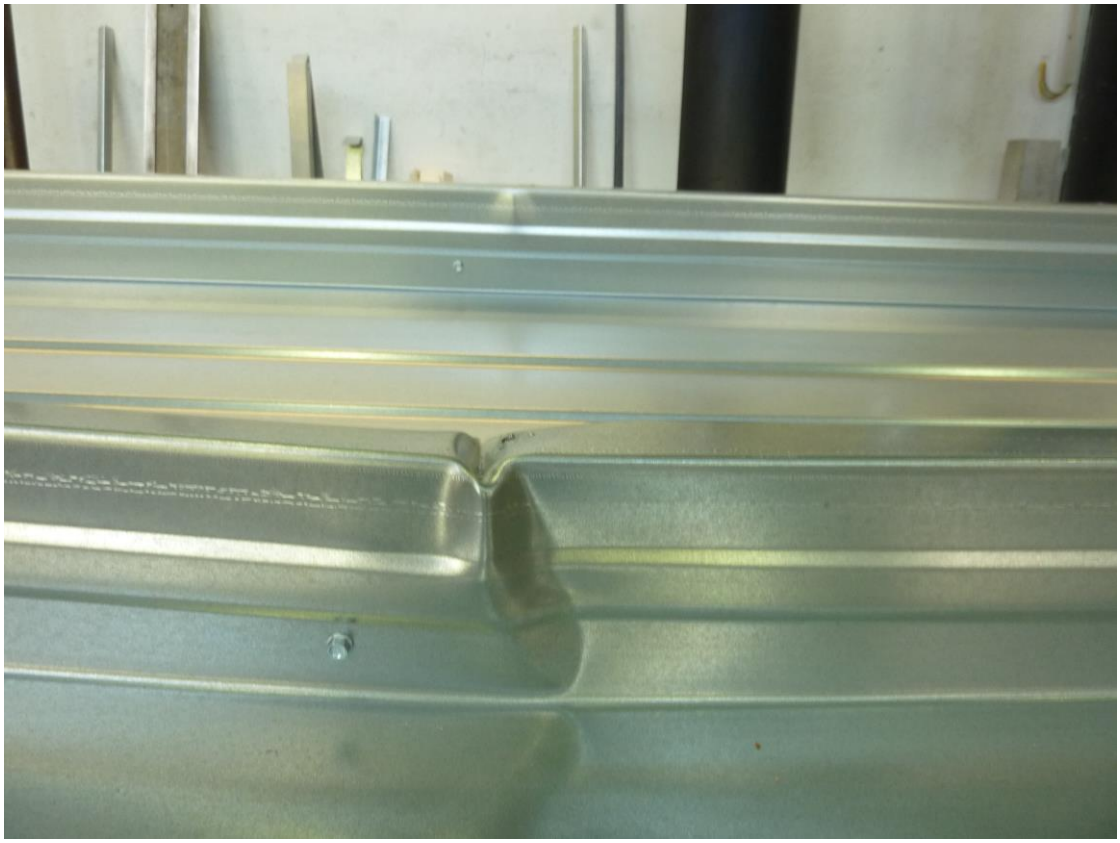


Figure B.6: Failure mode (buckling of the upper flange in the middle of the span, near the fixation of the flange)

Figure B.7: Test setup (liner tray without outer cladding, load distribution in the lower flange)

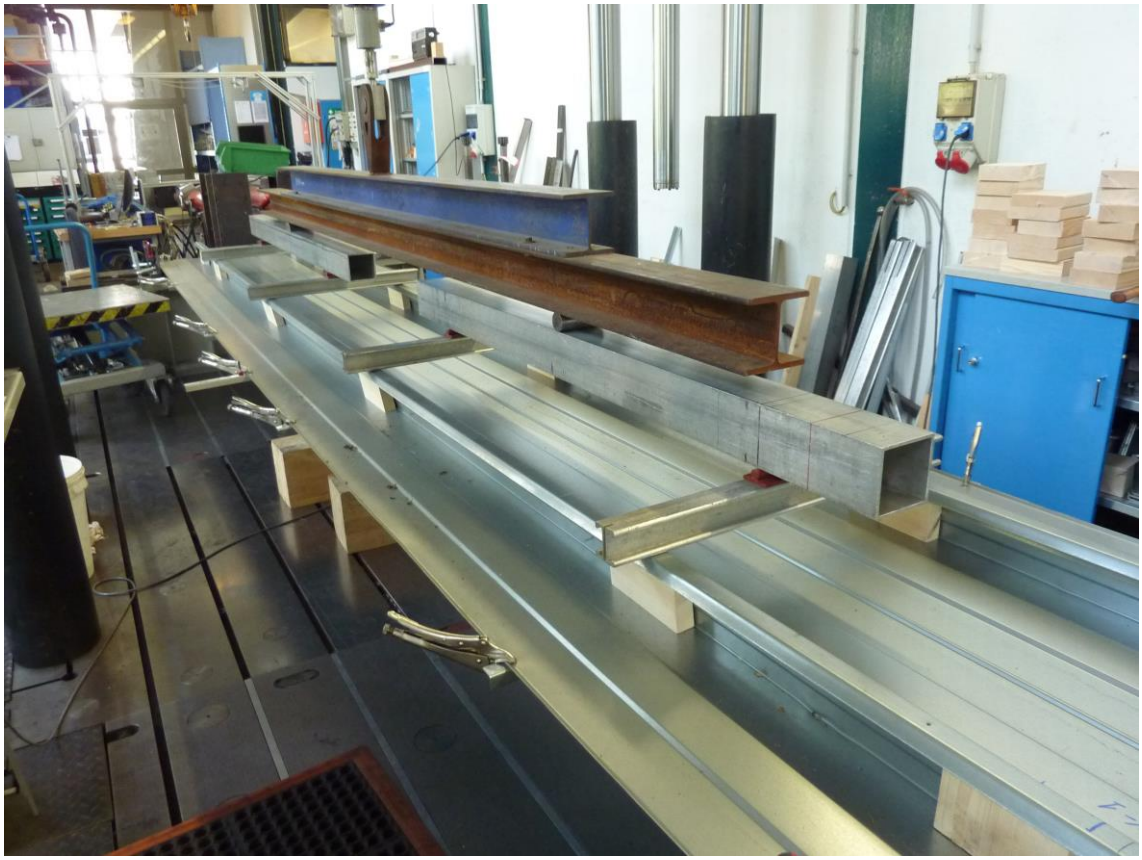


Figure B.8: Test setup (liner tray without outer cladding, load distribution in the upper flange)

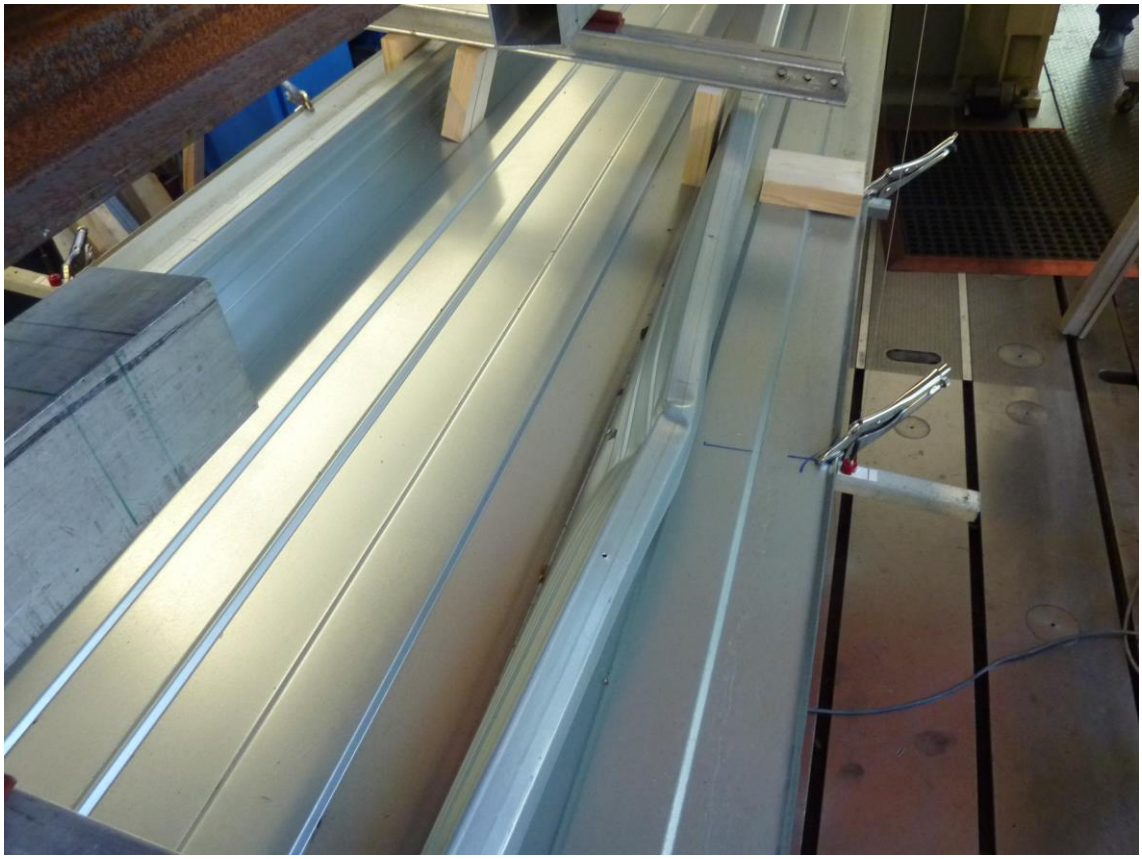
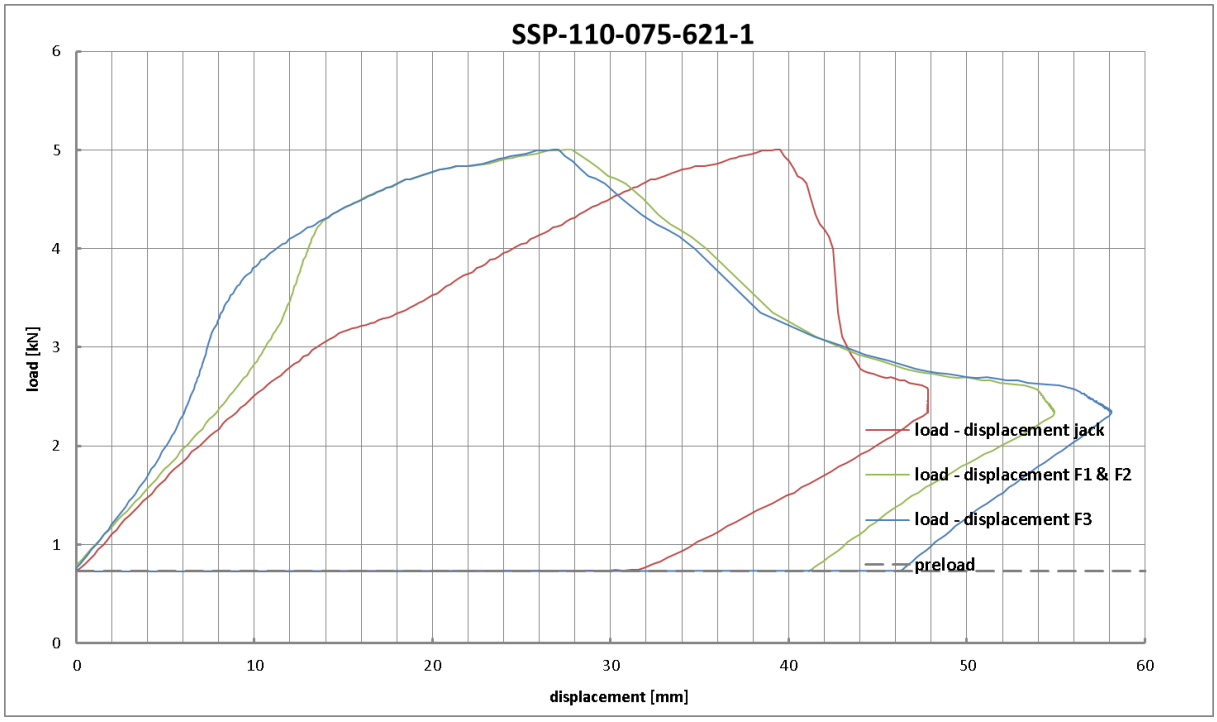


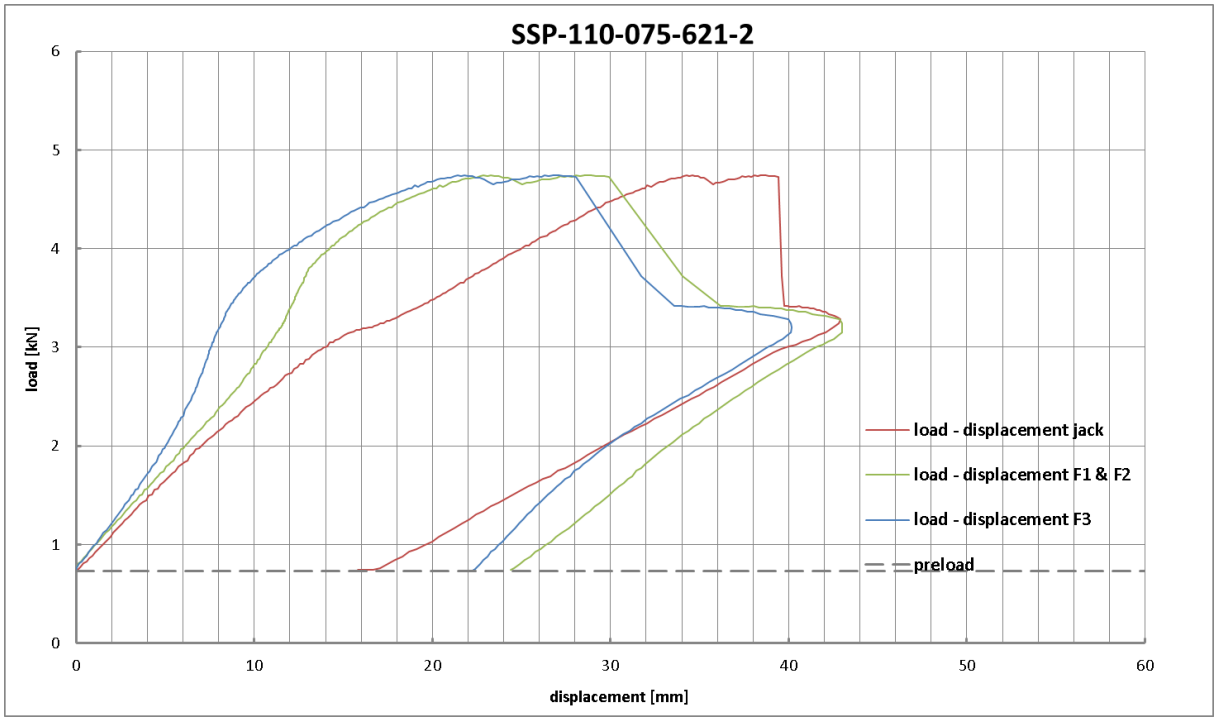
Figure B.9: Failure mode (liner tray without outer cladding, load distribution in the lower flange)

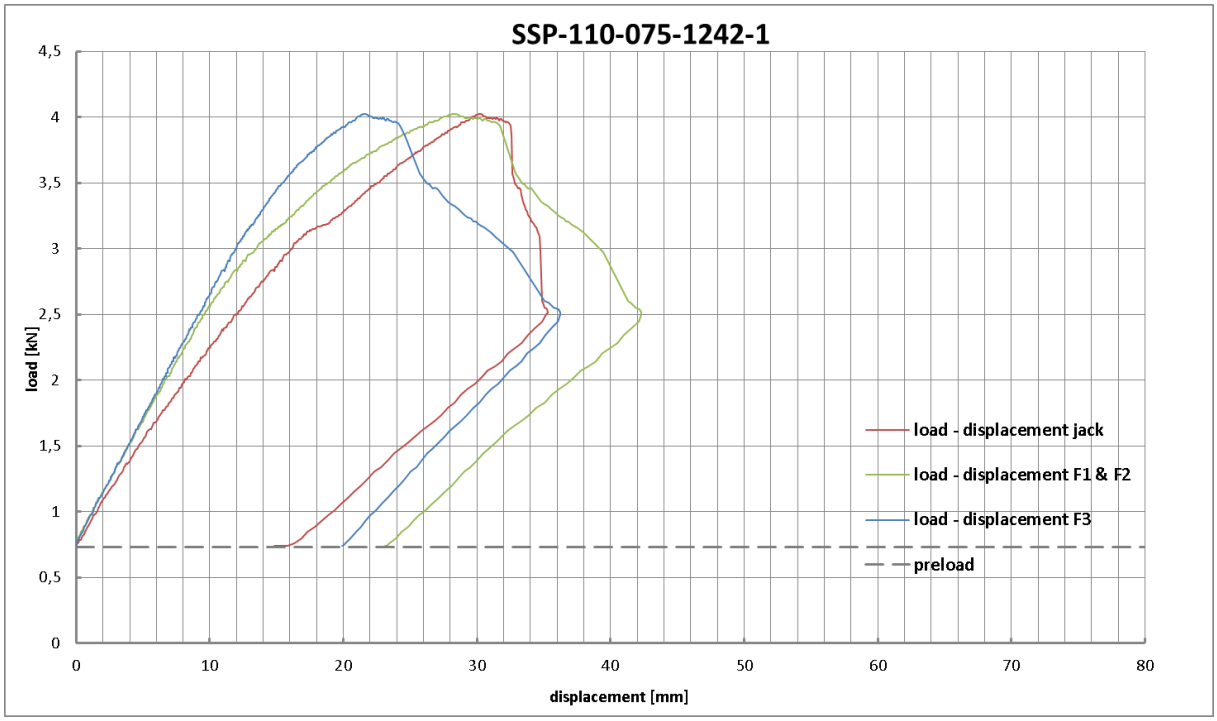
Figure B.10: Deformation of the upper flange and the web of the liner tray (liner tray without outer cladding, load distribution in the upper flange)

Figure B.11: Failure mode (liner tray without outer cladding, load distribution in the upper flange)

Load-deflection curves:



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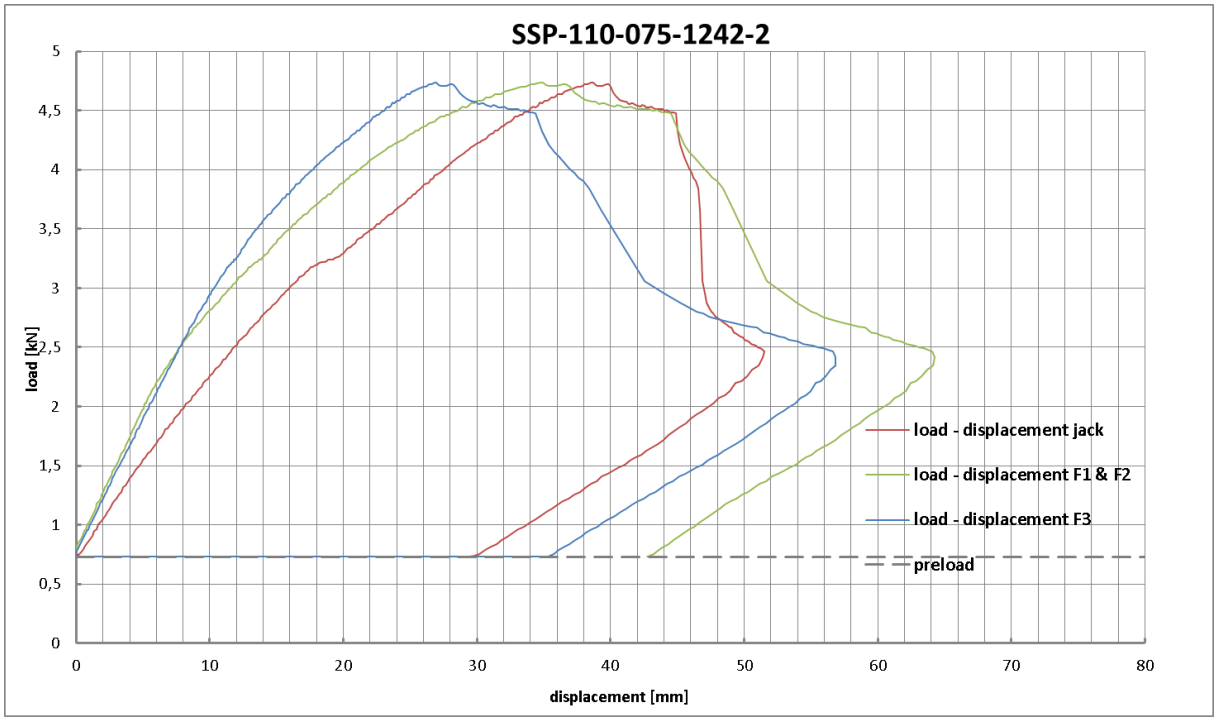
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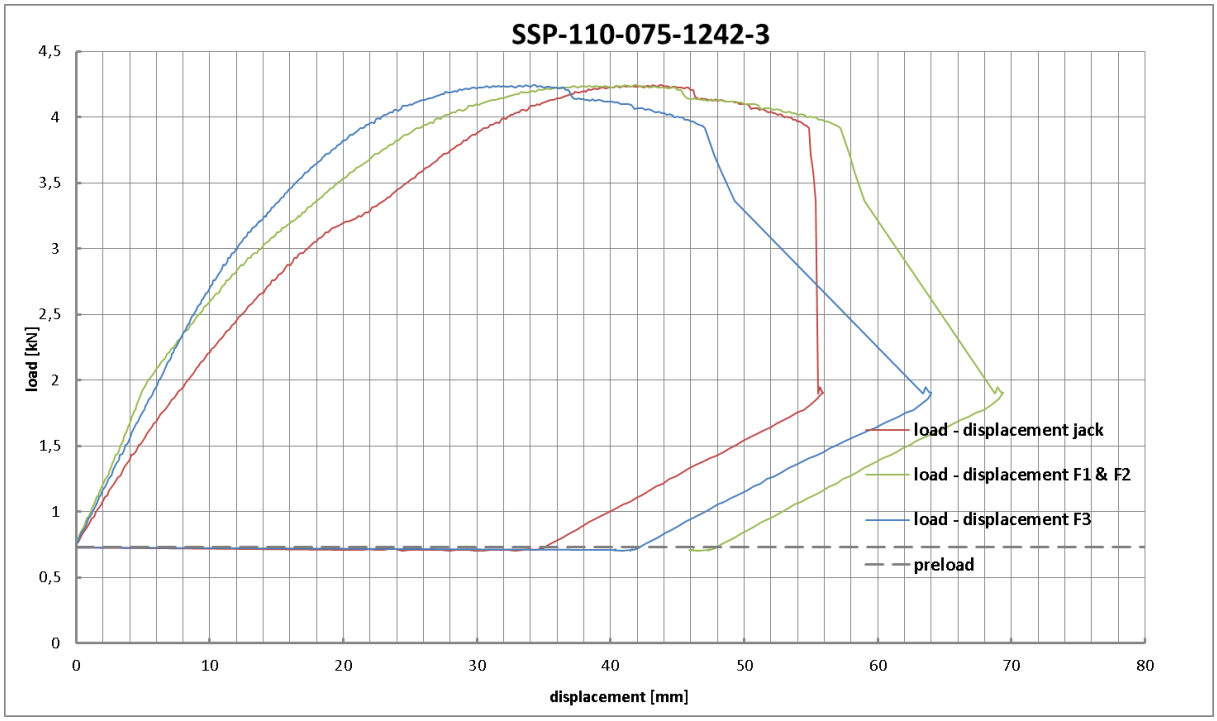
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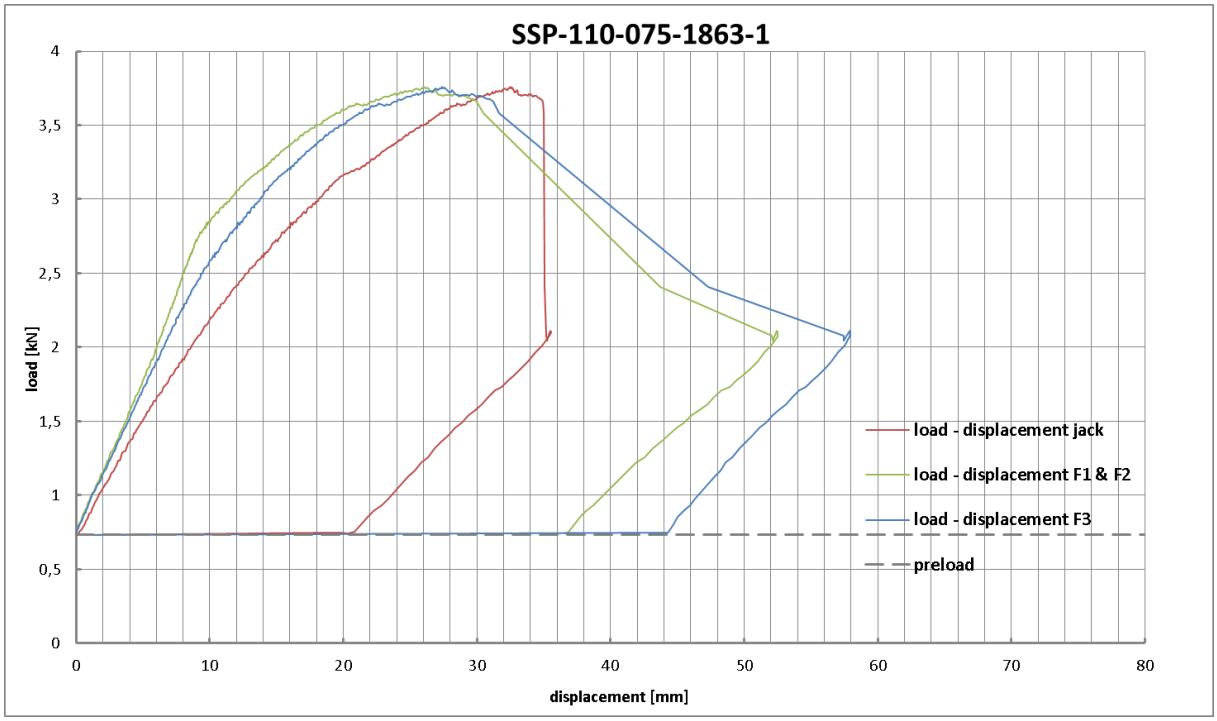
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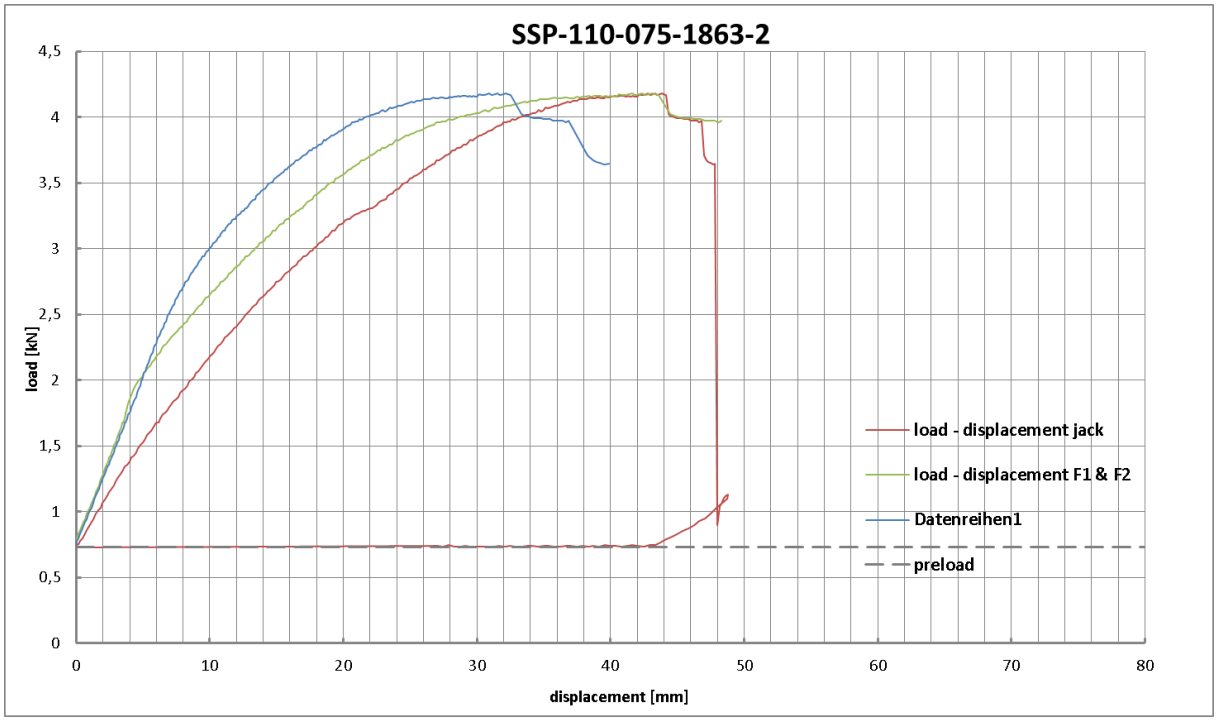
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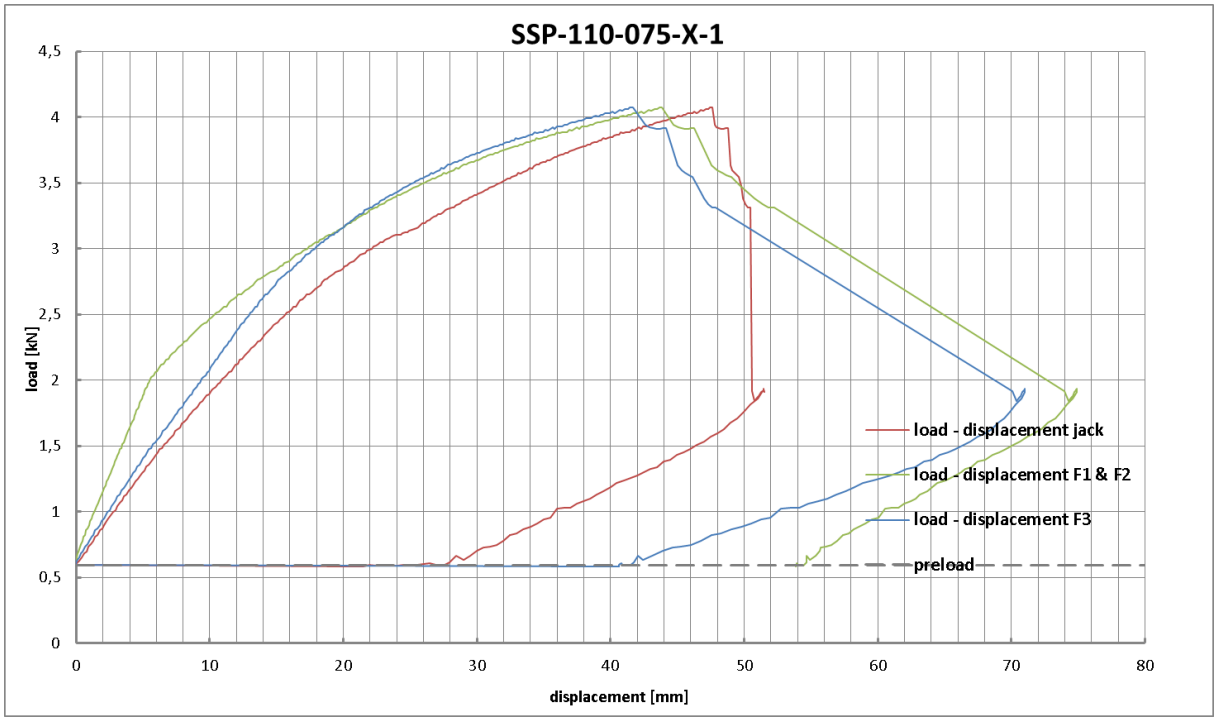
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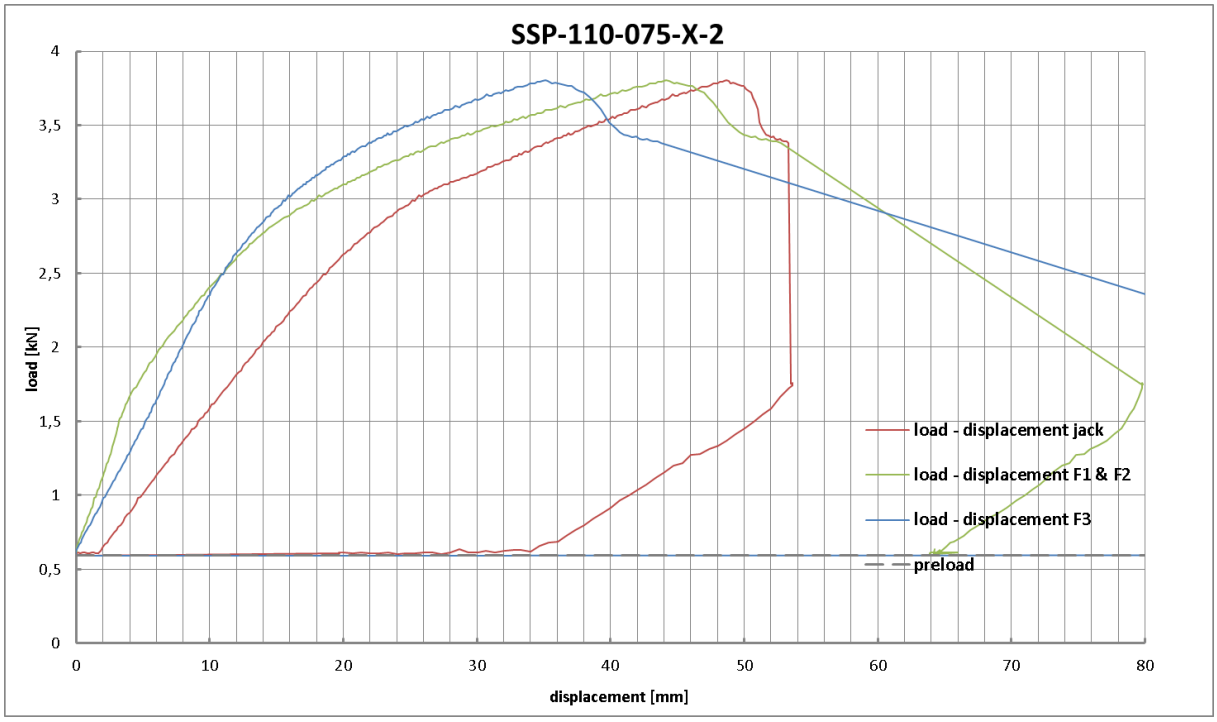
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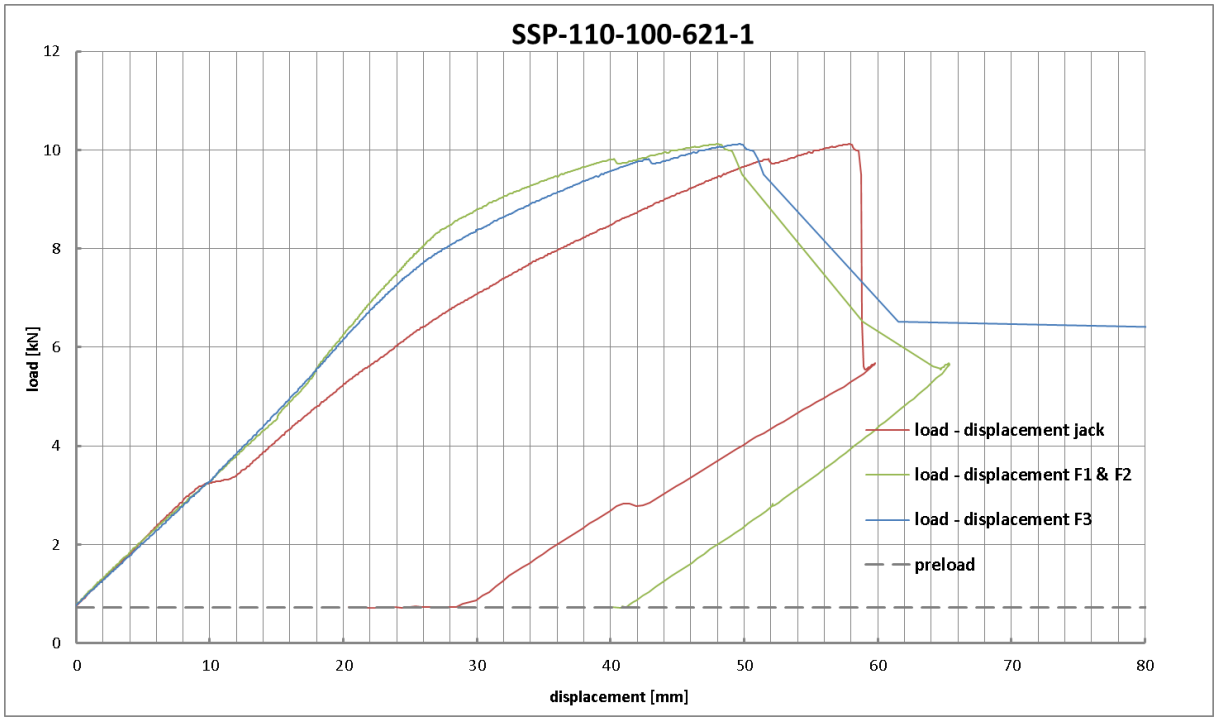
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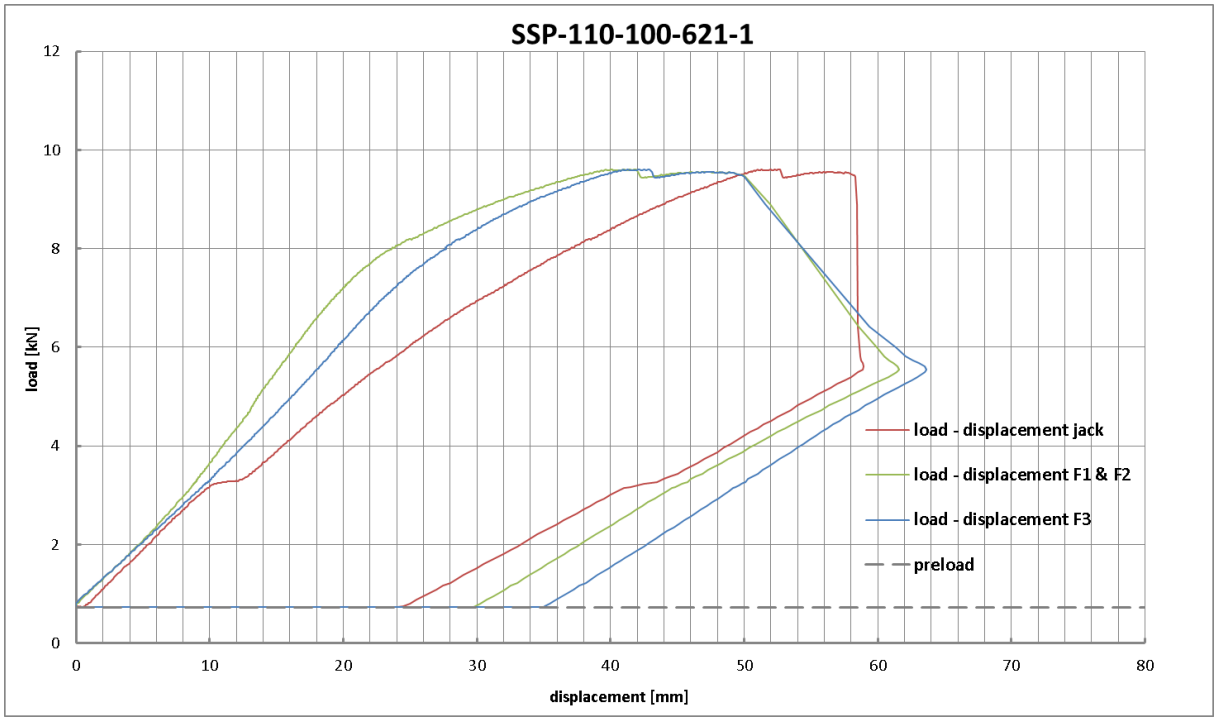
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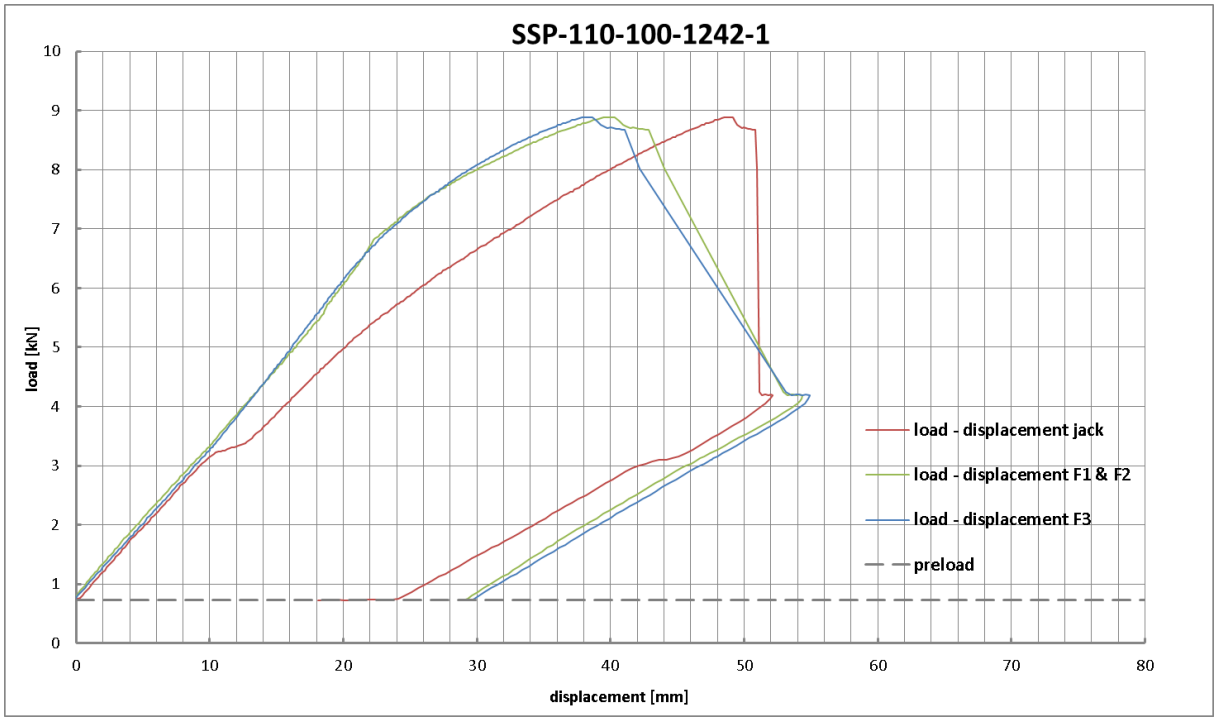
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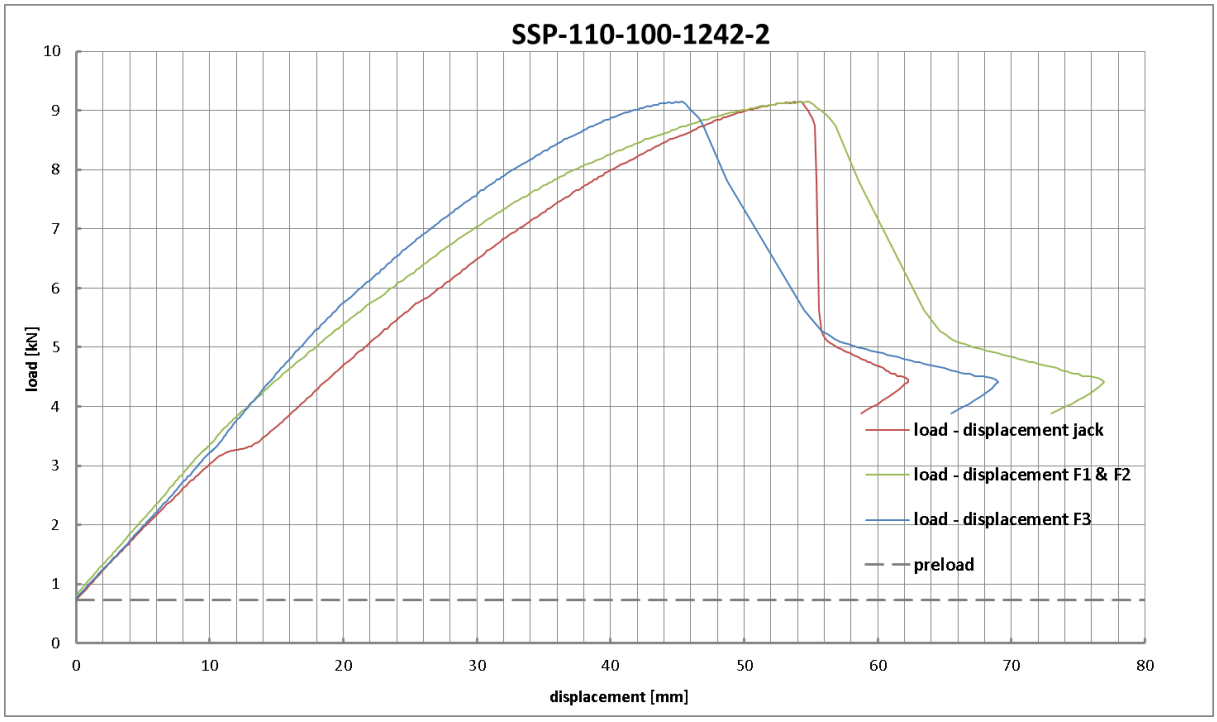
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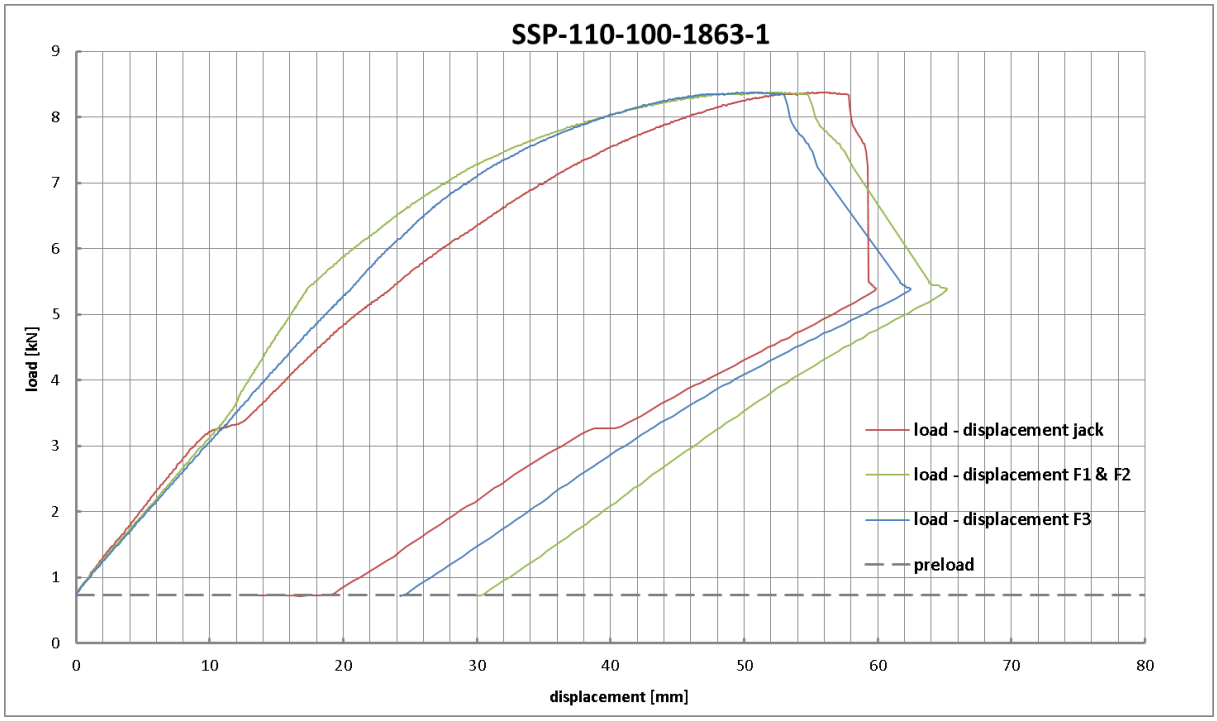
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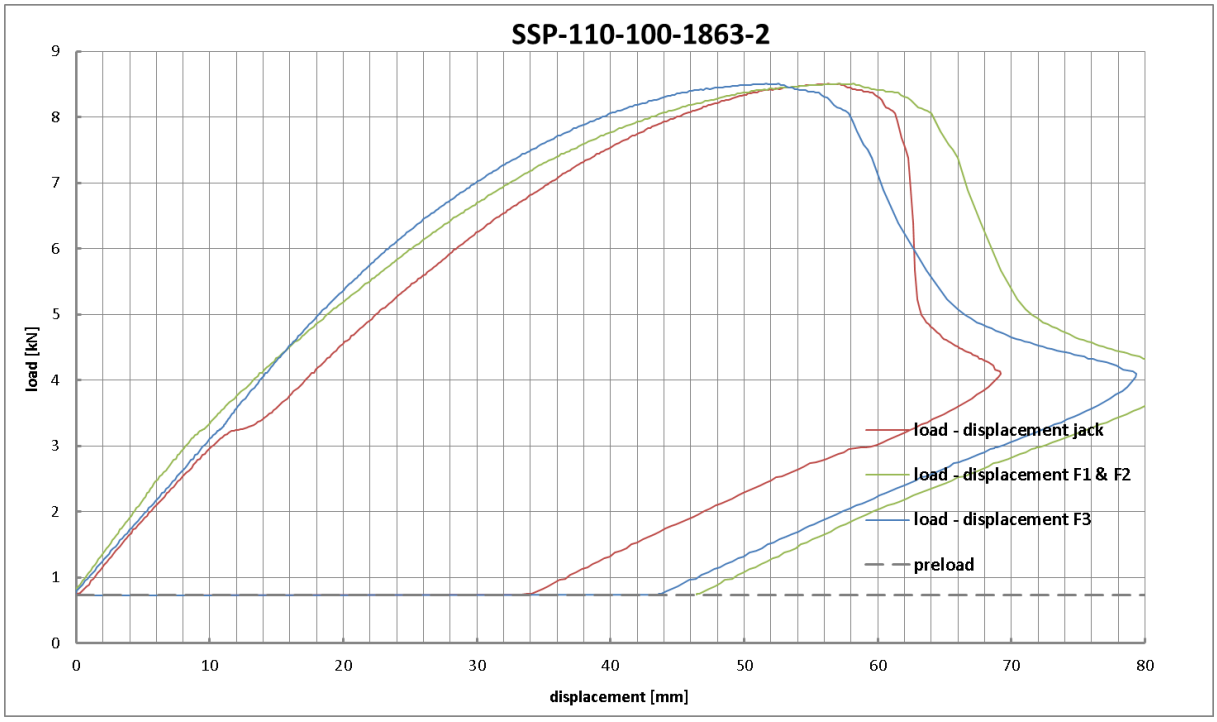
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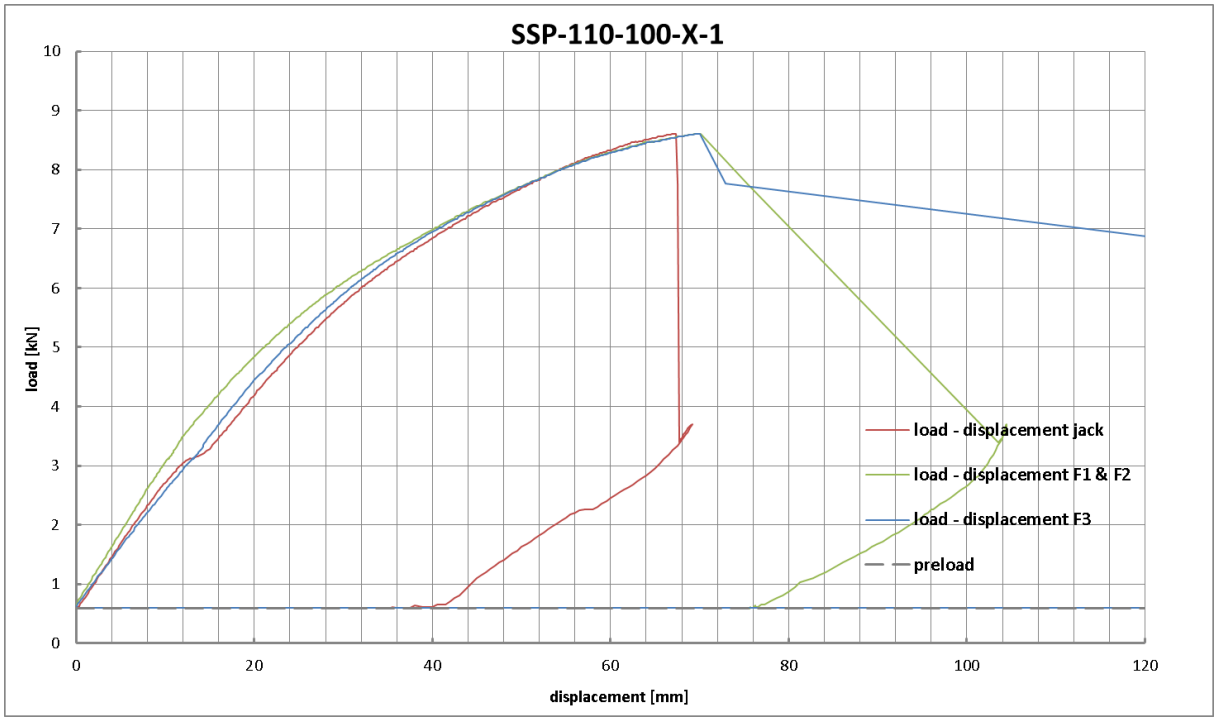
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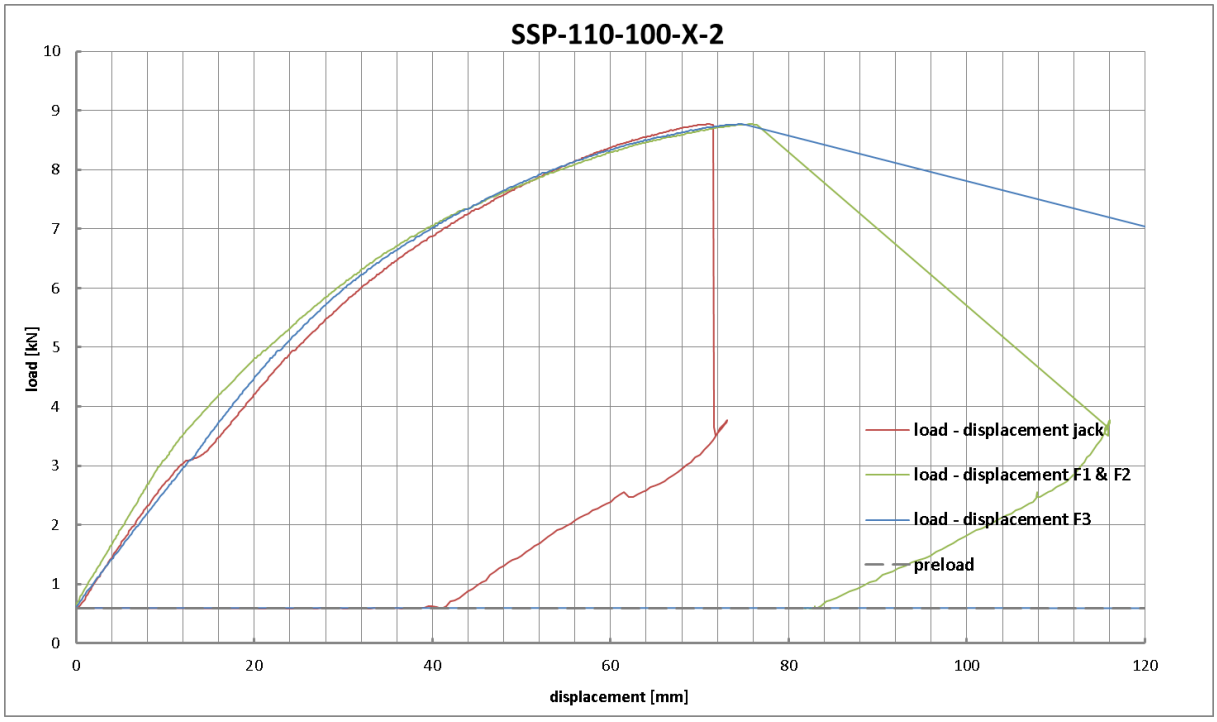
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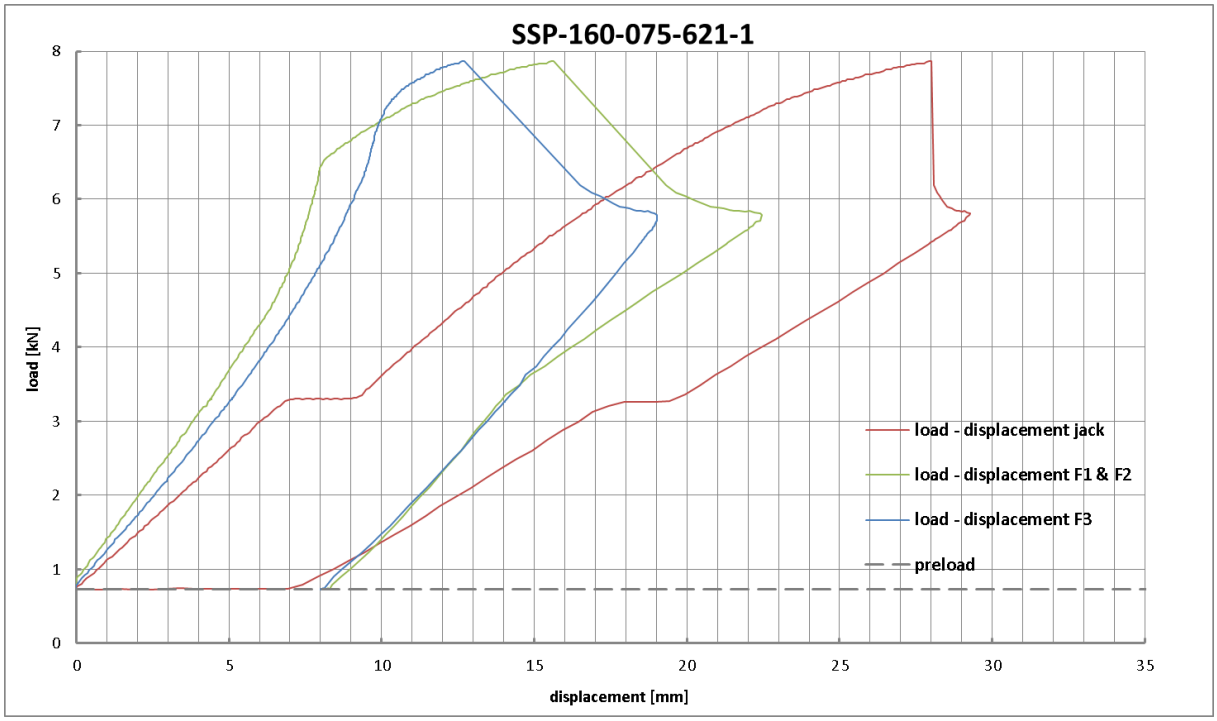
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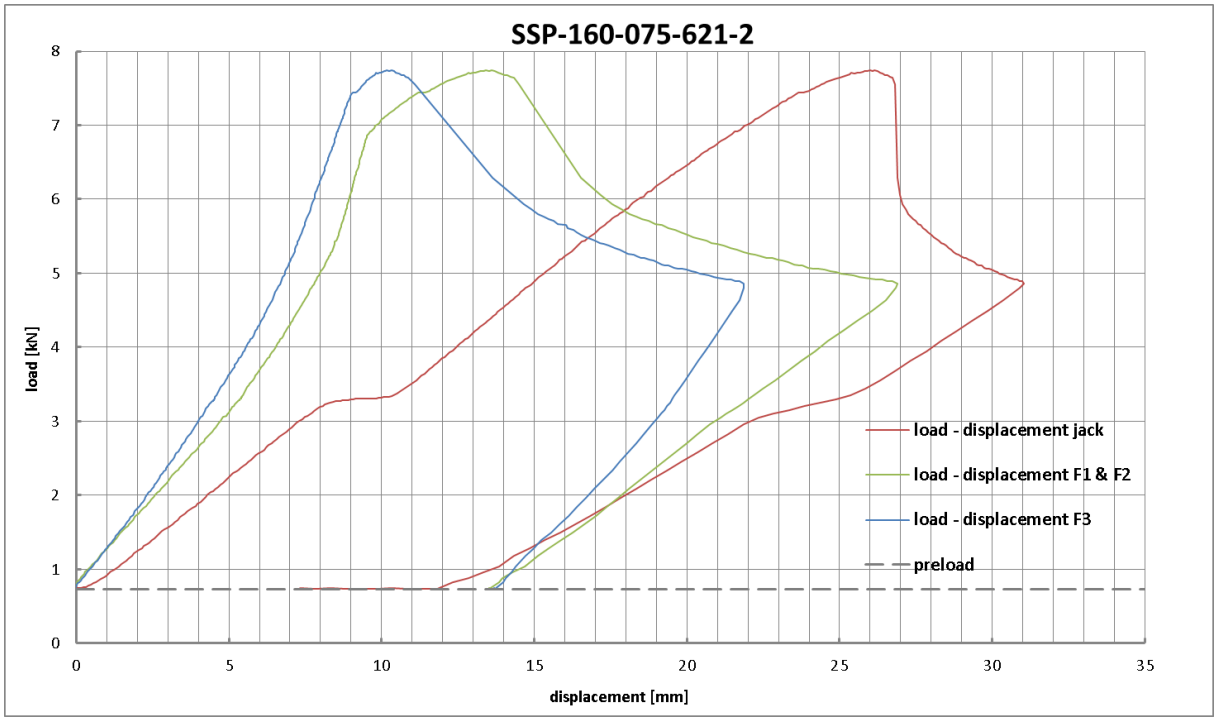
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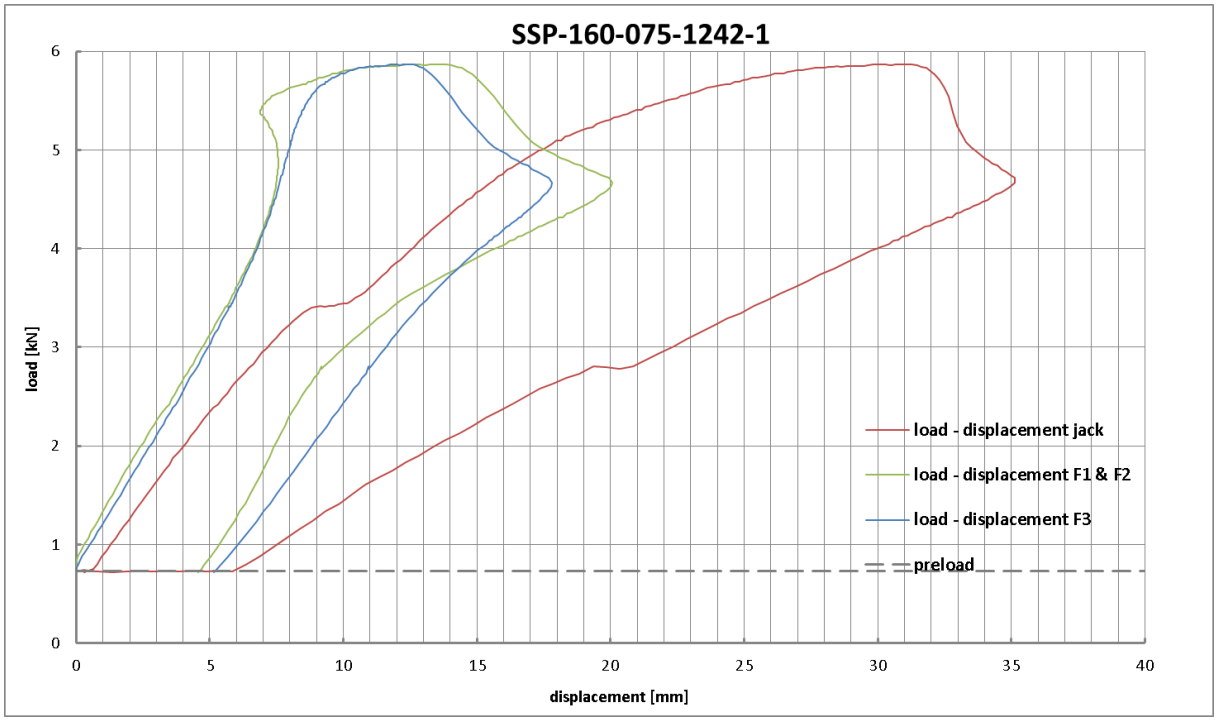
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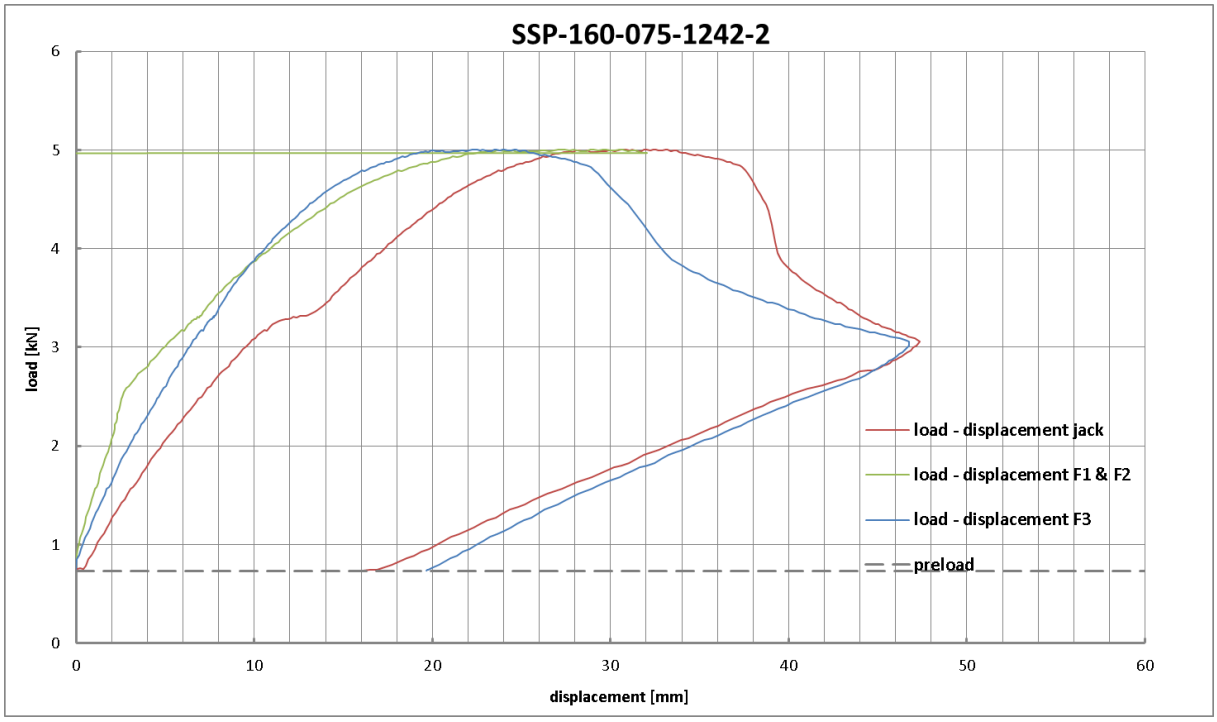
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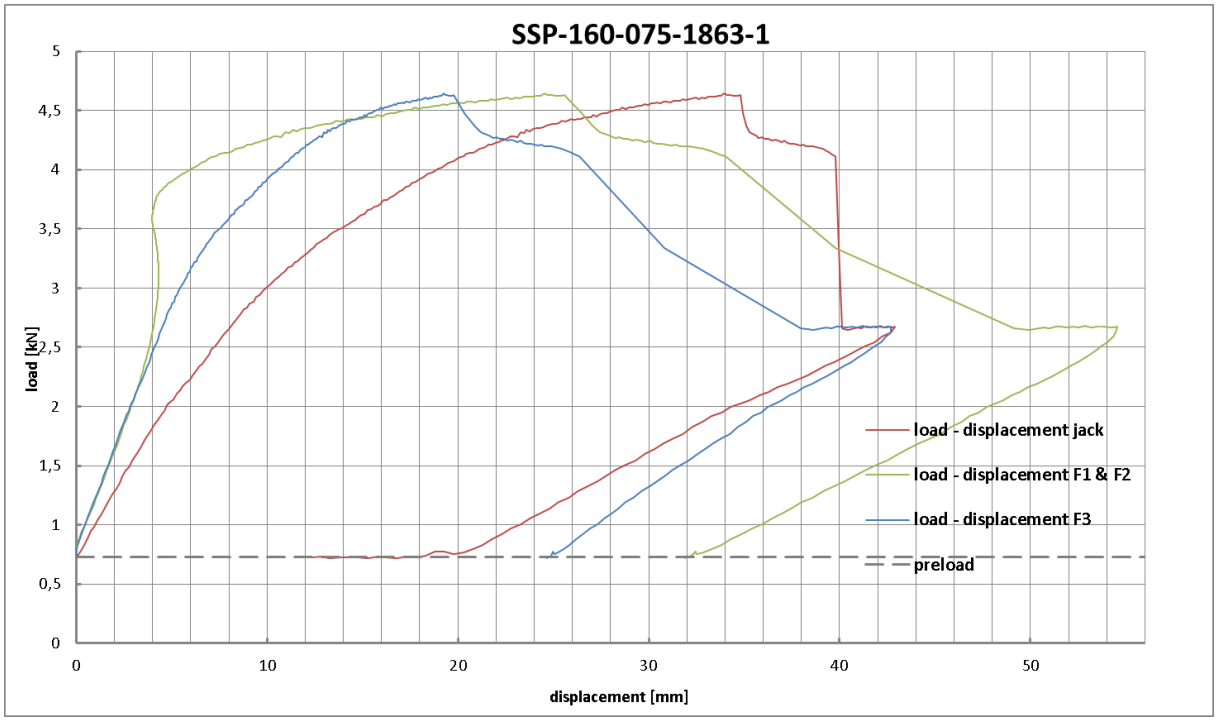
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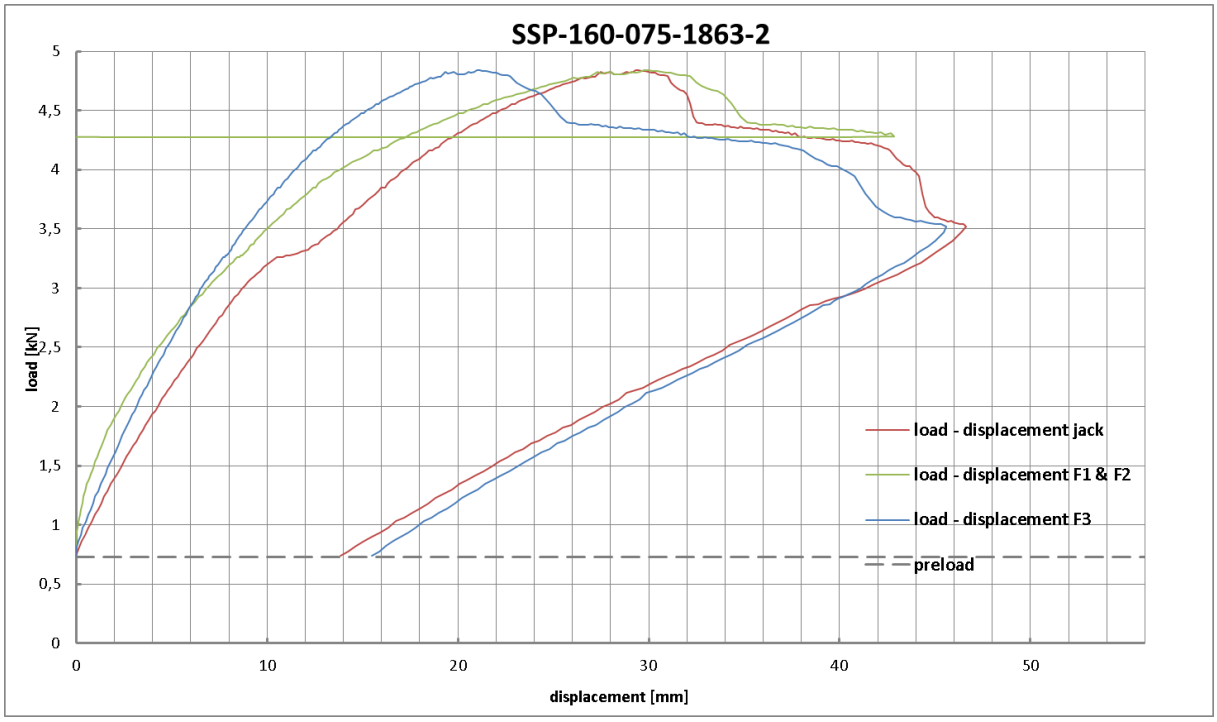
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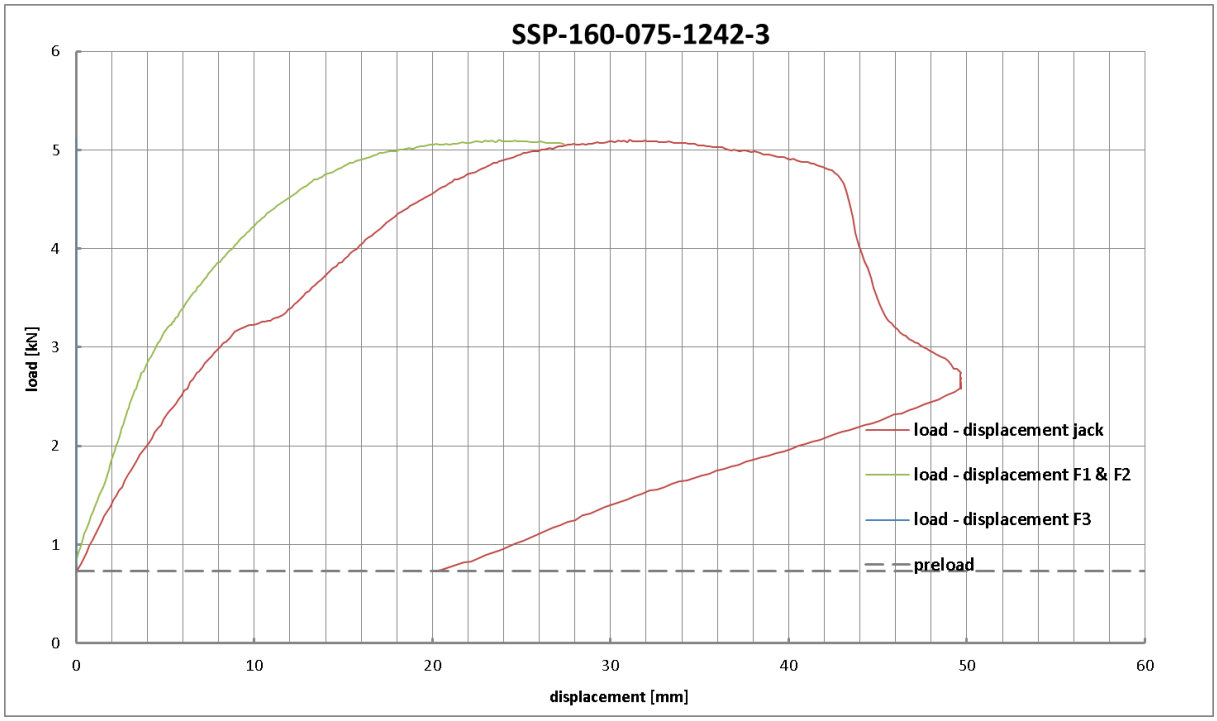
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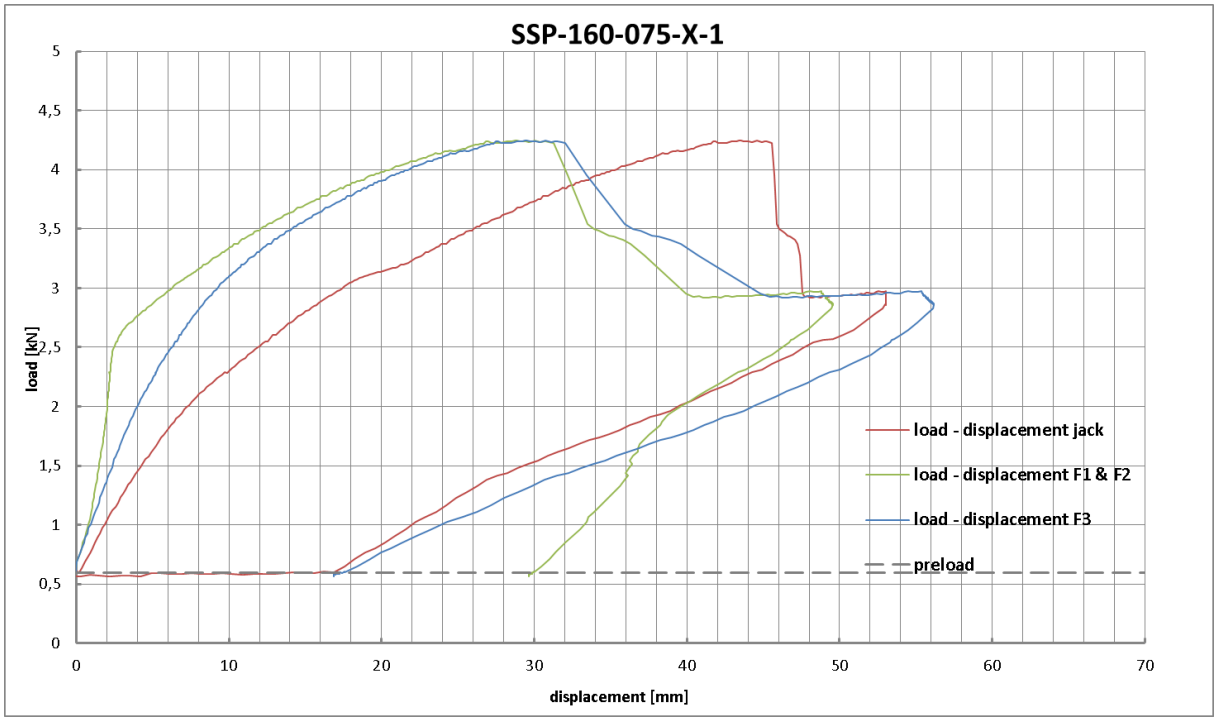
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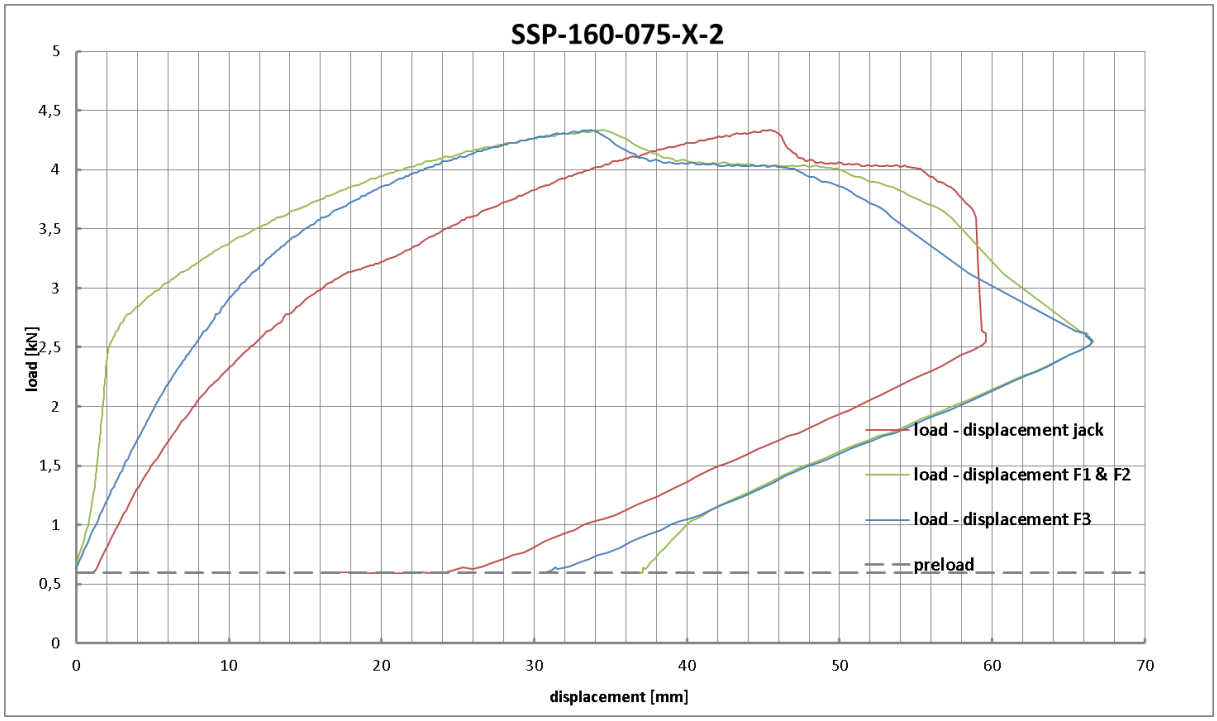
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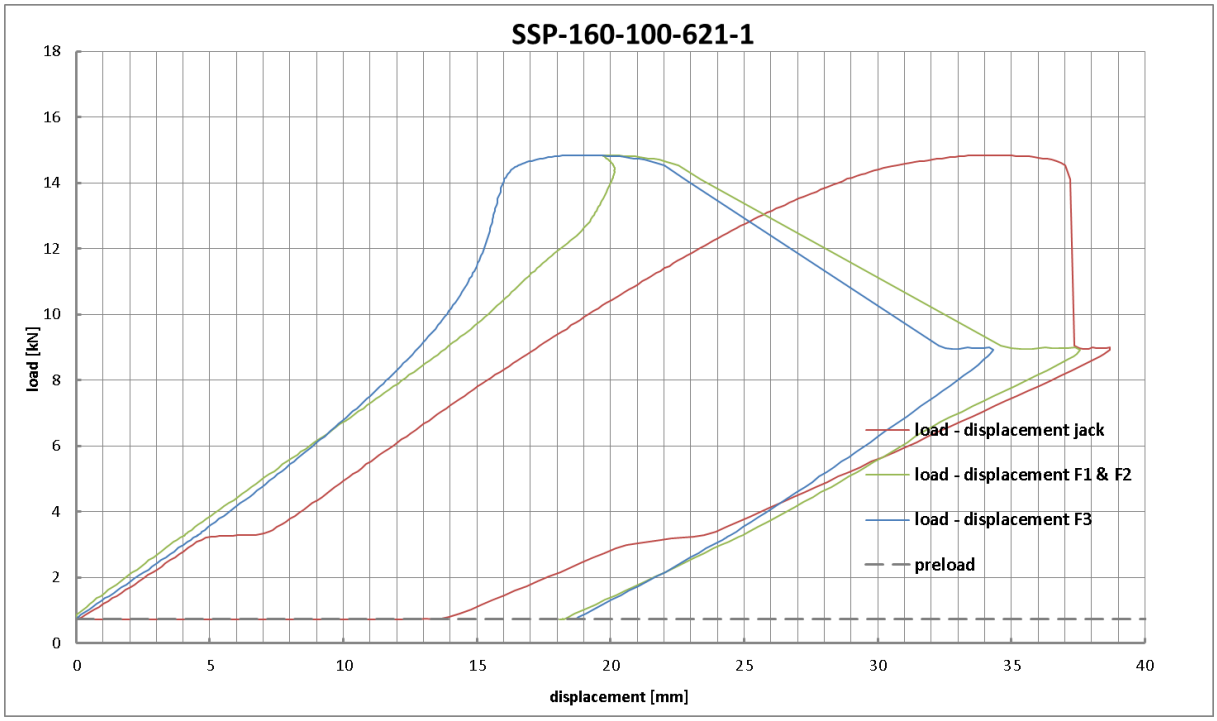
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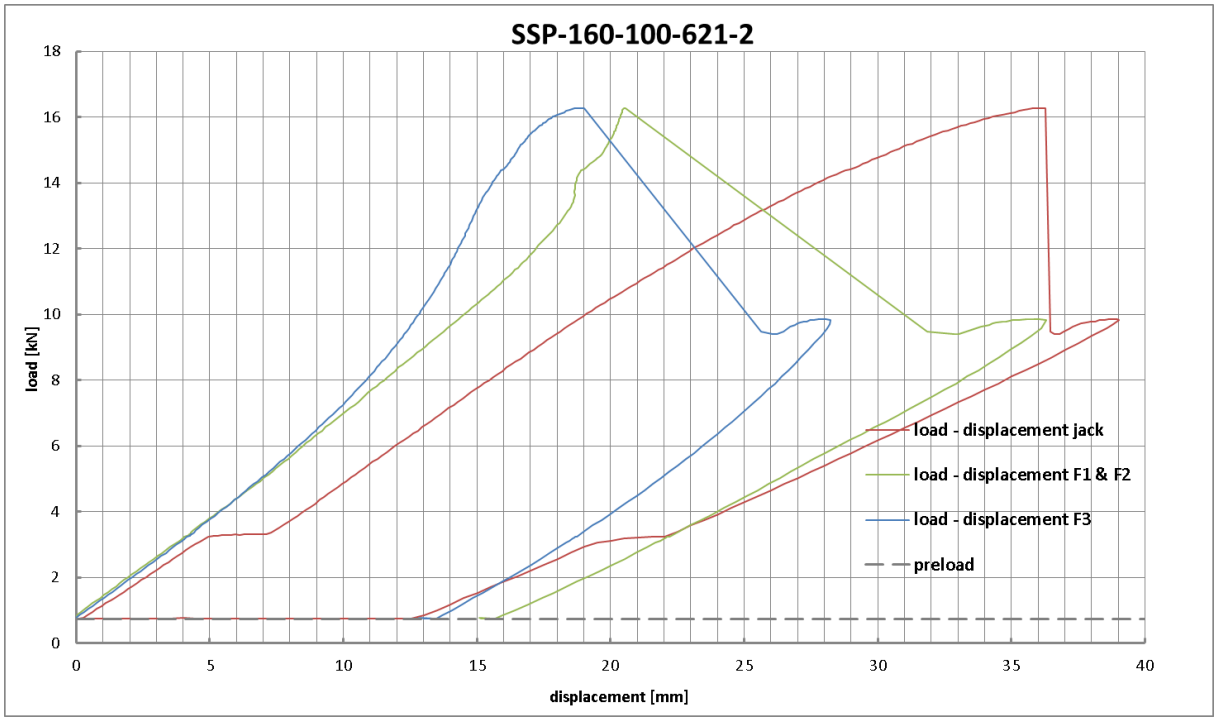
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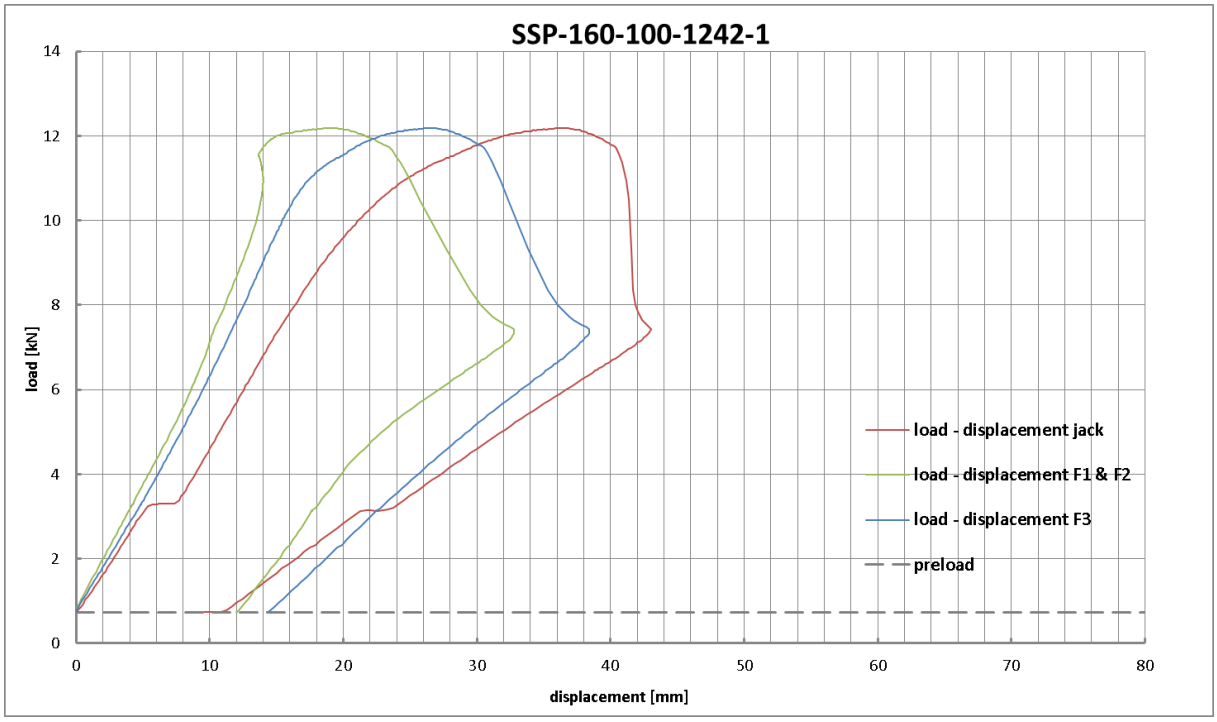
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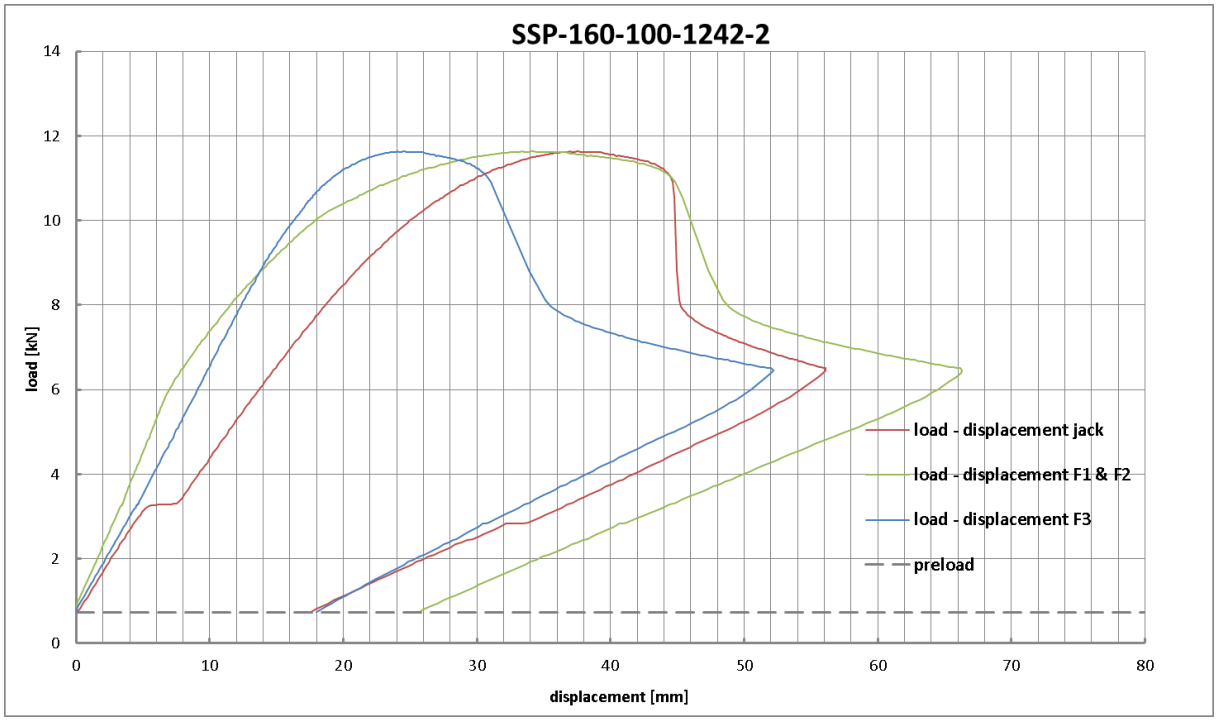
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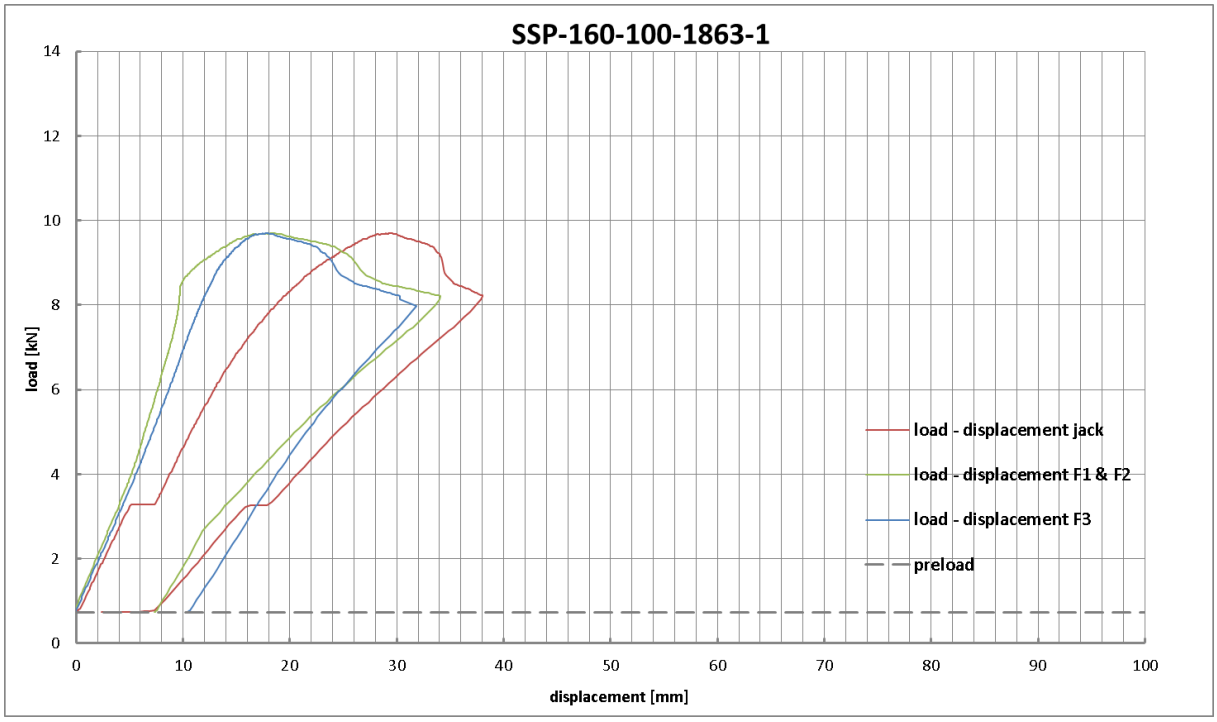
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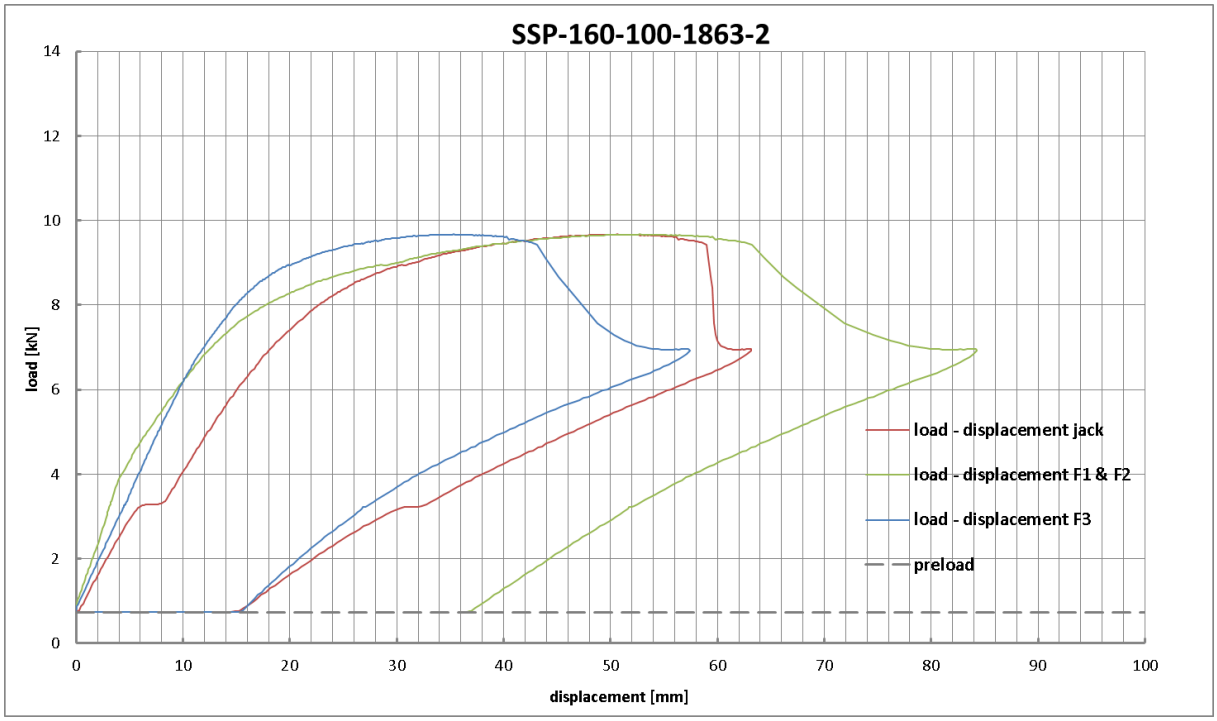
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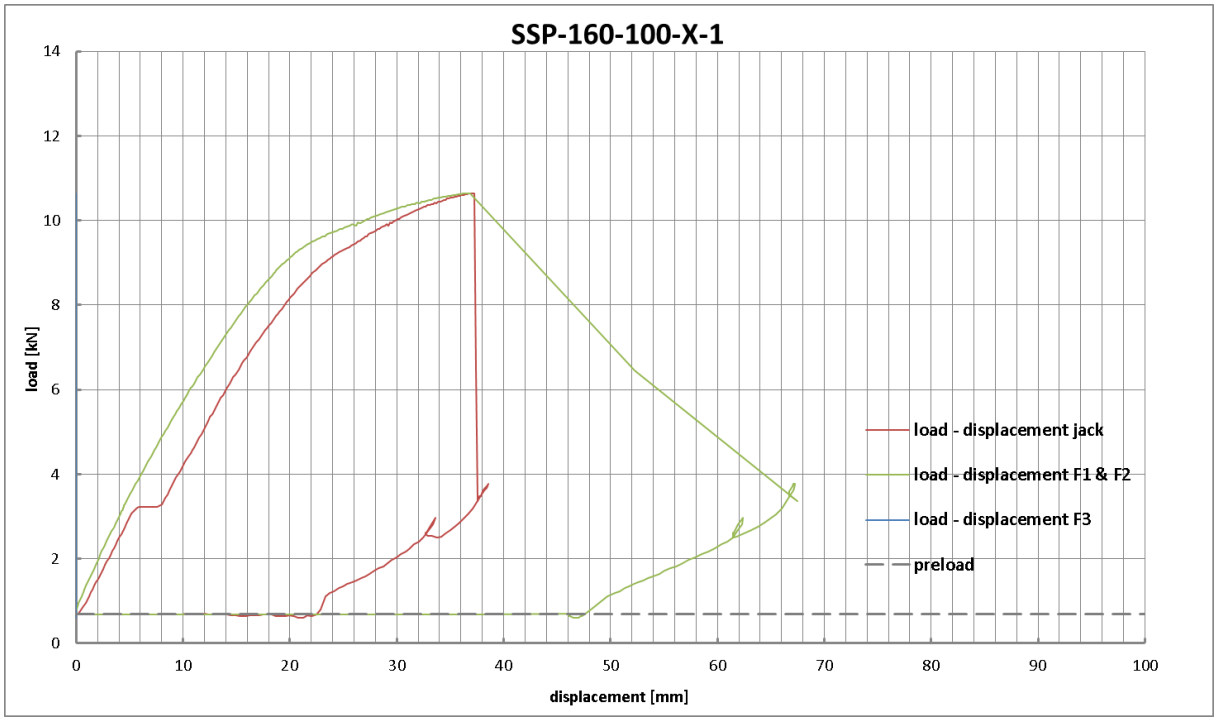
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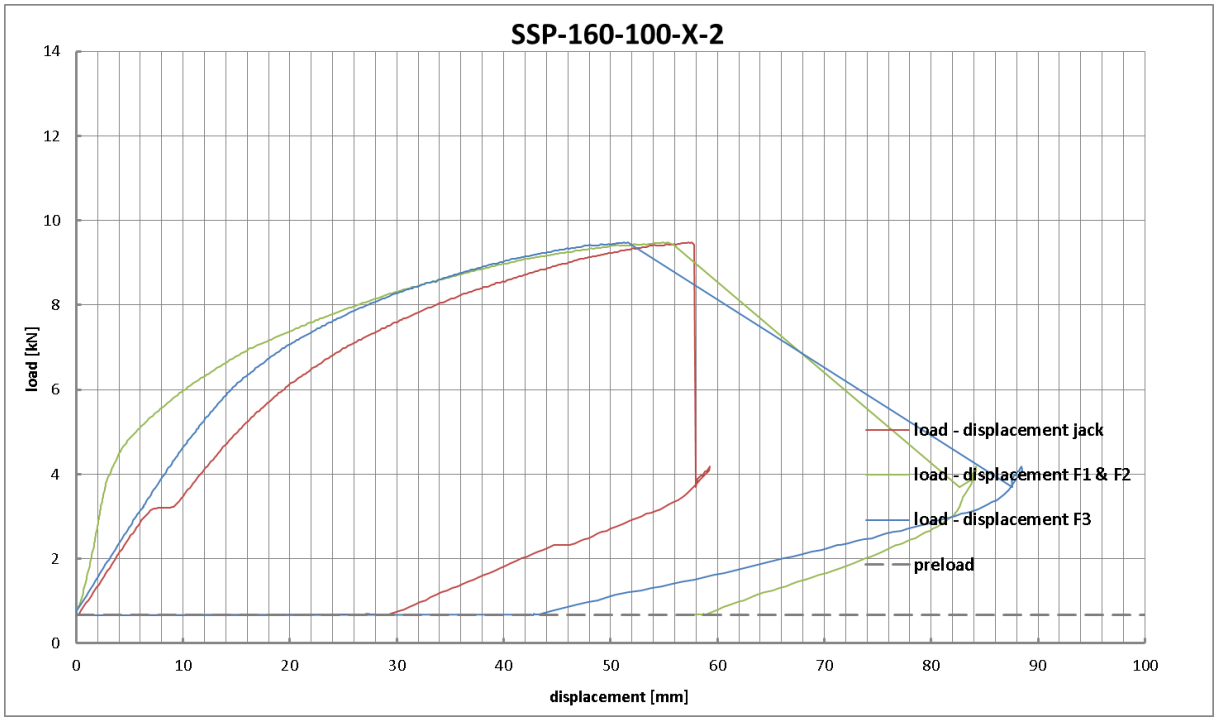
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load - displacement F3
preload

3 Annex C: Internal support test for load case “uplift loading”

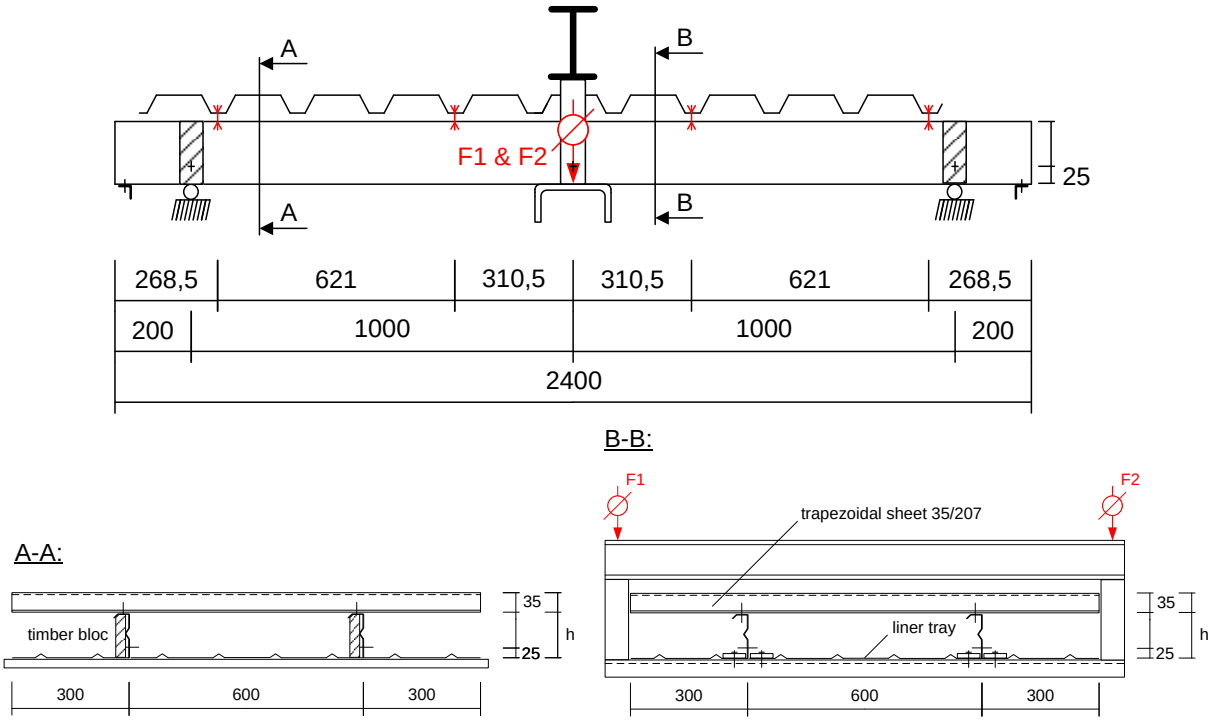


Figure C.1: Schematic test setup (s_1 = 621 mm)

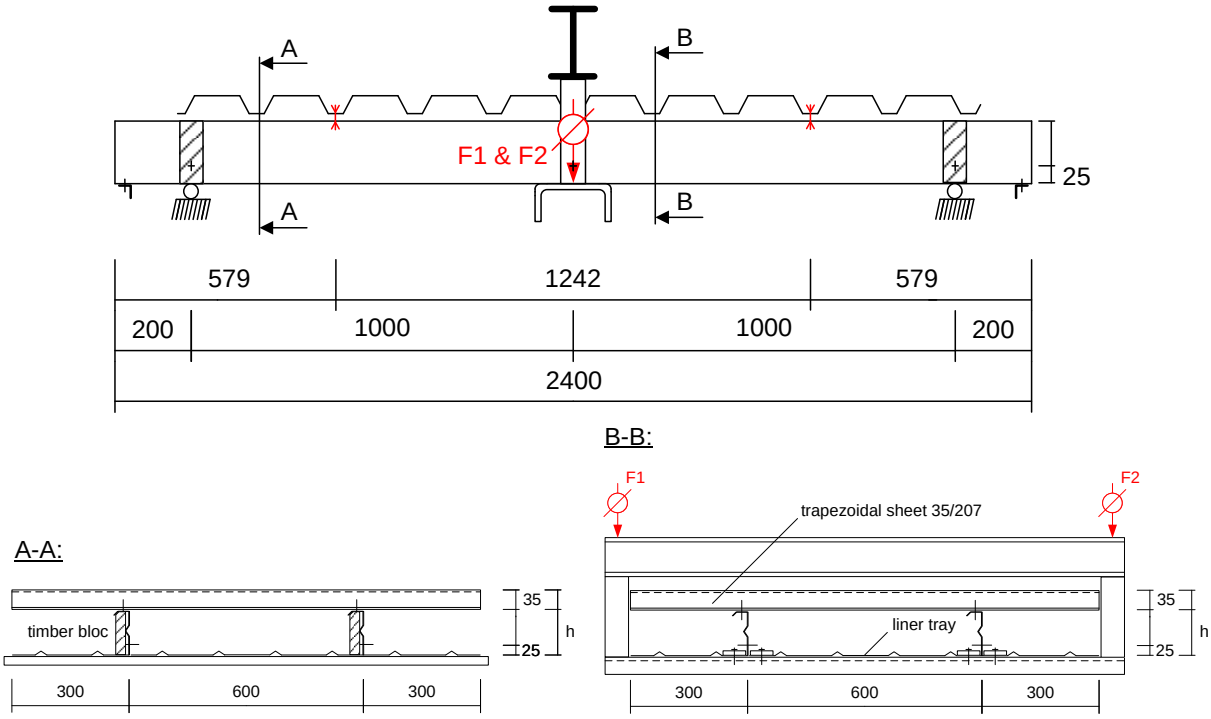


Figure C.2: Schematic test setup (s_1 = 1242 mm)

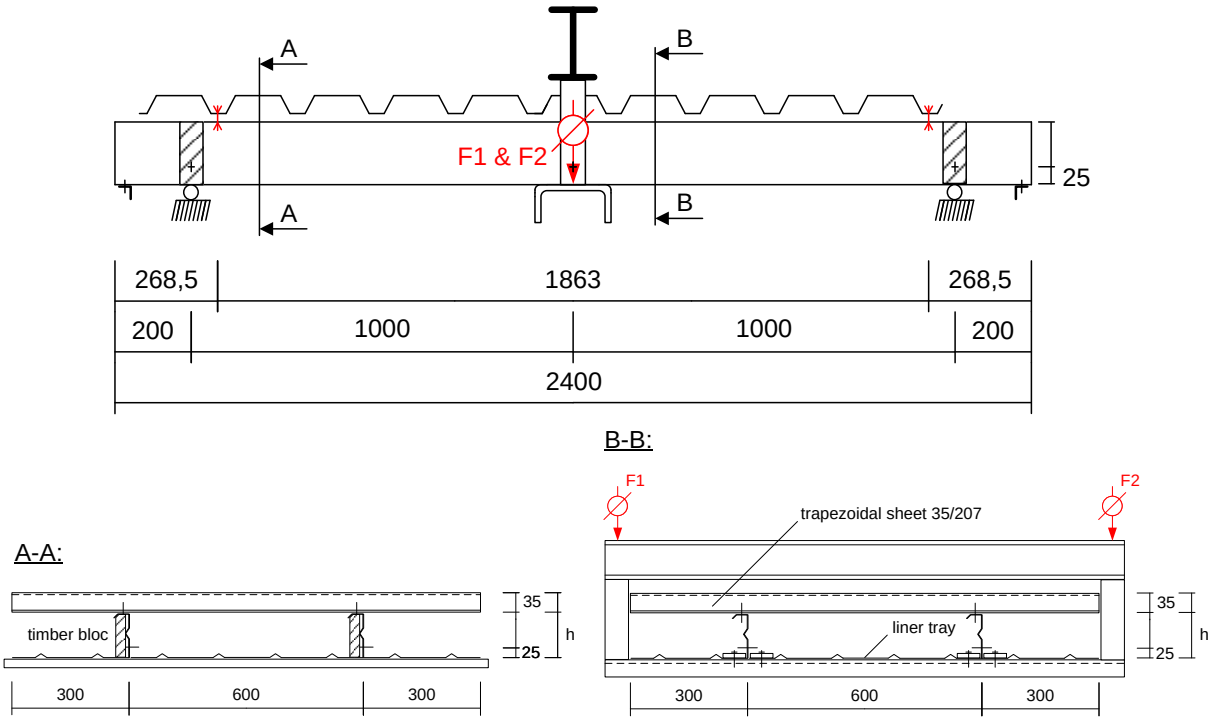


Figure C.3: Schematic test setup (s_1 = 1863 mm)

Figure C.4: Test setup, side view

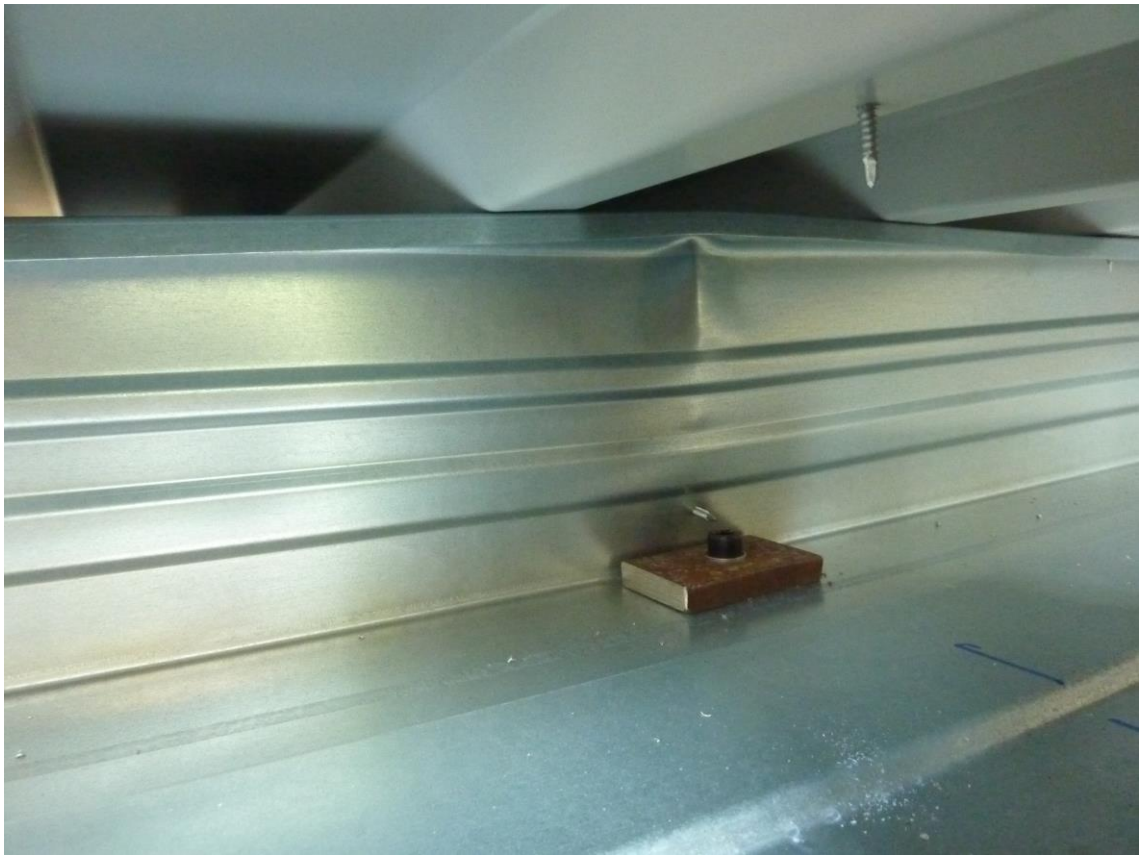


Figure C.5: Failure mode (buckling of the upper flange)

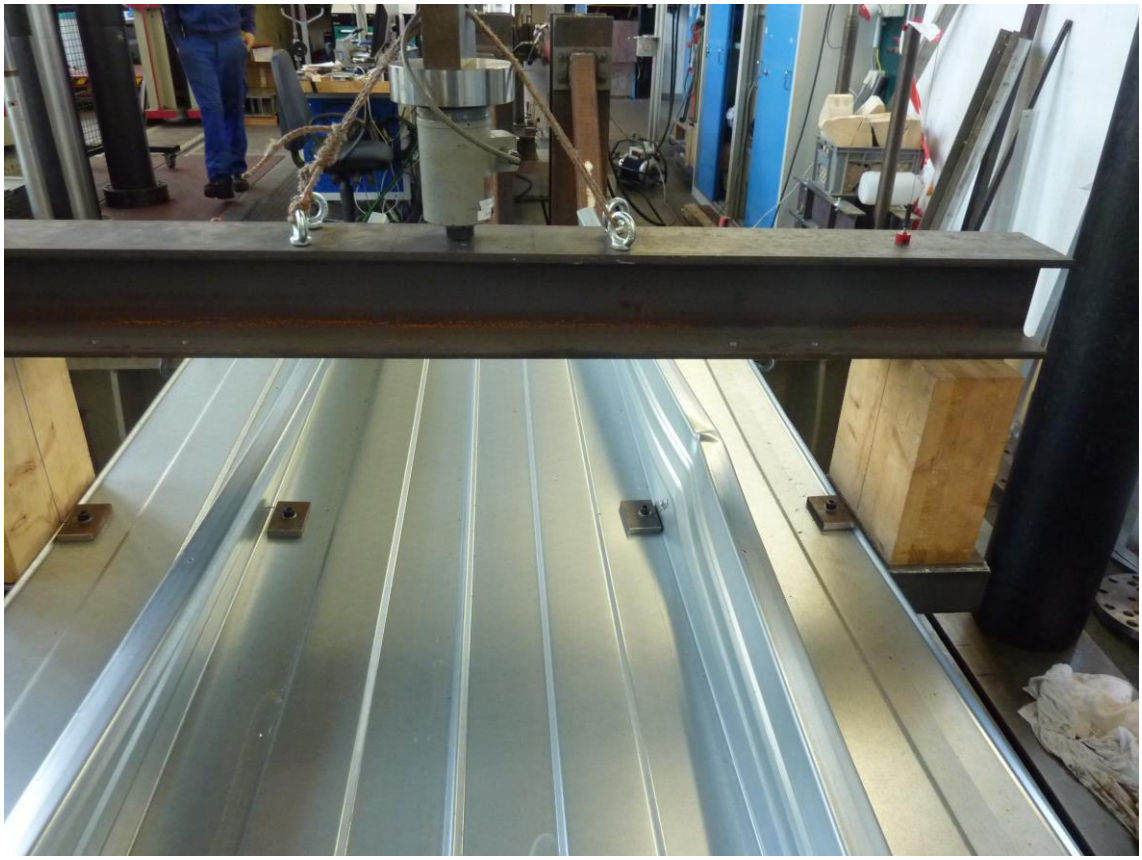
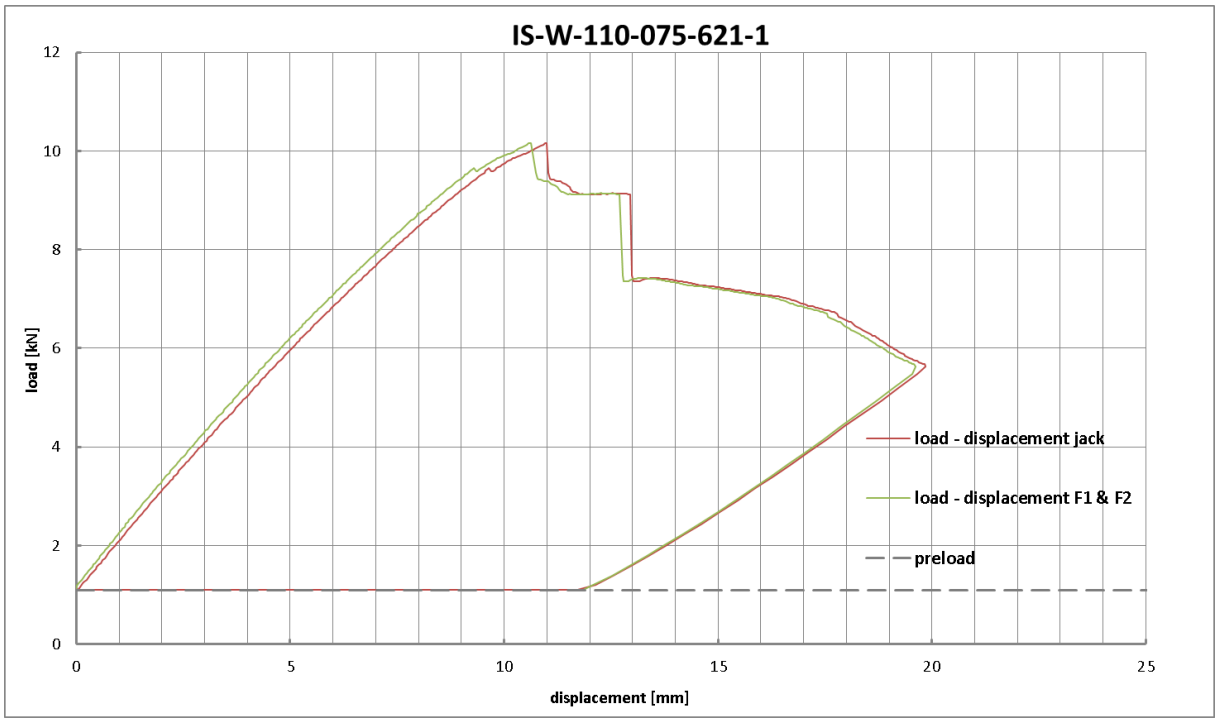
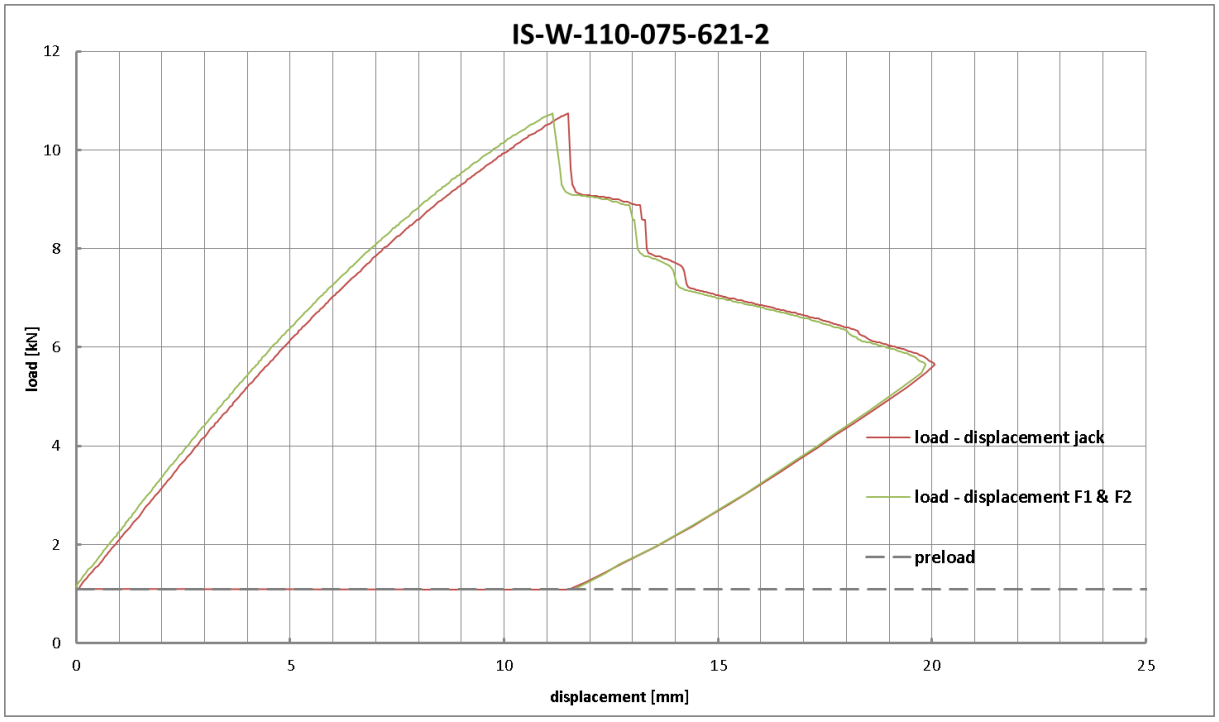


Figure C.6: Failure mode (liner tray without trapezoidal sheet)

Figure C.7: Screw hole in the middle of the span (IS W-110-075-1242-2 and IS-W-110-100-1242-2)

Load-deflection curves:

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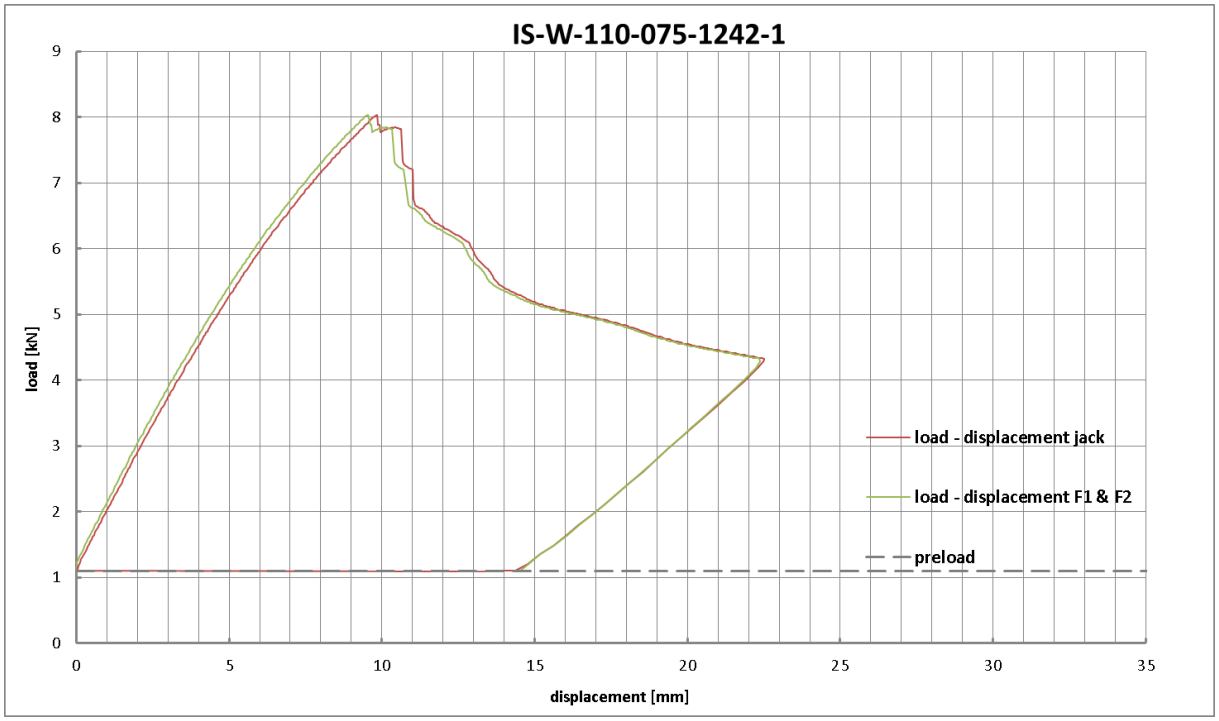
displacement [mm]
load - displacement jack
load - displacement F1 & F2
preload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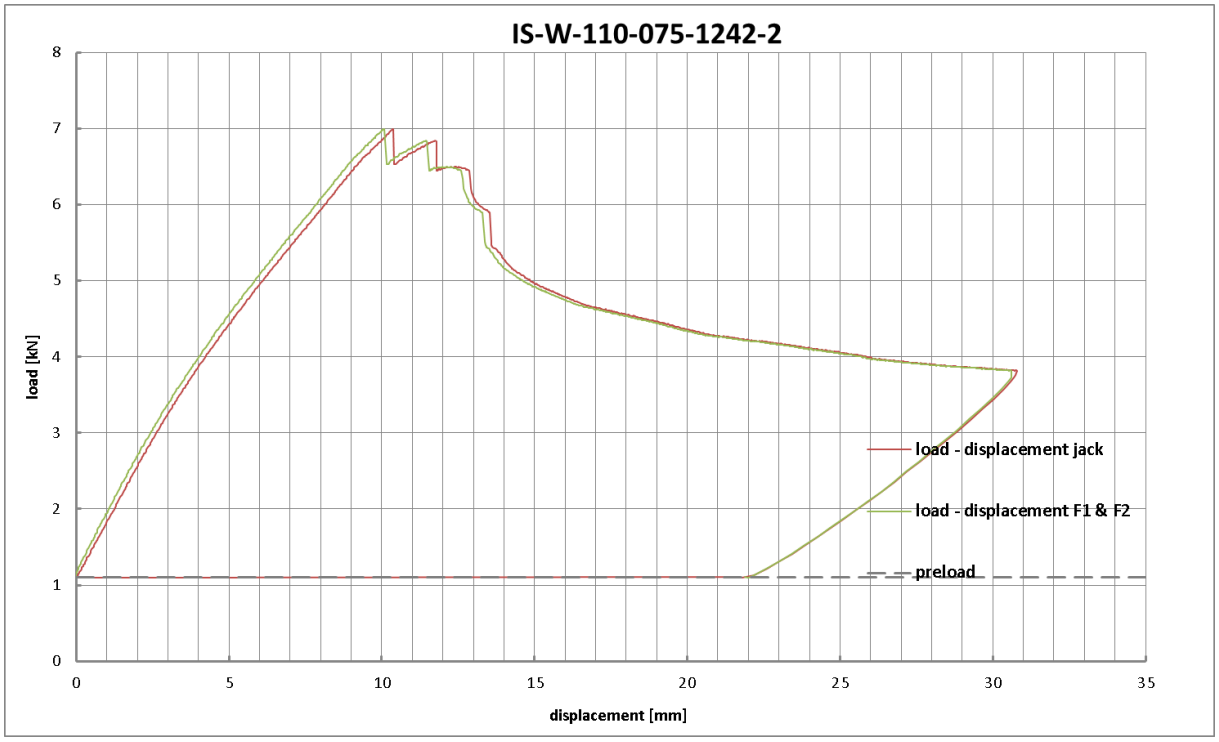
displacement [mm]
load - displacement jack
load - displacement F1 & F2
preload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displacement [mm]
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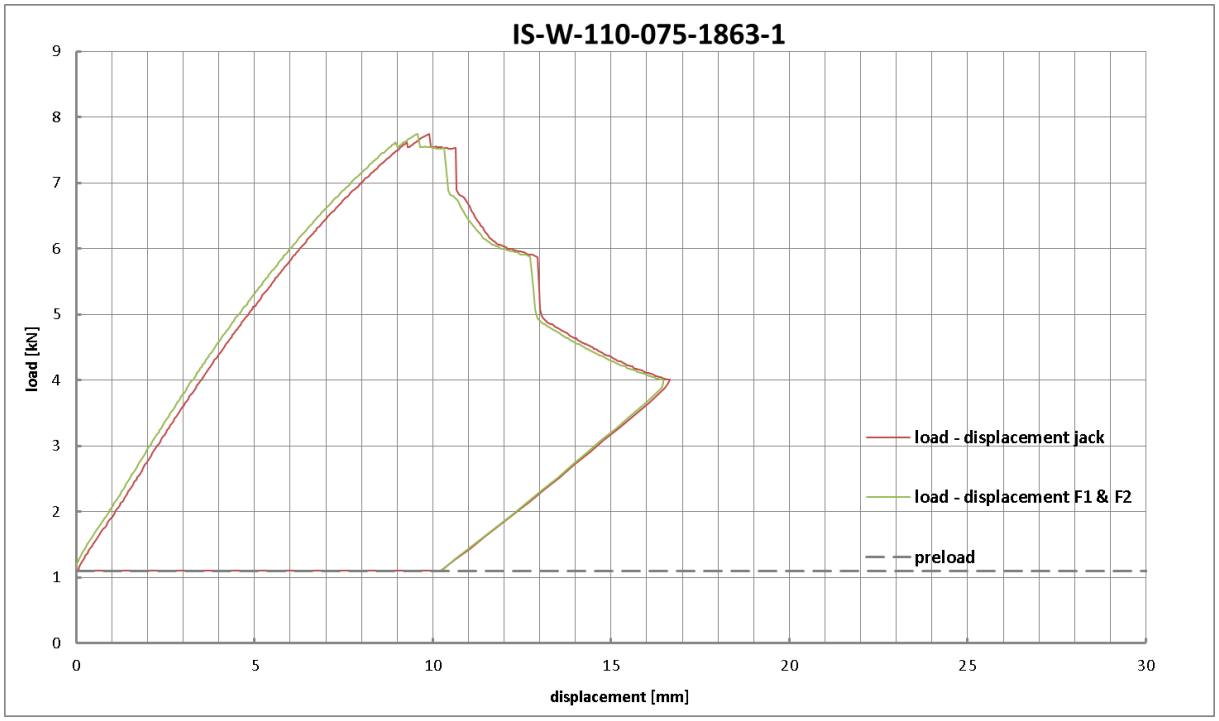
load - displacement F1 & F2
preload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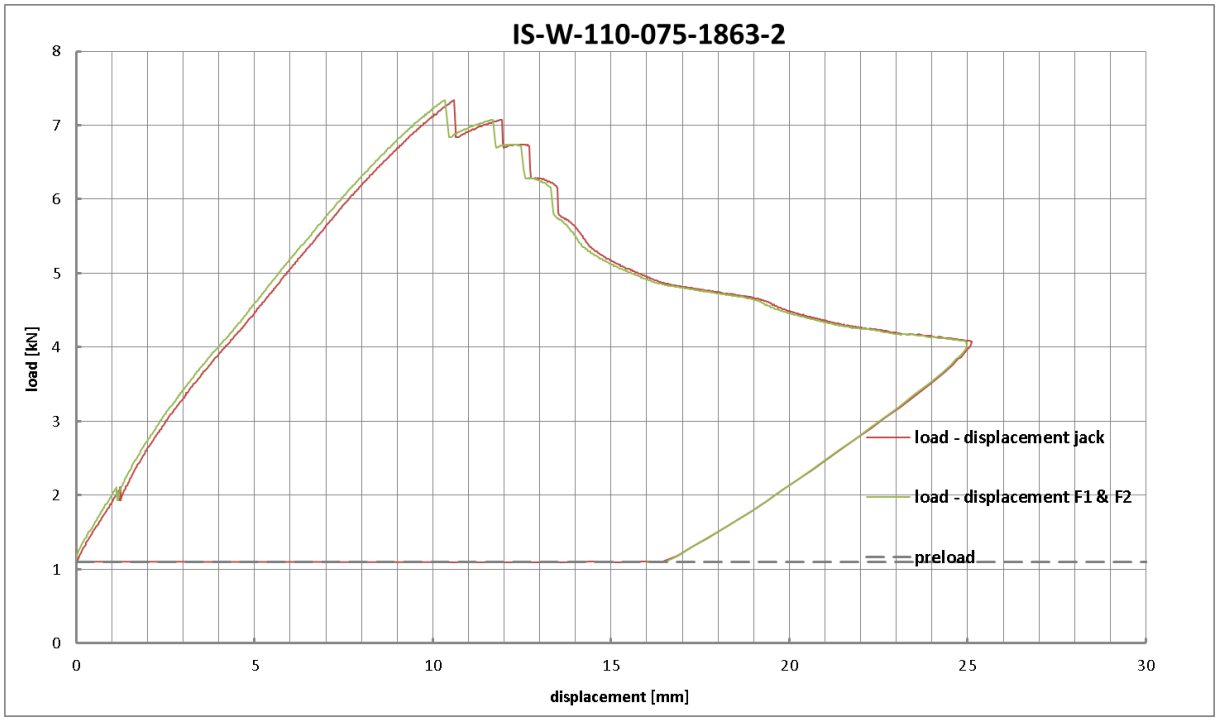
displacement [mm]
load - displacement jack
load - displacement F1 & F2
preload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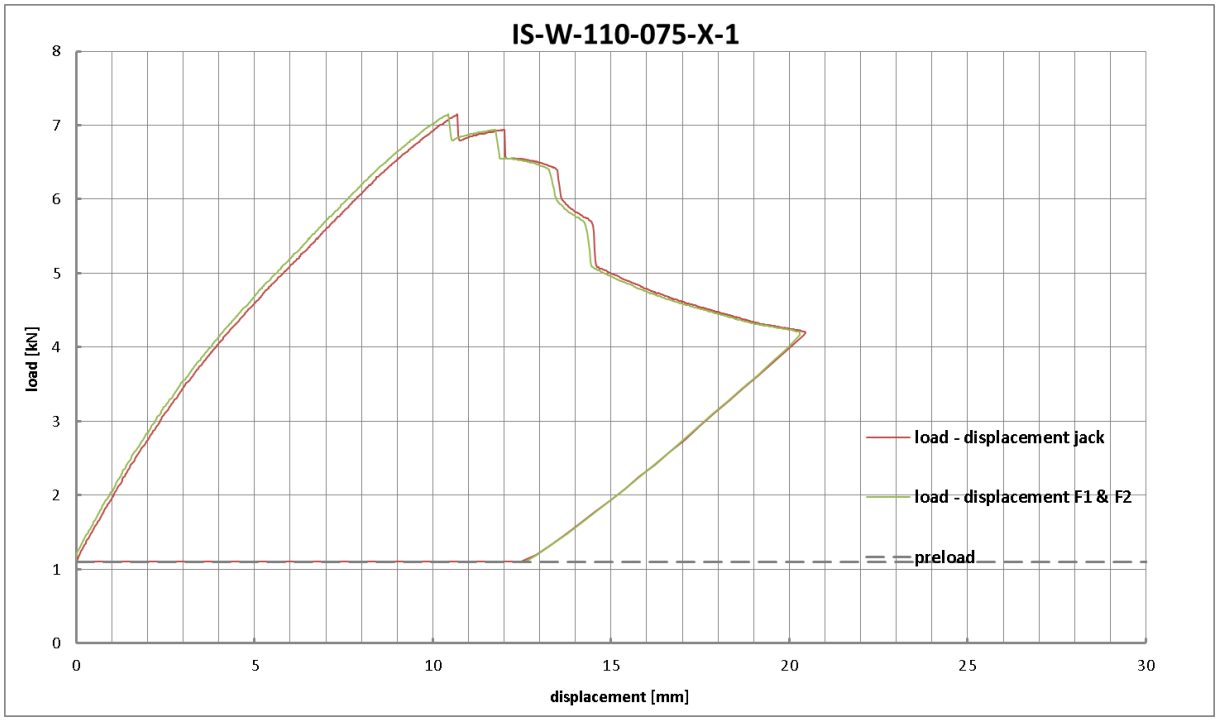
displacement [mm]
load - displacement jack
load - displacement F1 & F2
preload


IS-W-110-075-X-1
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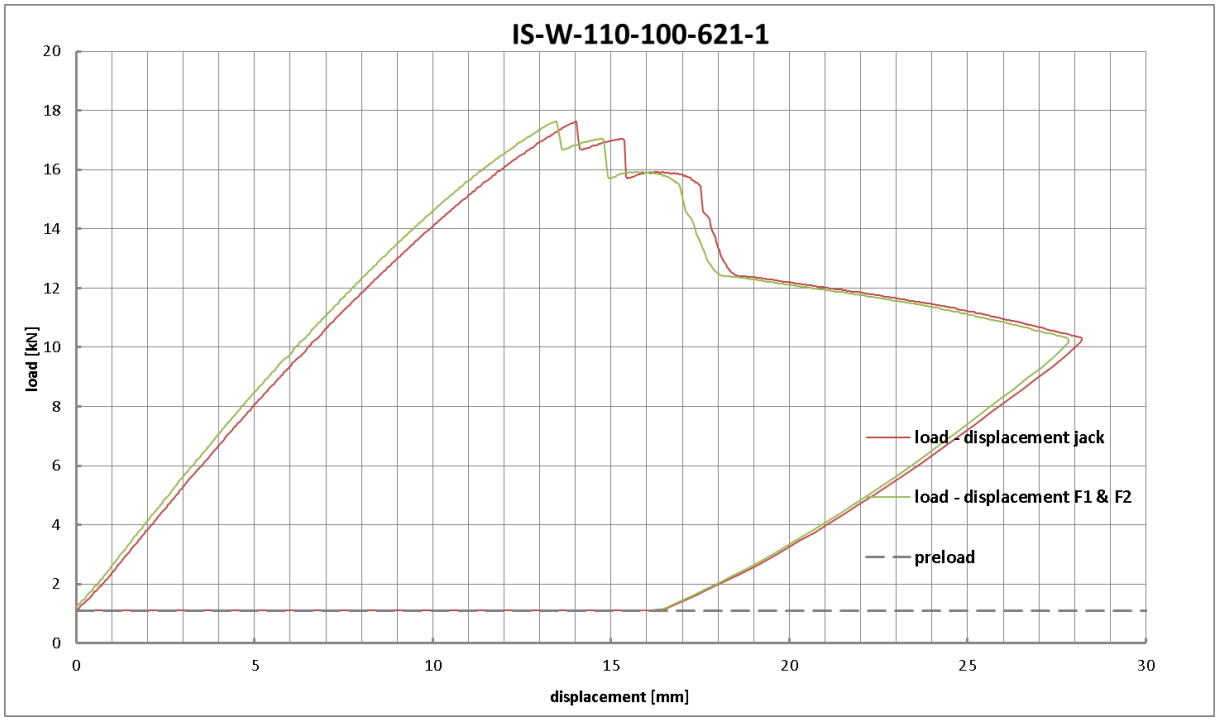
displacement [mm]
load - displacement jack
load - displacement F1 & F2
preload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displacement [mm]
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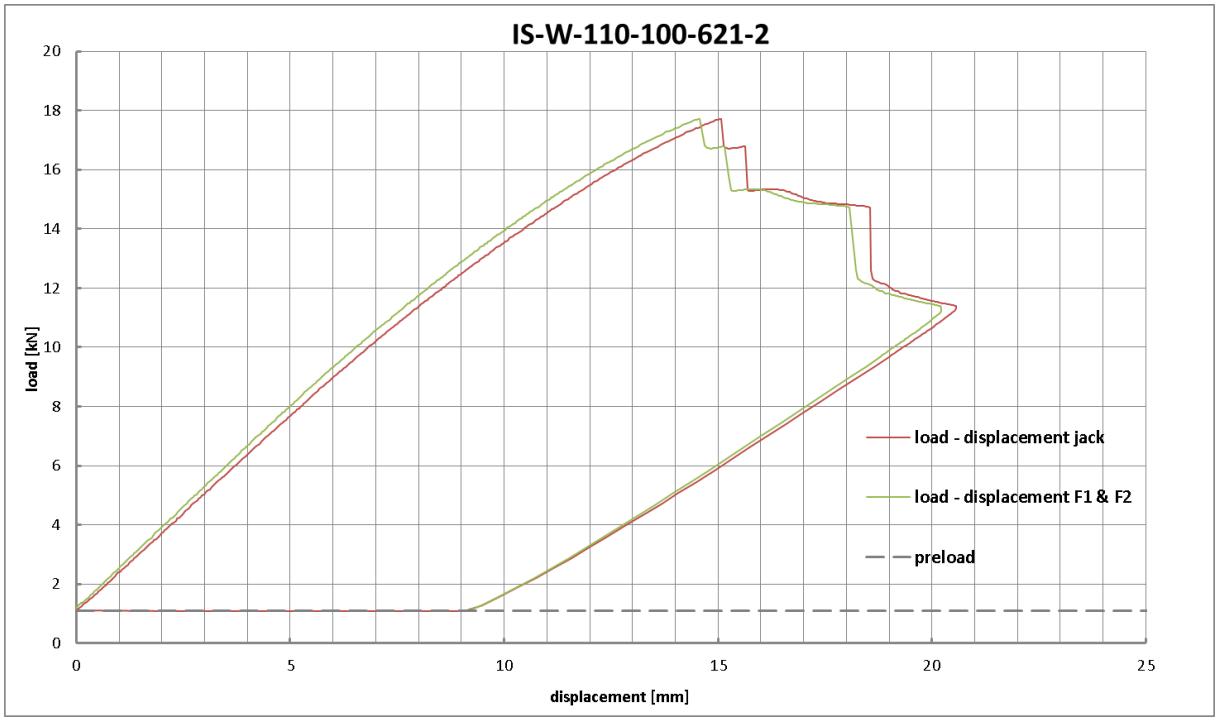
load - displacement F1 & F2
preload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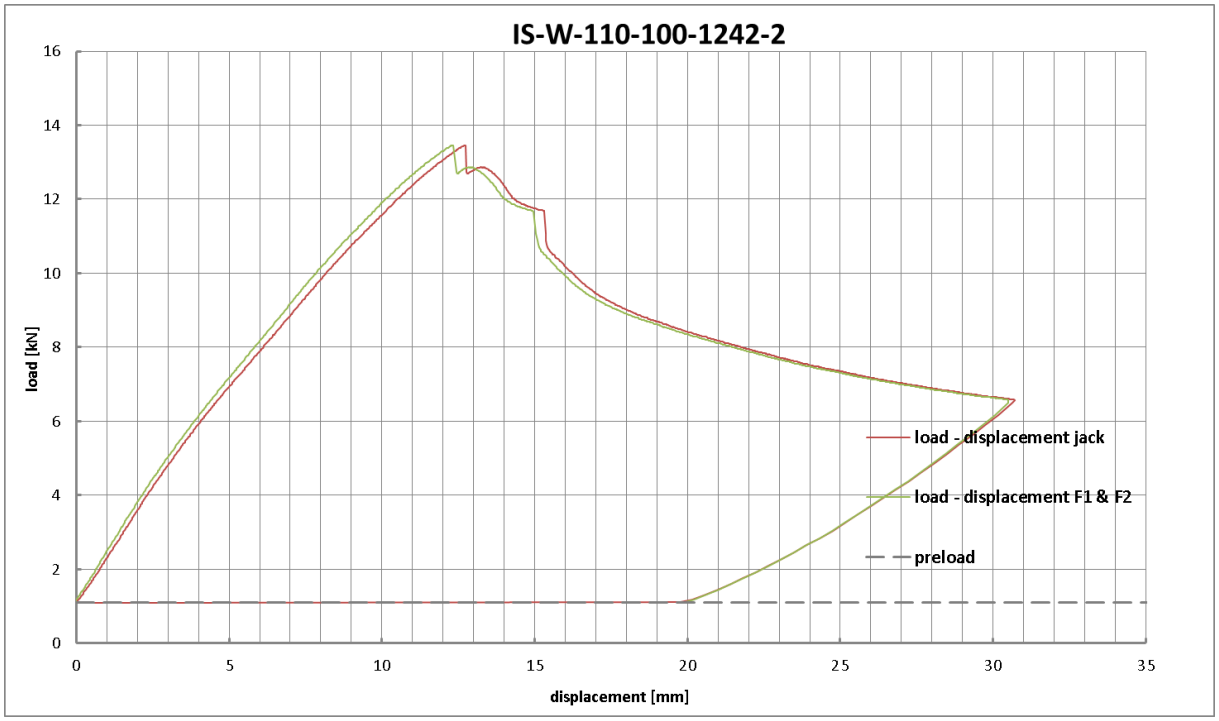
displacement [mm]
load - displacement jack
load - displacement F1 & F2
preload


IS-W-110-100-1242-1
load [kN]
displacement [mm]
load - displacement jack
load - displacement F1 & F2
preload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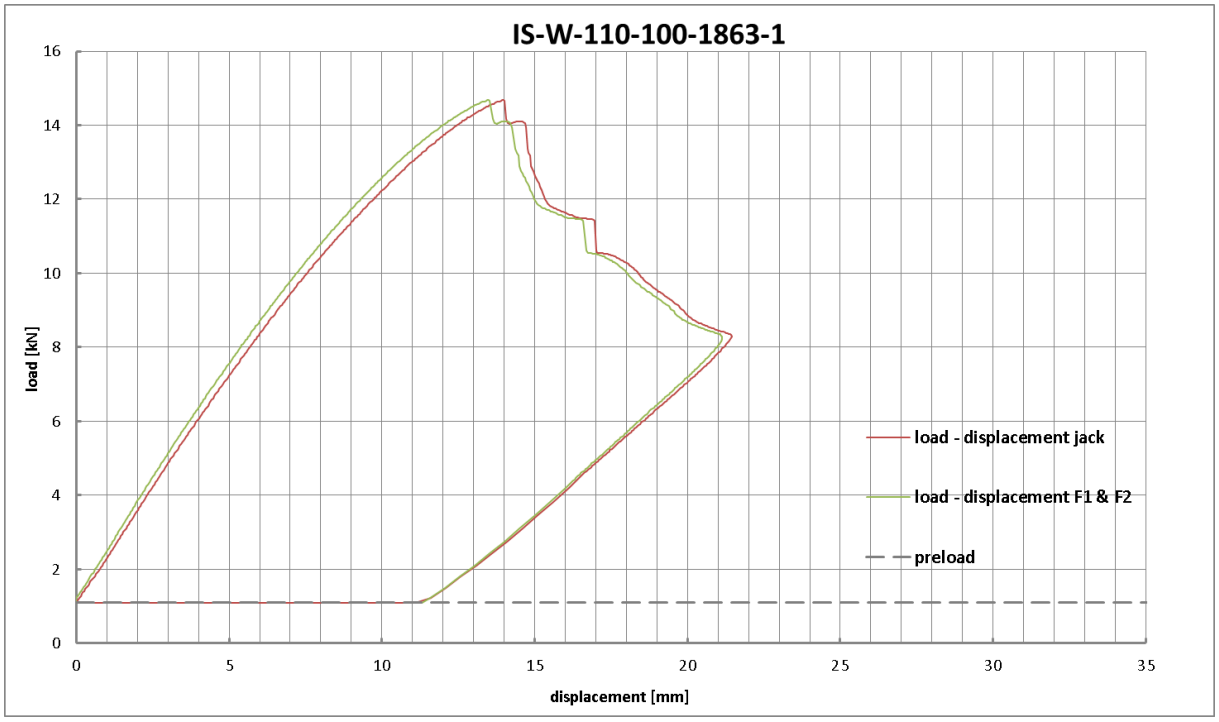
load - displacement F1 & F2
preload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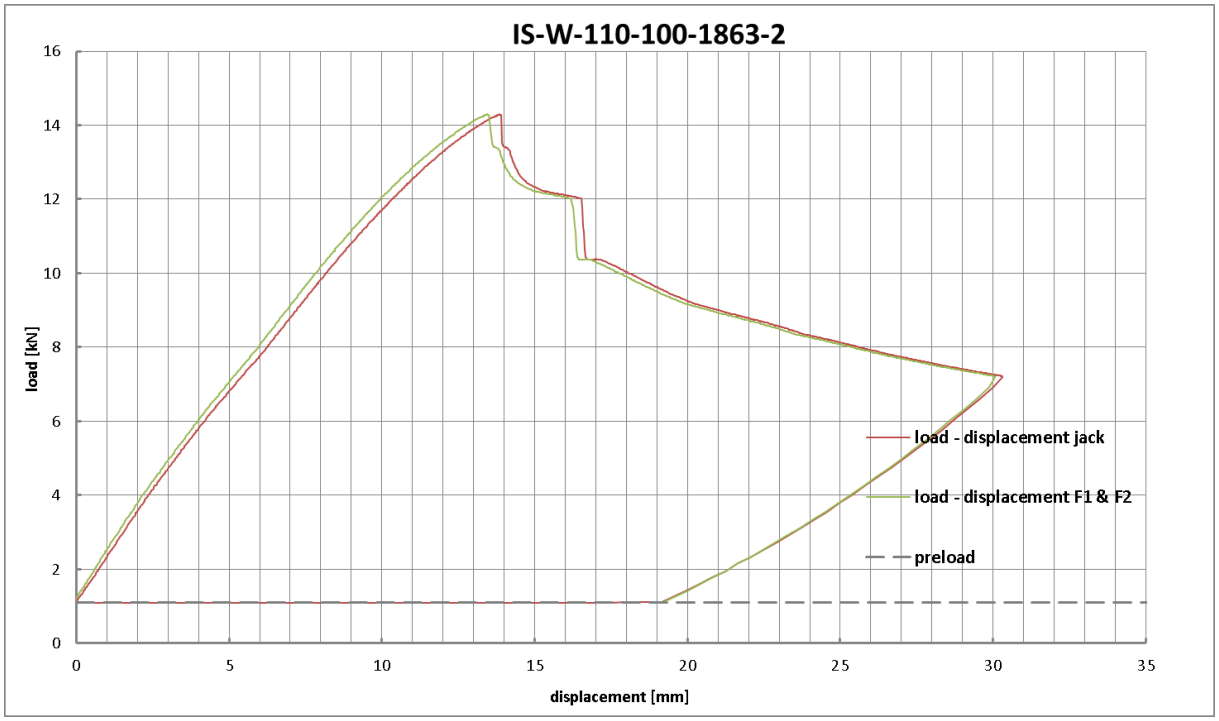
load - displacement F1 & F2
preload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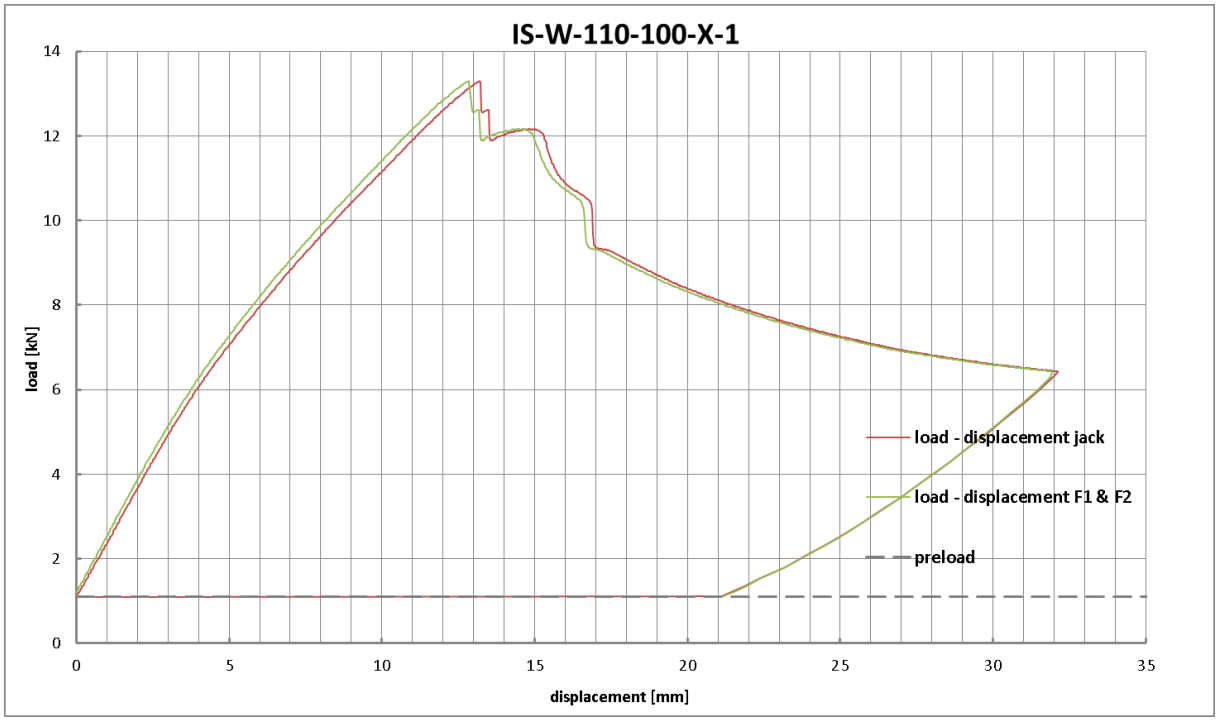
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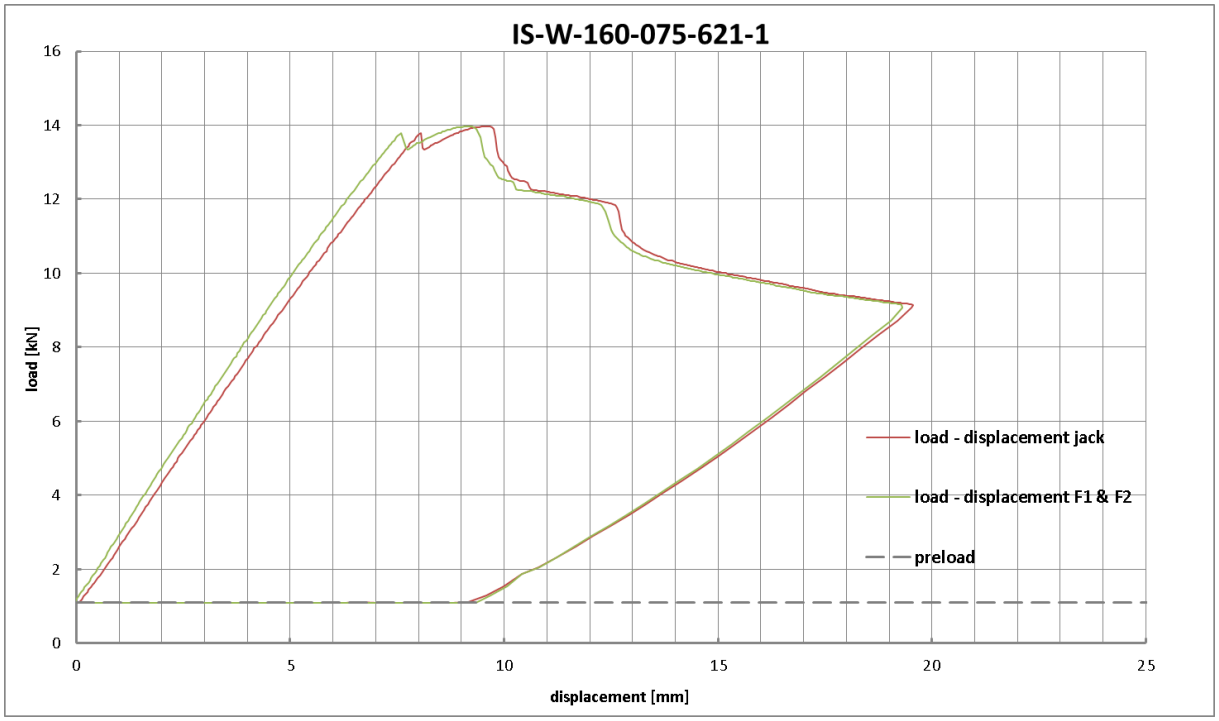
preload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displacement [mm]
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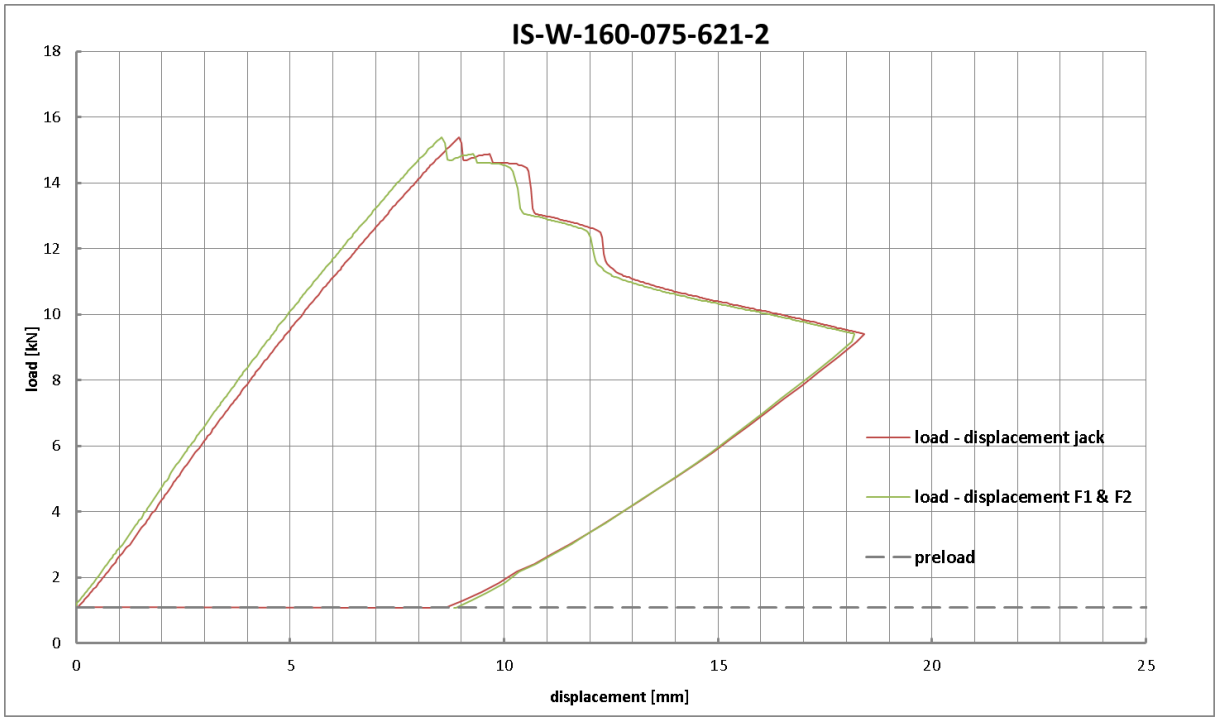
load - displacement F1 & F2
preload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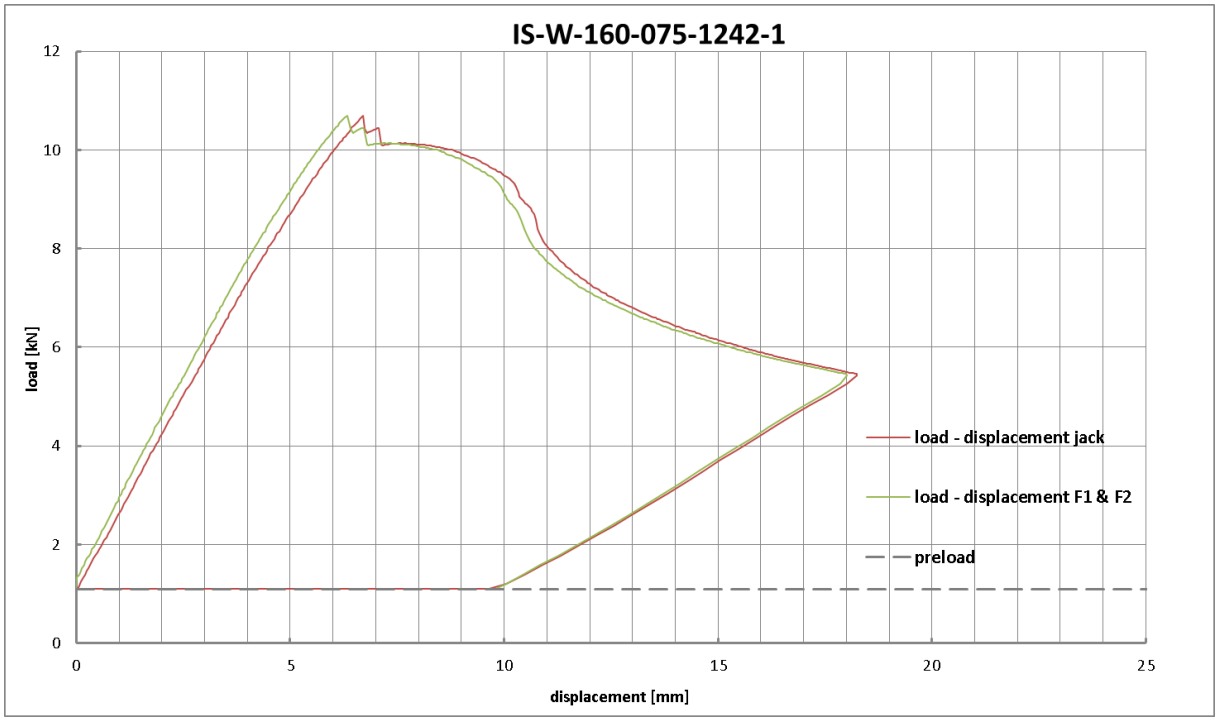
preload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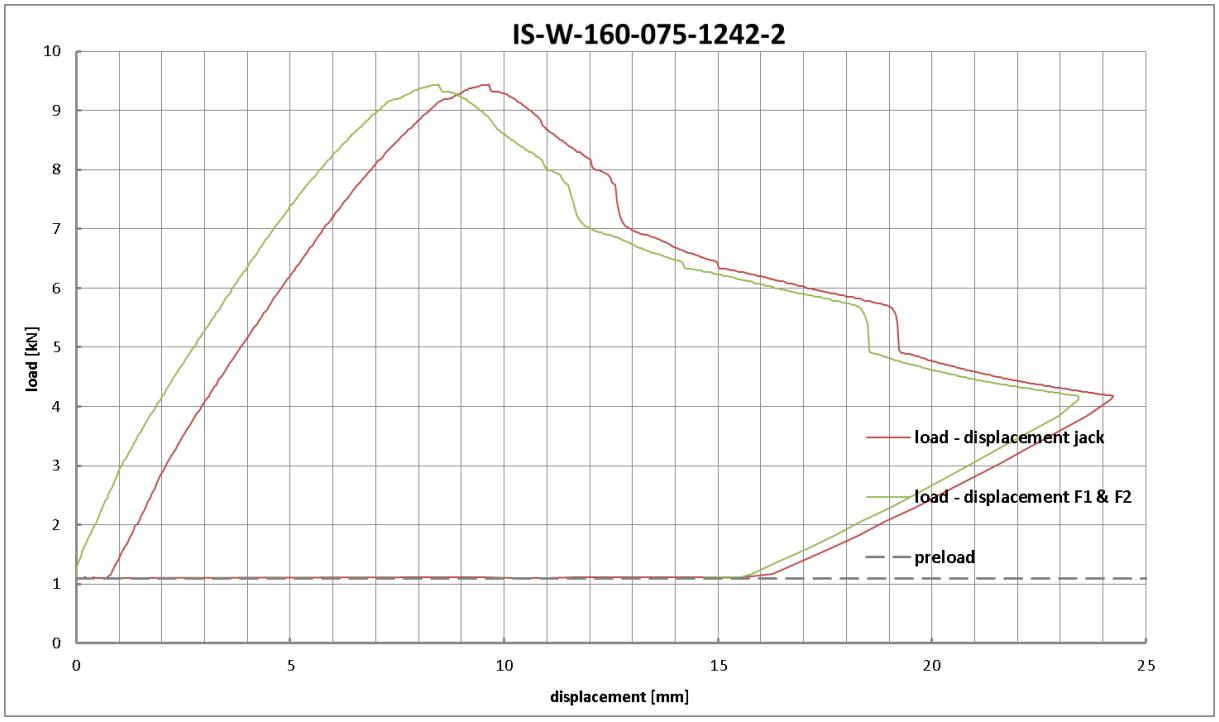
load - displacement F1 & F2
preload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load - displacement F1 & F2
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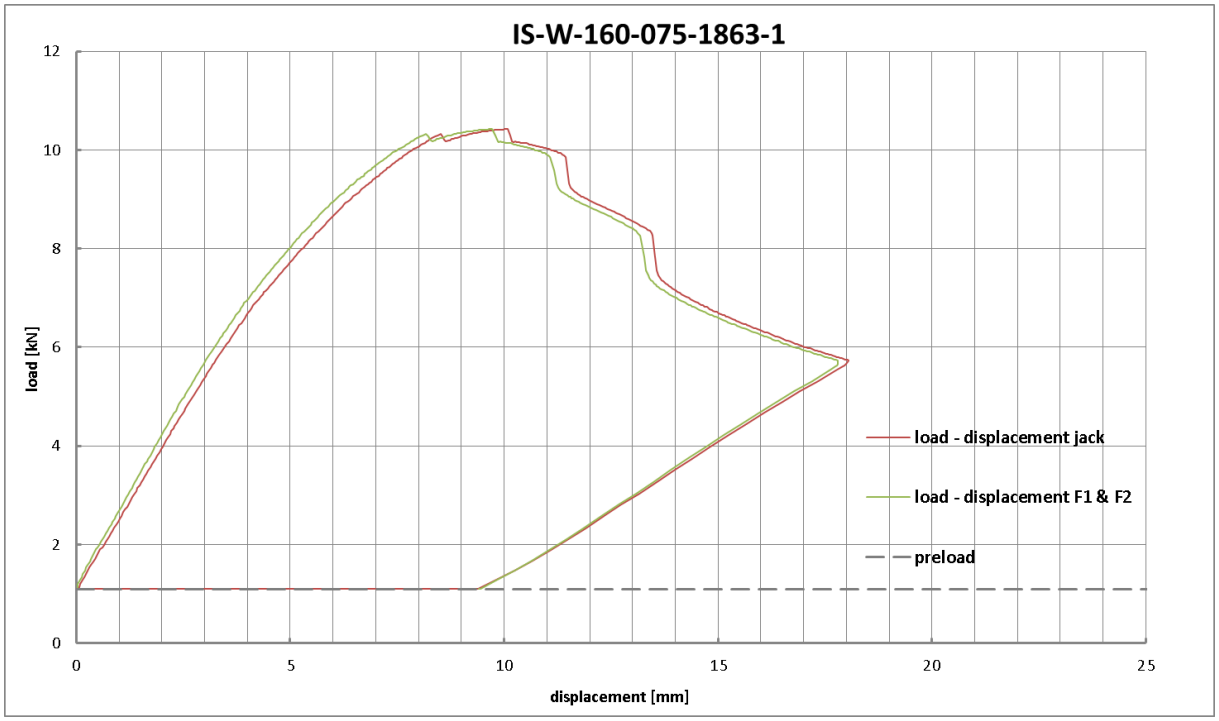
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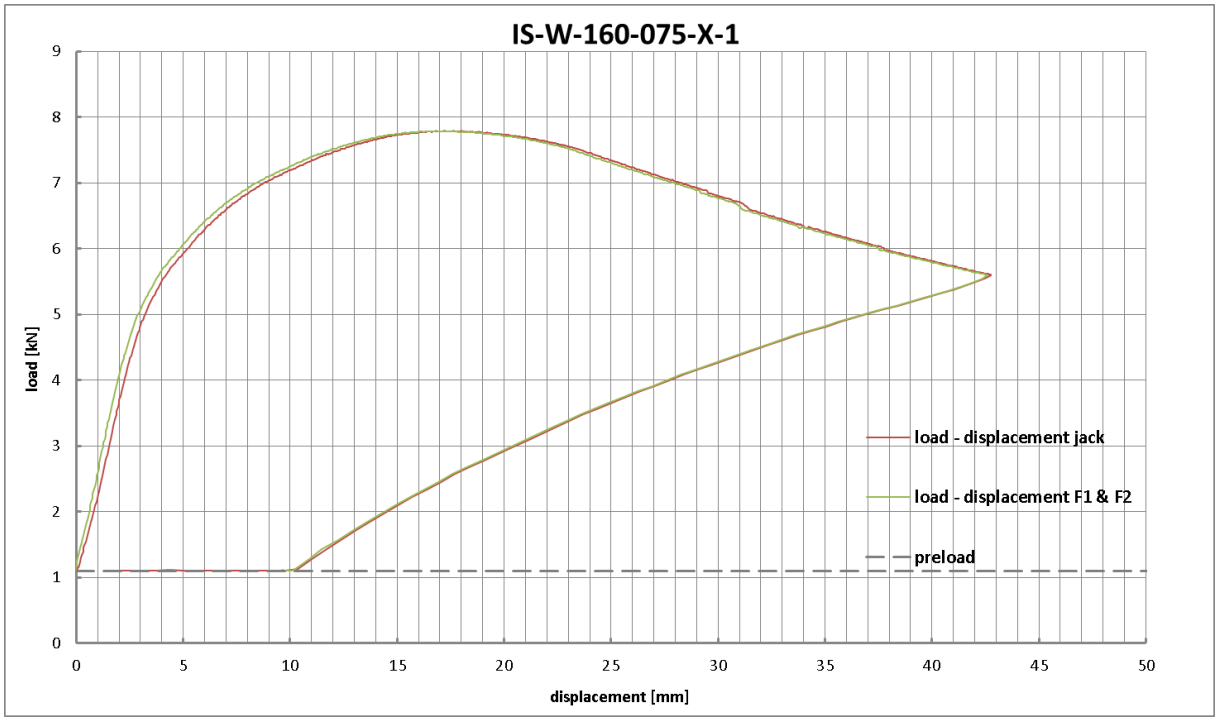
displacement [mm]
load - displacement jack
load - displacement F1 & F2
preload


IS-W-160-075-1863-2
load [kN]
displacement [mm]
load - displacement jack
load - displacement F1 & F2
preload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displacement [mm]
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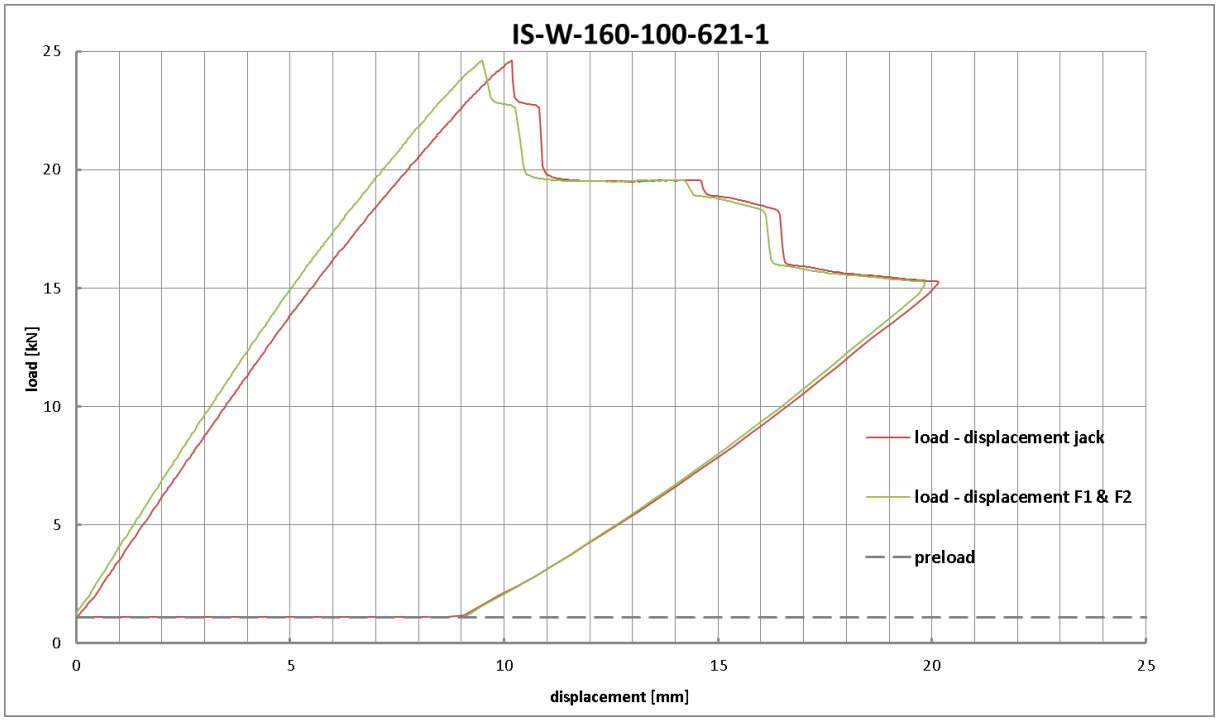
load - displacement F1 & F2
preload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displacement [mm]
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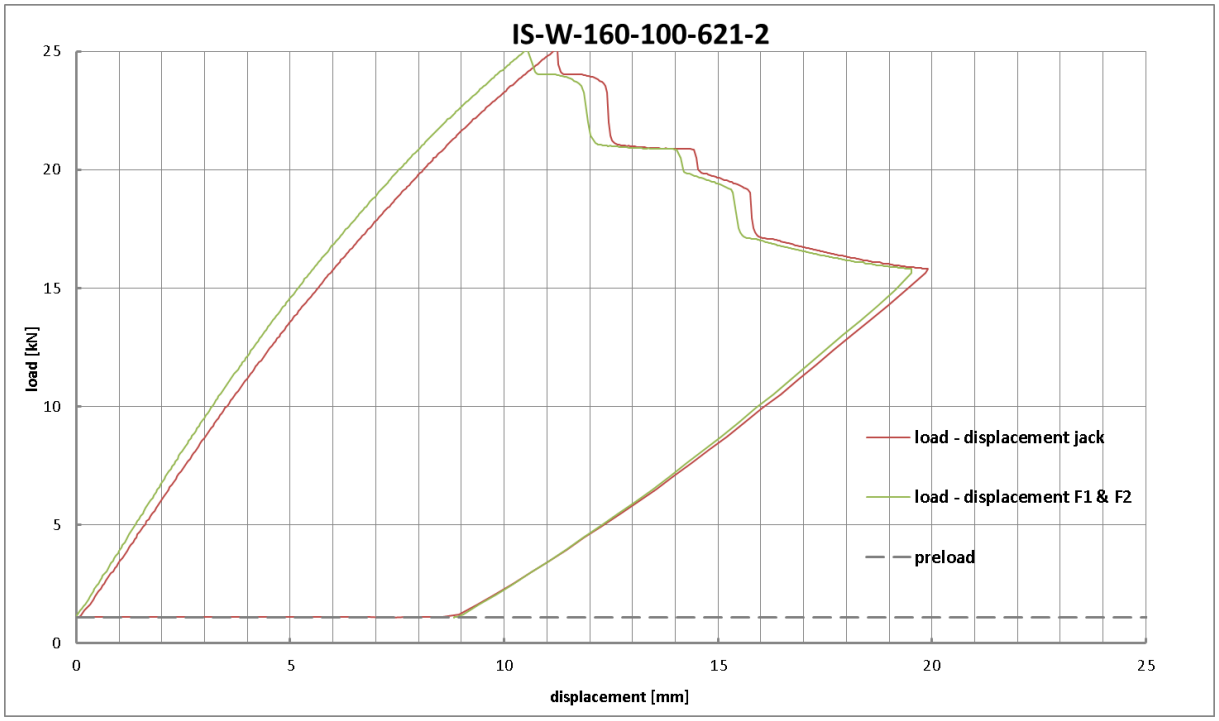
preload


IS-W-160-100-621-2
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displacement [mm]
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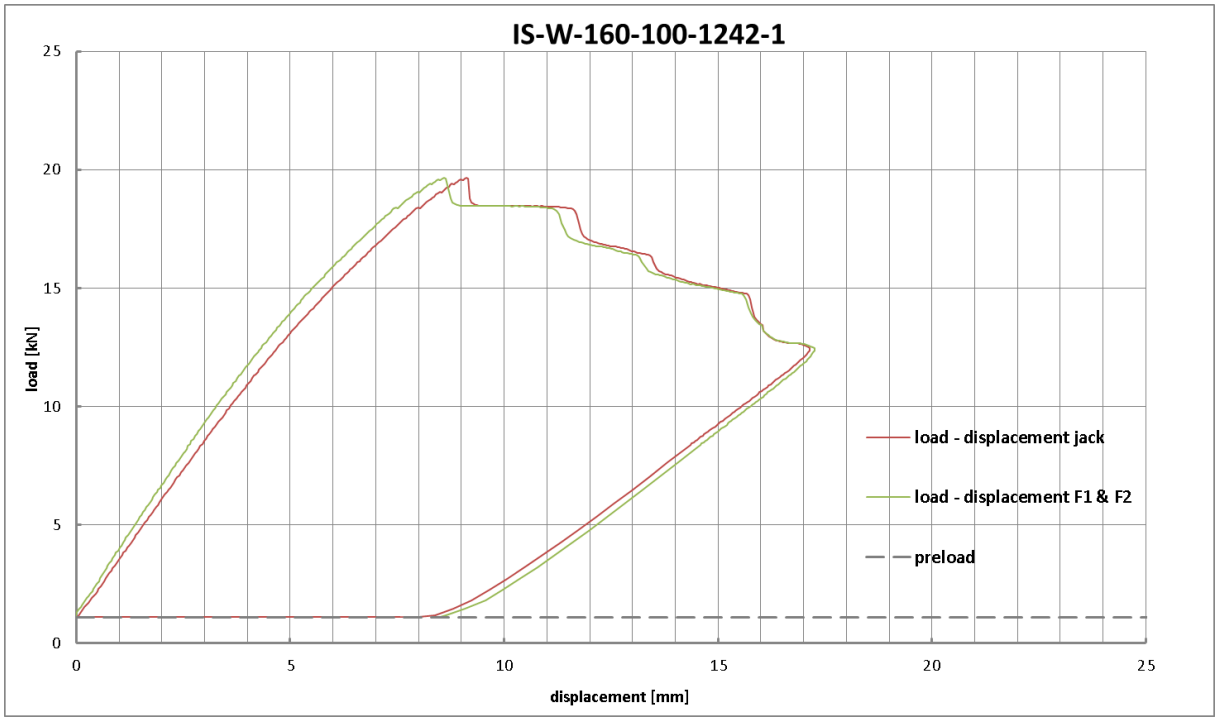
preload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displacement [mm]
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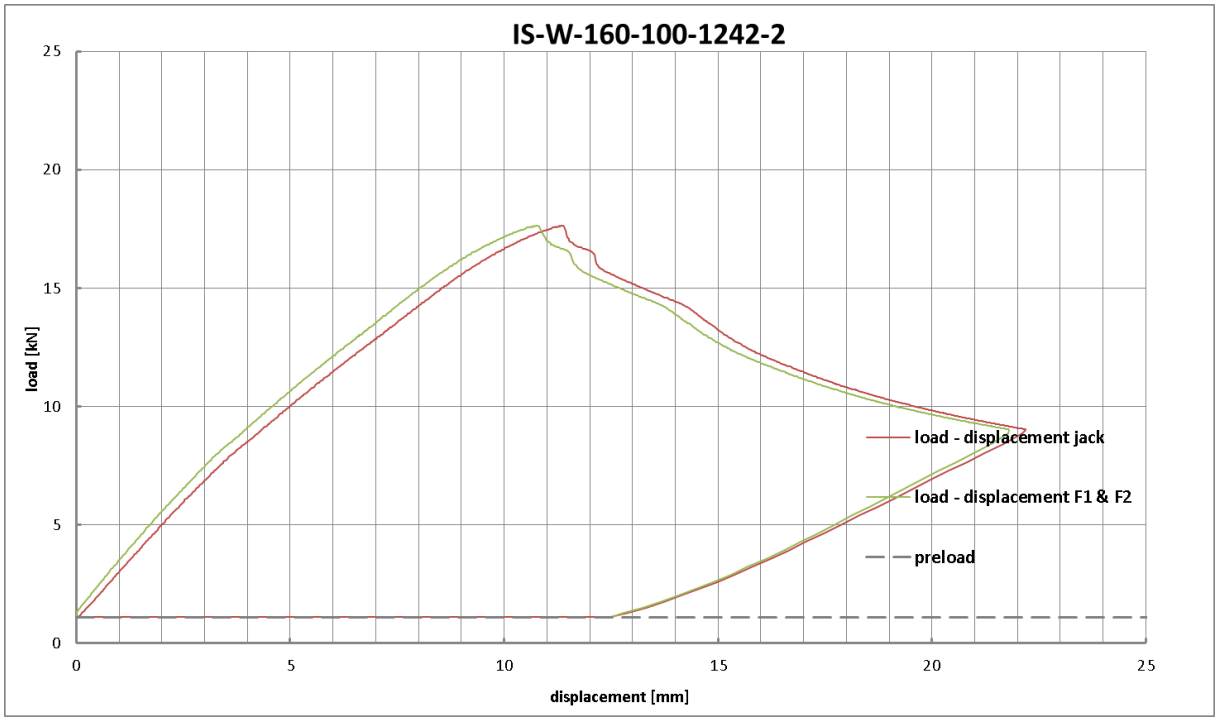
load - displacement F1 & F2
preload
0
5
10
15
20
25


IS-W-160-100-1242-2
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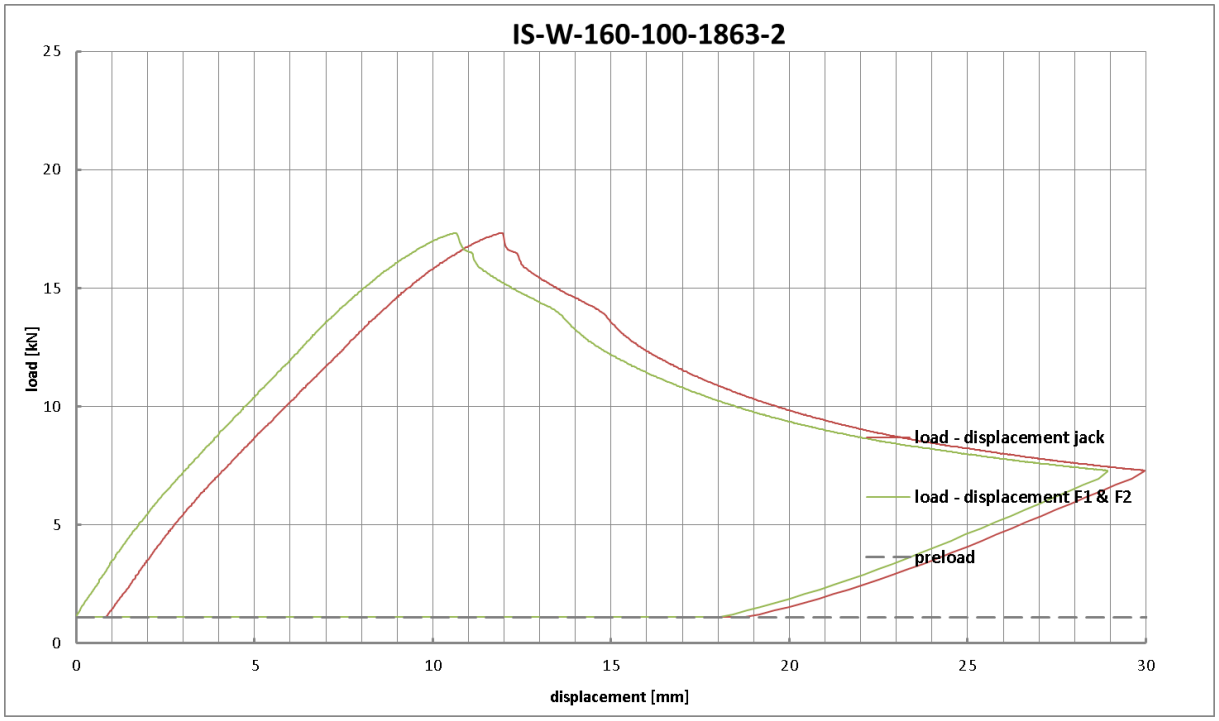
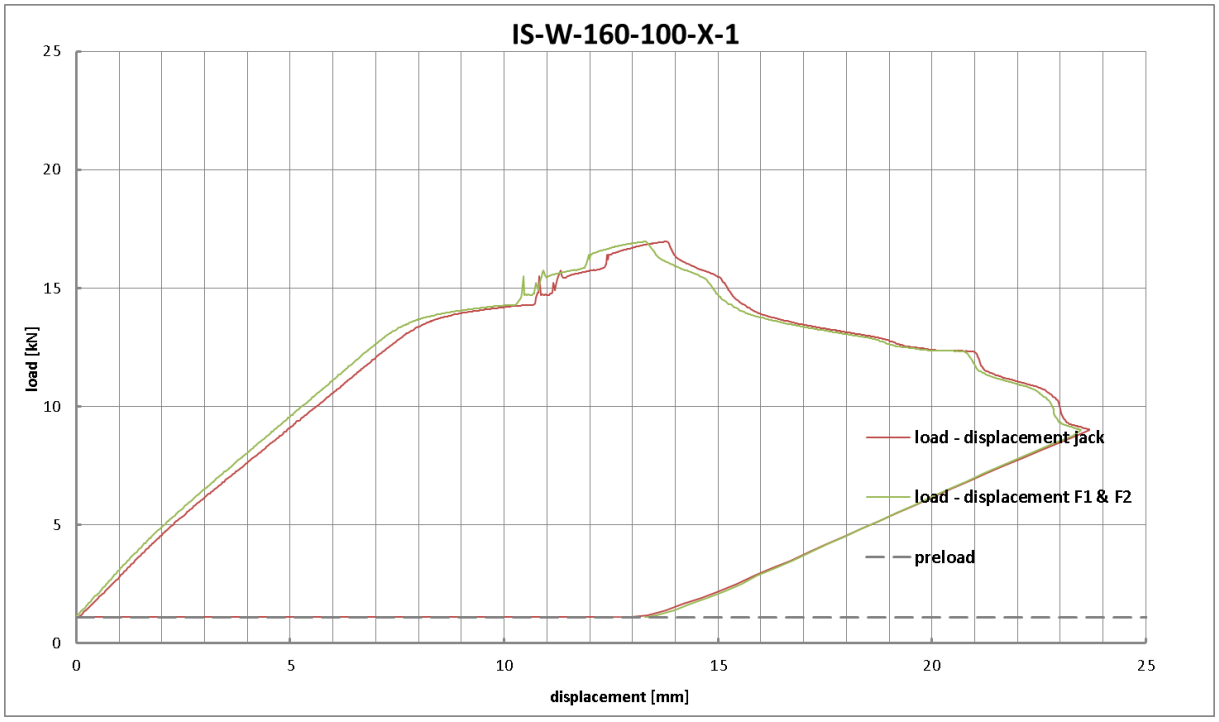
displacement [mm]
load - displacement jack
load - displacement F1 & F2
preload
0
5
10
15
20
25


IS-W-160-100-1863-1
load [kN]
displacement [mm]
load - displacement jack
load - displacement F1 & F2
preload


IS-W-160-100-1863-2
load [kN]
displacement [mm]
load - displacement jack
load - displacement F1 & F2
preload


IS-W-160-100-X-1
load [kN]
displacement [mm]
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5
10
15
20
25
load - displacement jack
load - displacement F1 & F2
preload

4 Annex D: Double span positive bending tests

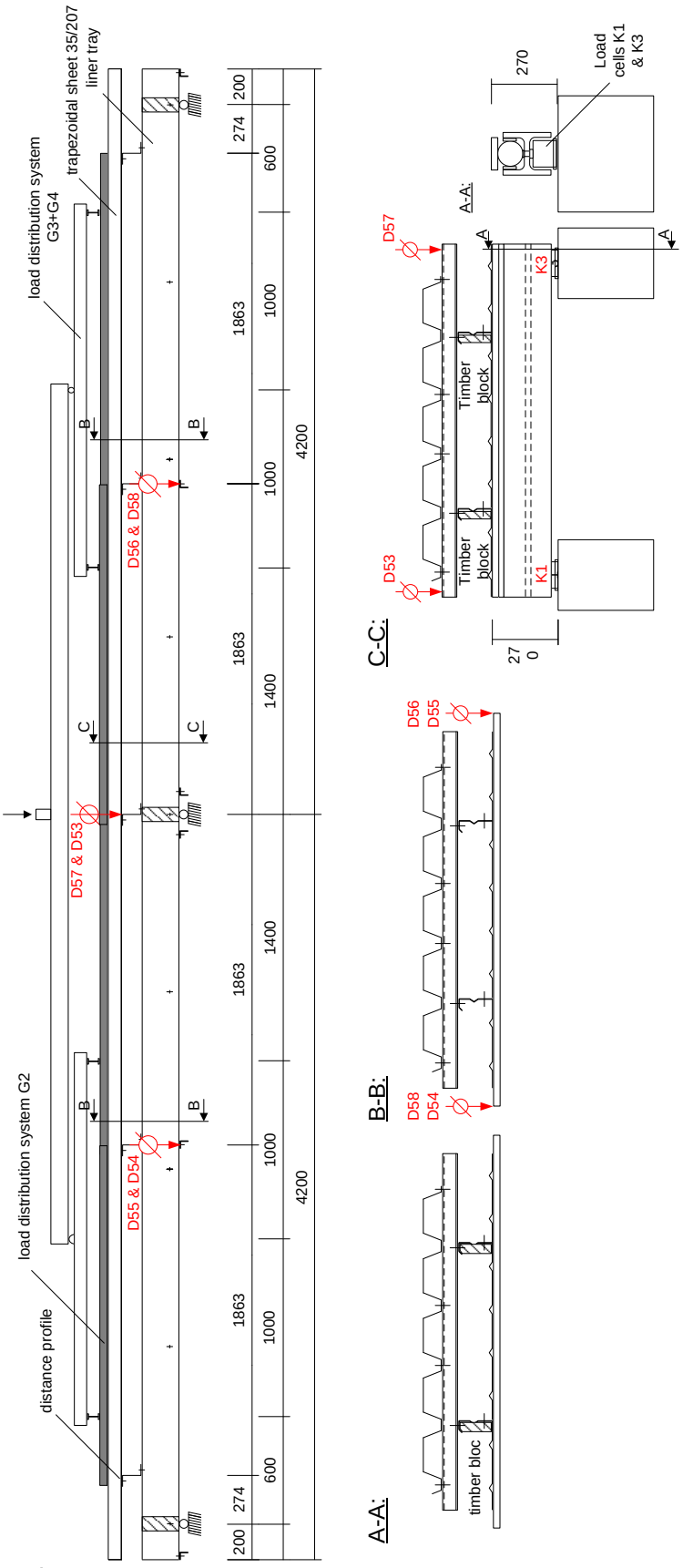


Figure D.1: Schematic test setup

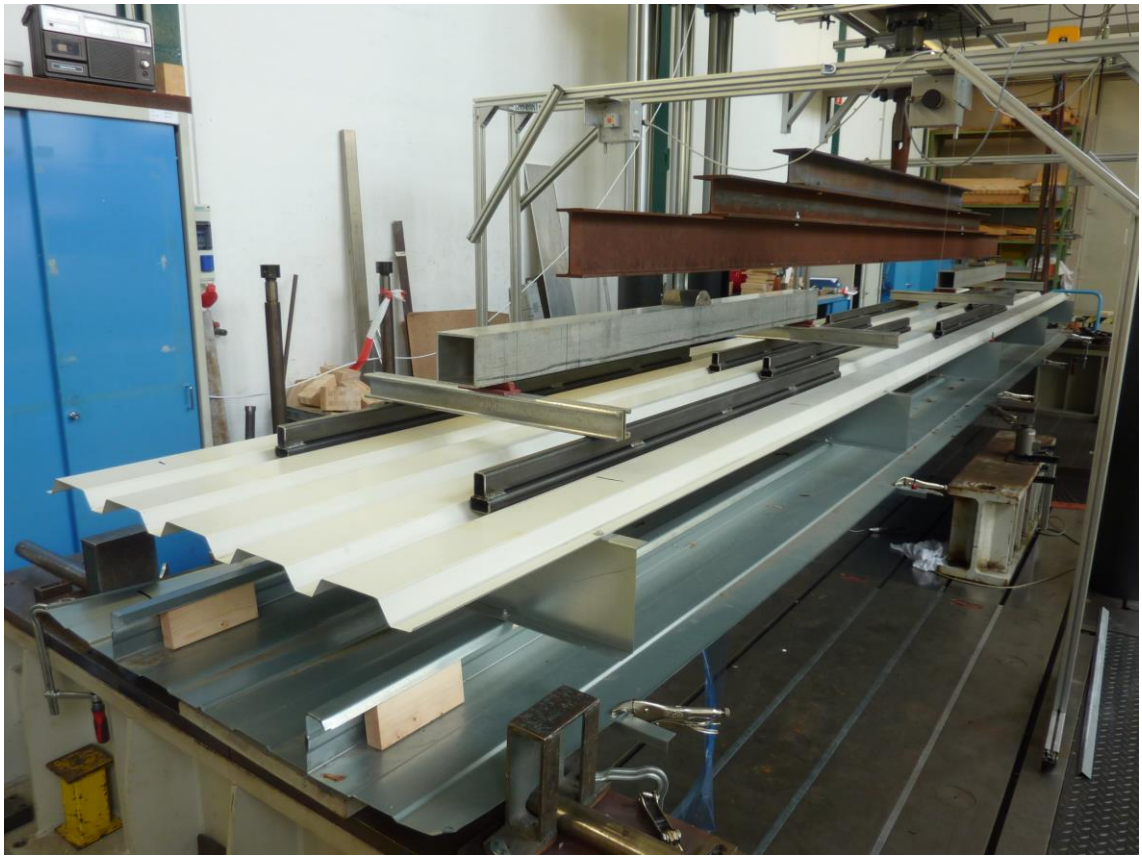


Figure D.2: Test setup (Z-profile h = 200 mm)

Figure D.3: Test setup (omega-profile h = 200 mm)

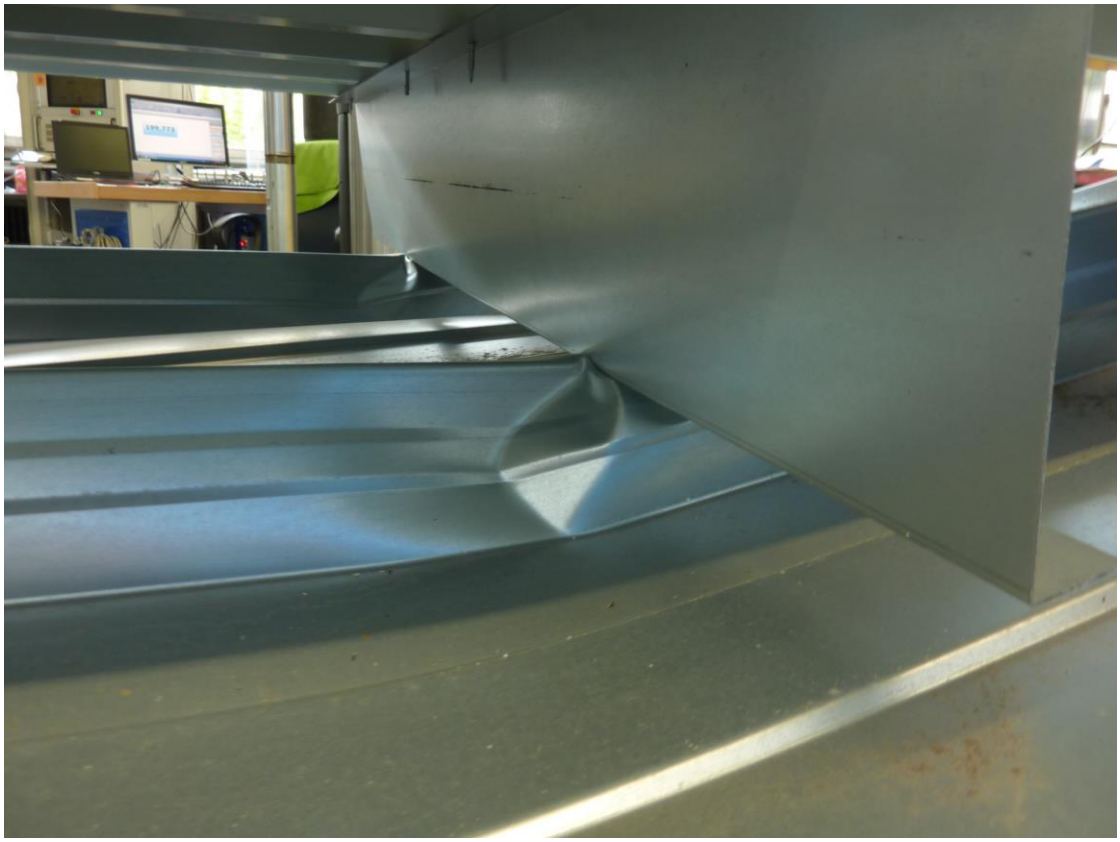


Figure D.4: Web crippling near the end support under the Z-profile h = 200 mm

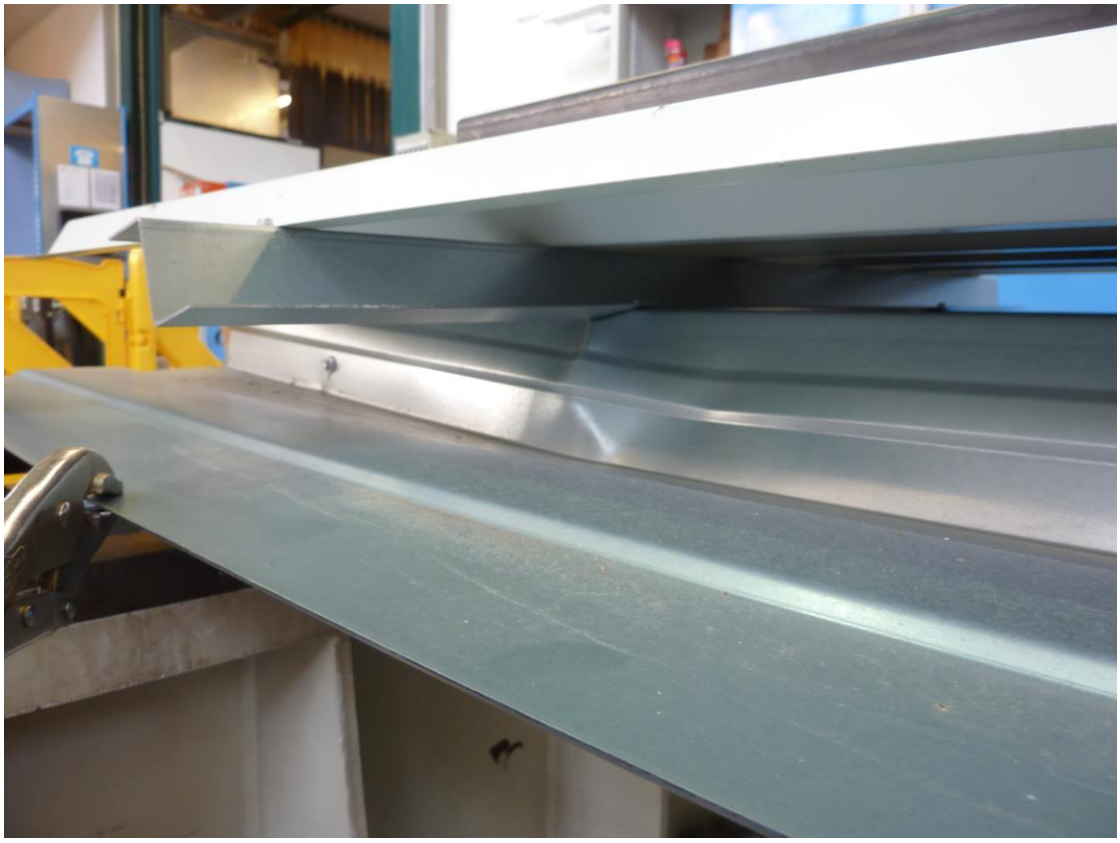


Figure D.5: Web crippling near the end support under the Z-profile h = 50 mm

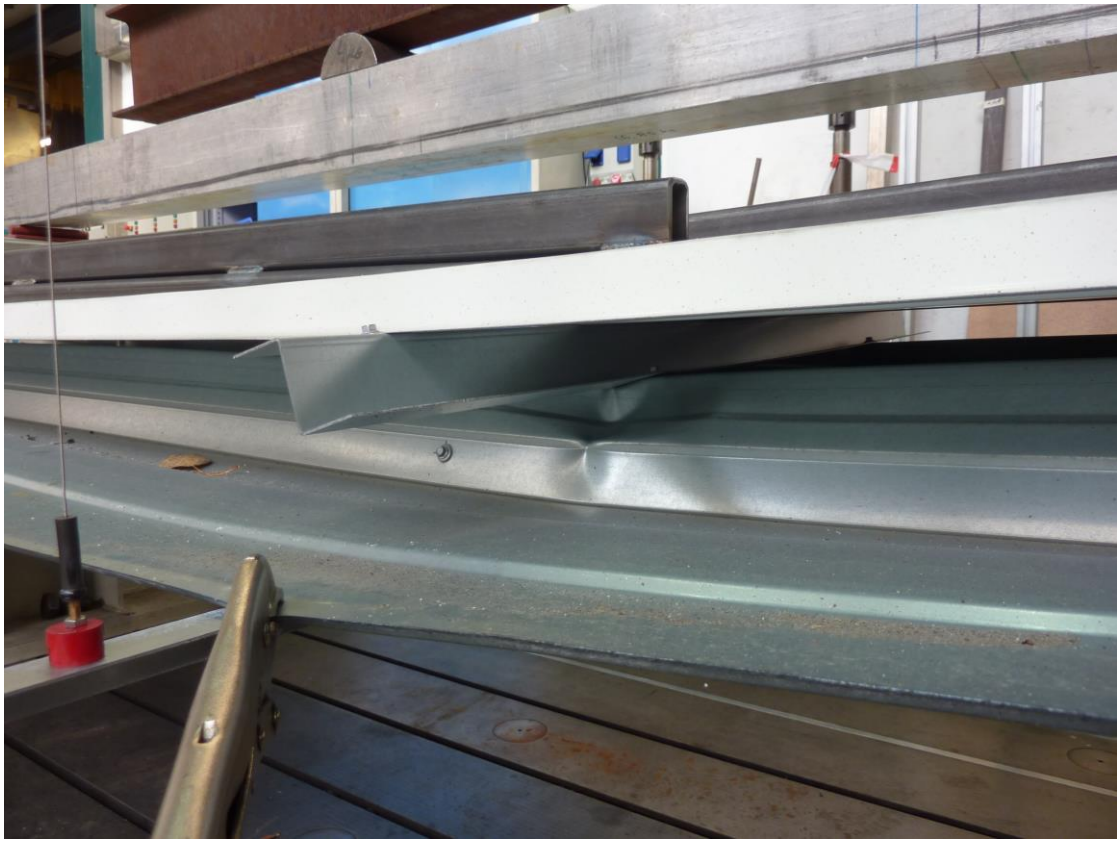


Figure D.6: Web crippling in the middle of the span under the Z-profile h = 50 mm

Figure D.7: Deformation of the test specimen at the maximum load (Z-profile h = 50 mm)

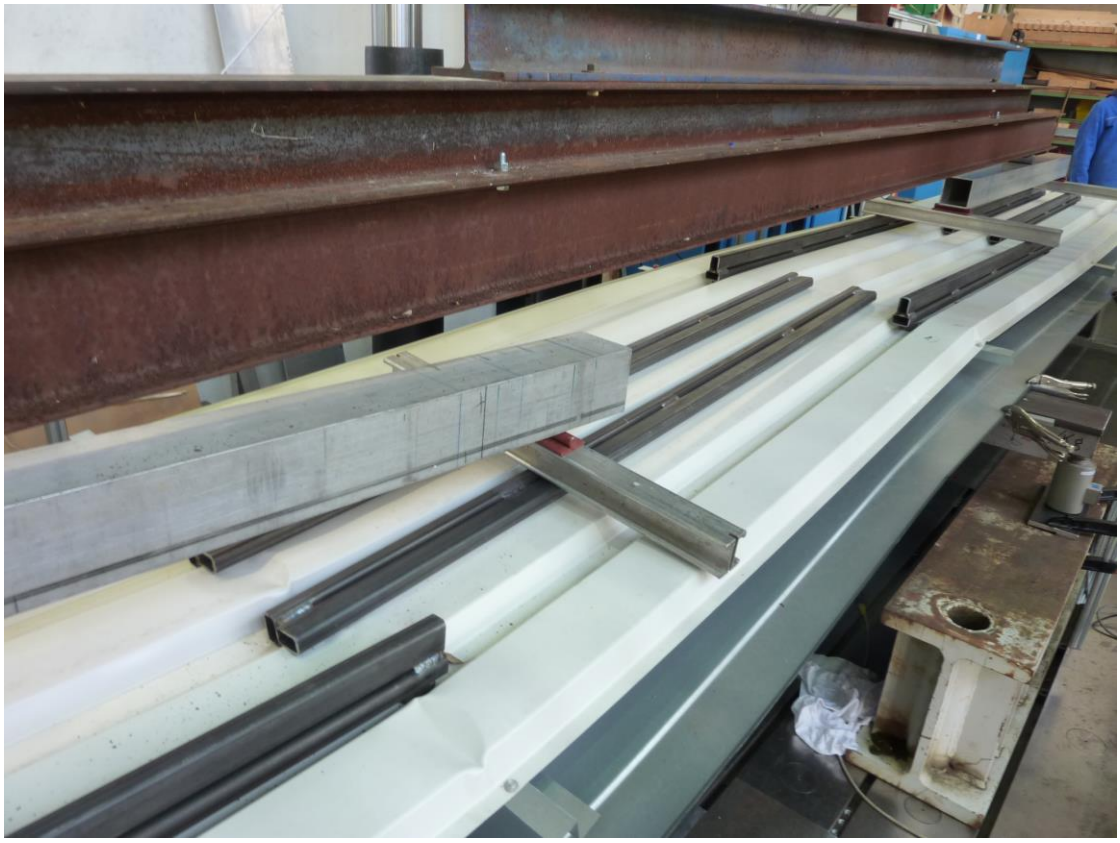


Figure D.8: Failure mode (buckling of the trapezoidal sheet in the middle of one span, Z-profile h = 50 mm)

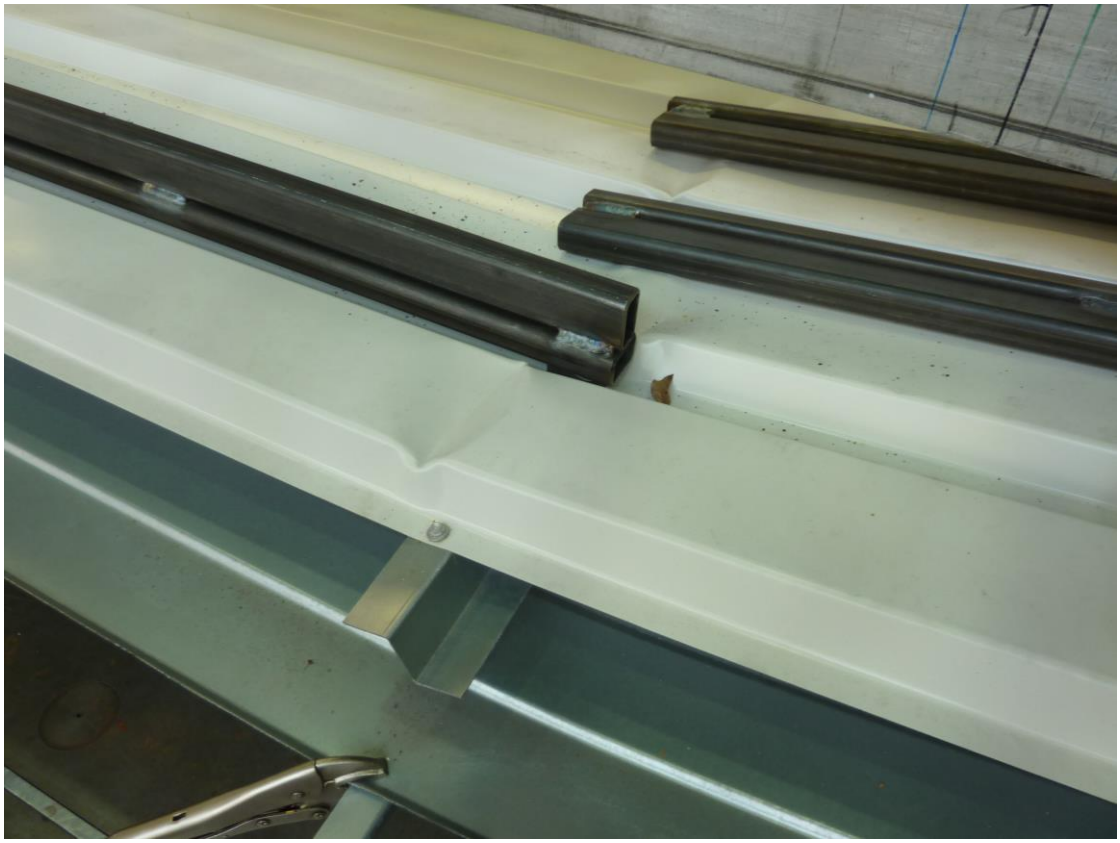


Figure D.9: Failure mode (buckling of the trapezoidal sheet in the middle of one span, Z-profile h = 50 mm), close up

Figure D.10: Deformation of the test specimen near the maximum load (omega-profile h = 50 mm)

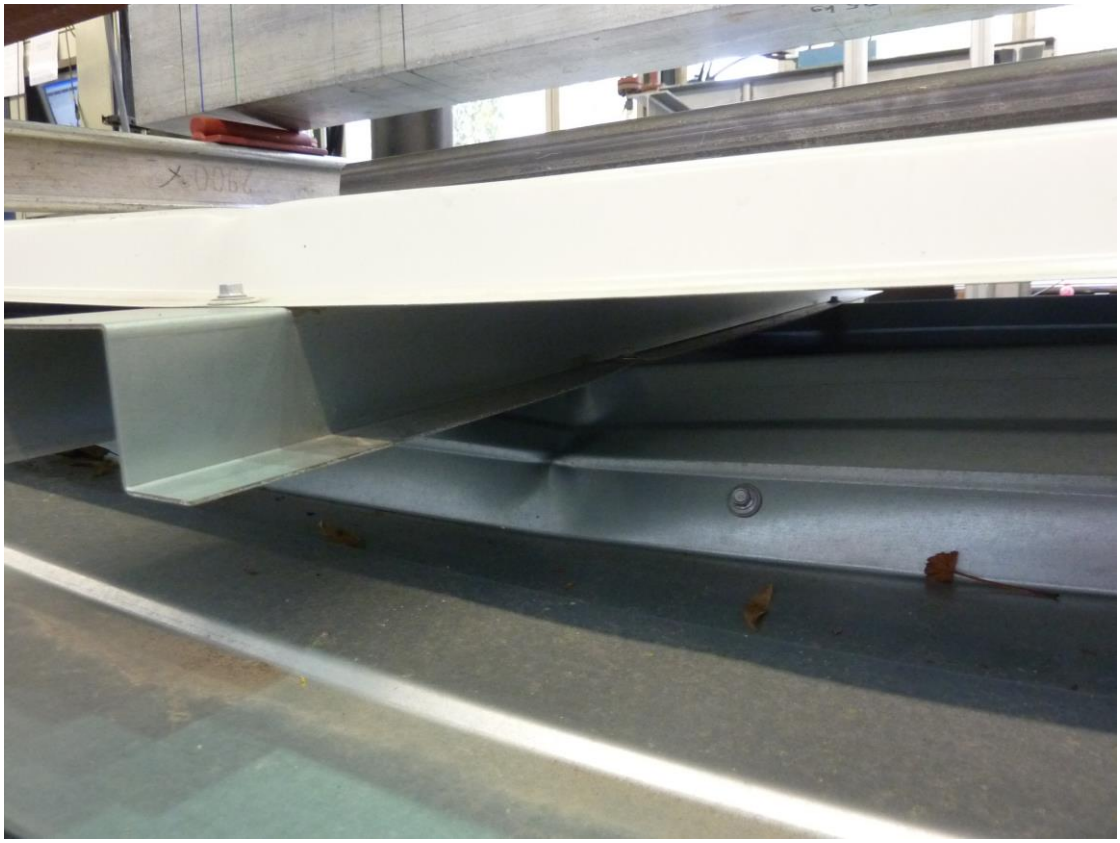


Figure D.11: Web crippling in the middle of the span under the omega-profile h = 50 mm

Figure D.12: Web crippling at the middle support under the omega-profile h = 200 mm

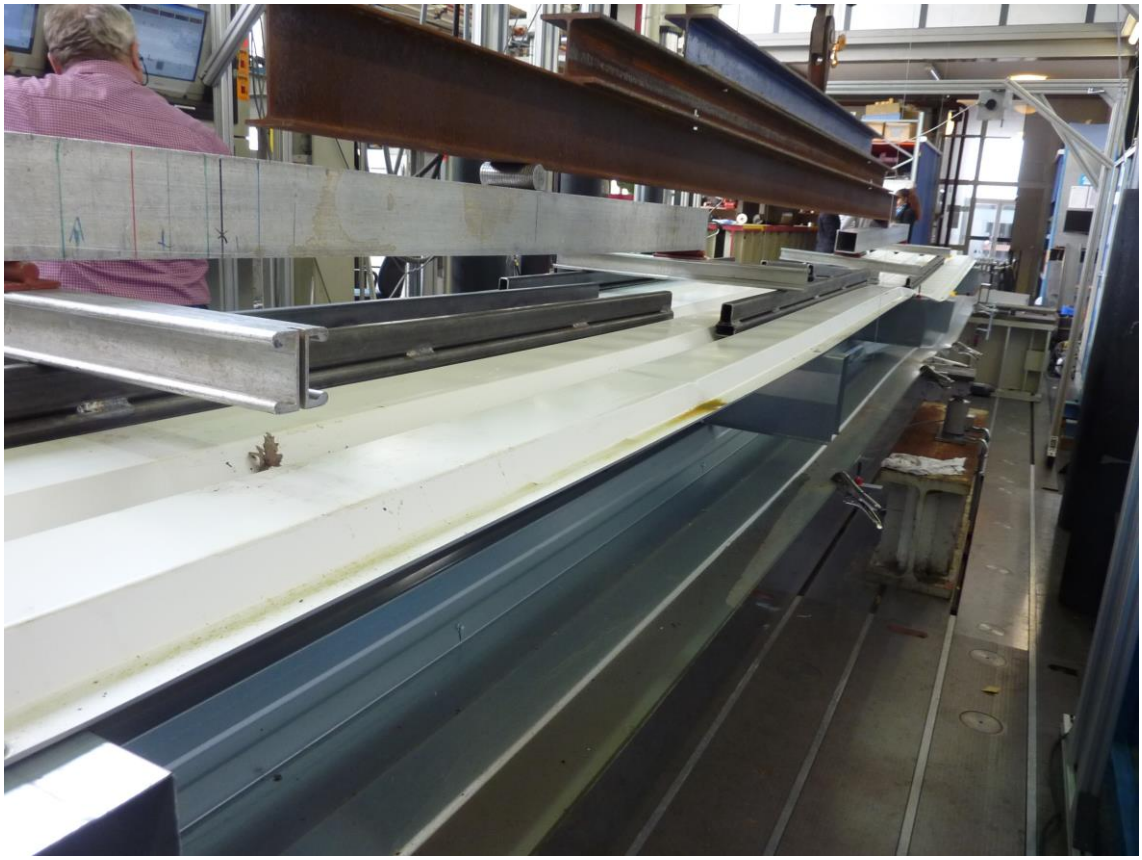


Figure D.13: Deformation of the test specimen near the maximum load (omega-profile h = 200 mm)

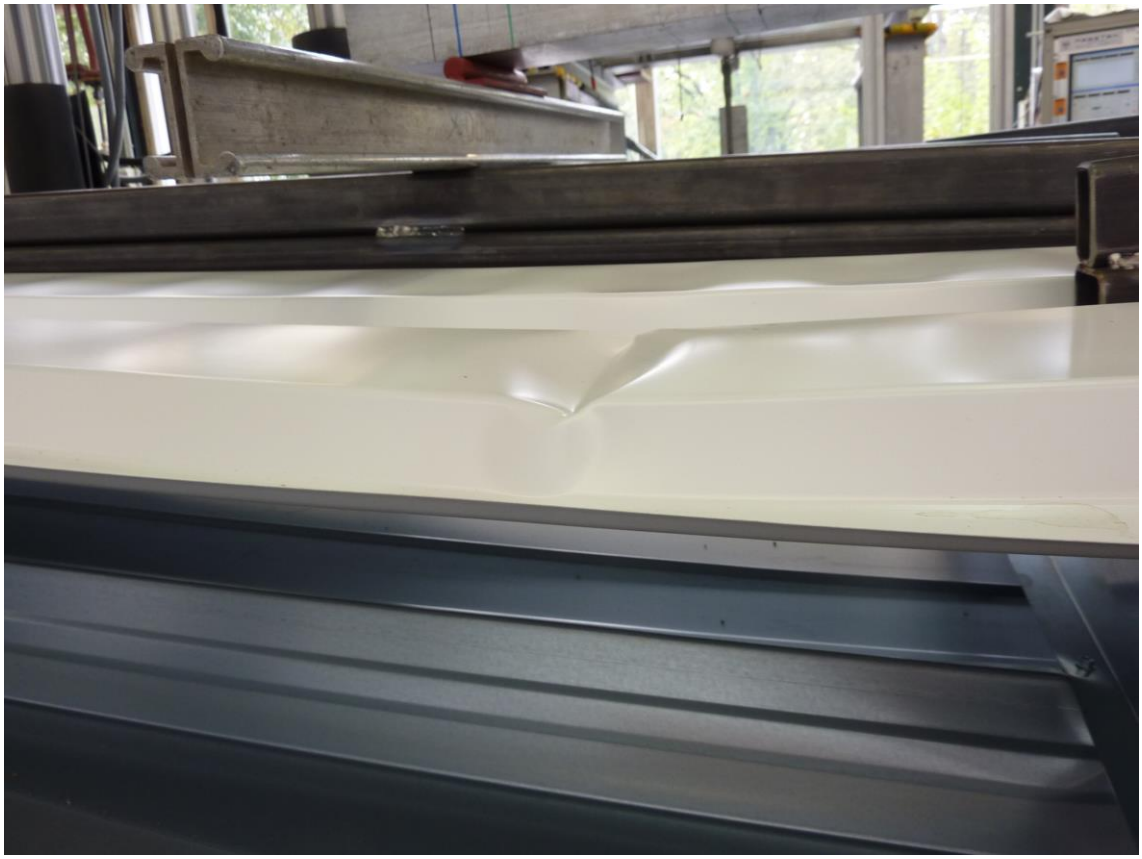


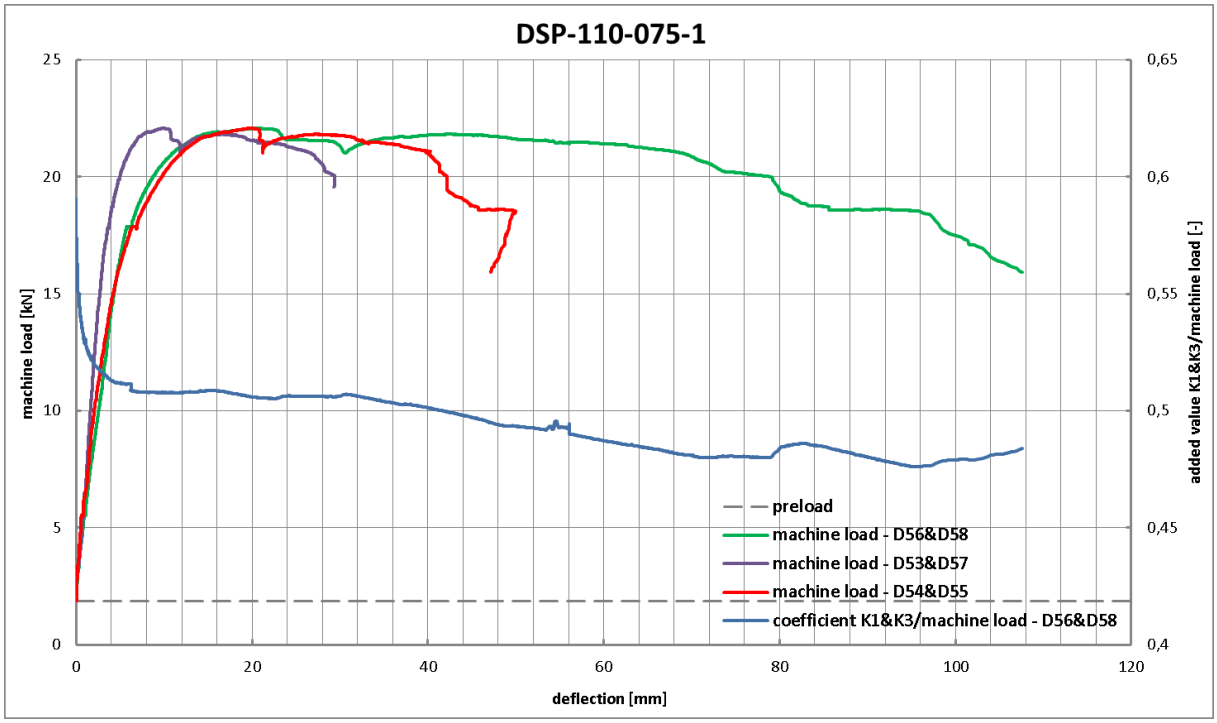
Figure D.14: Failure mode (buckling of the trapezoidal sheet in the middle of one span, omega-profile h = 200 mm)

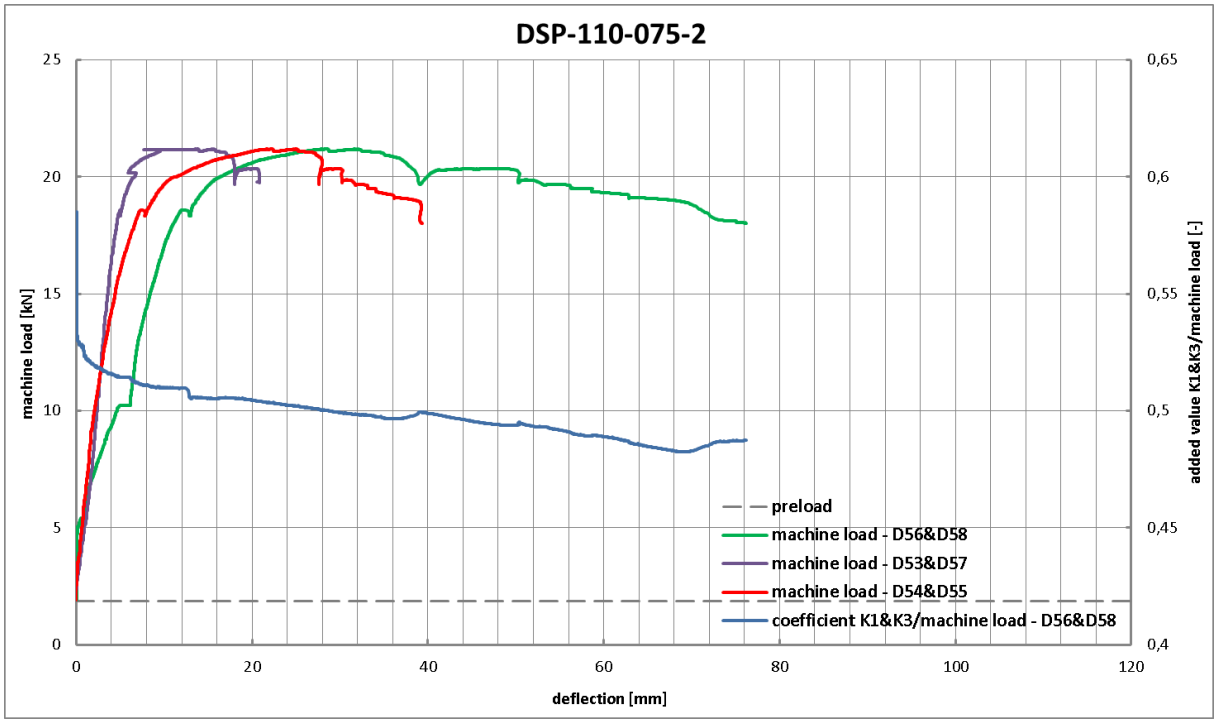
Figure D.15: Test setup for liner tray without outer cladding

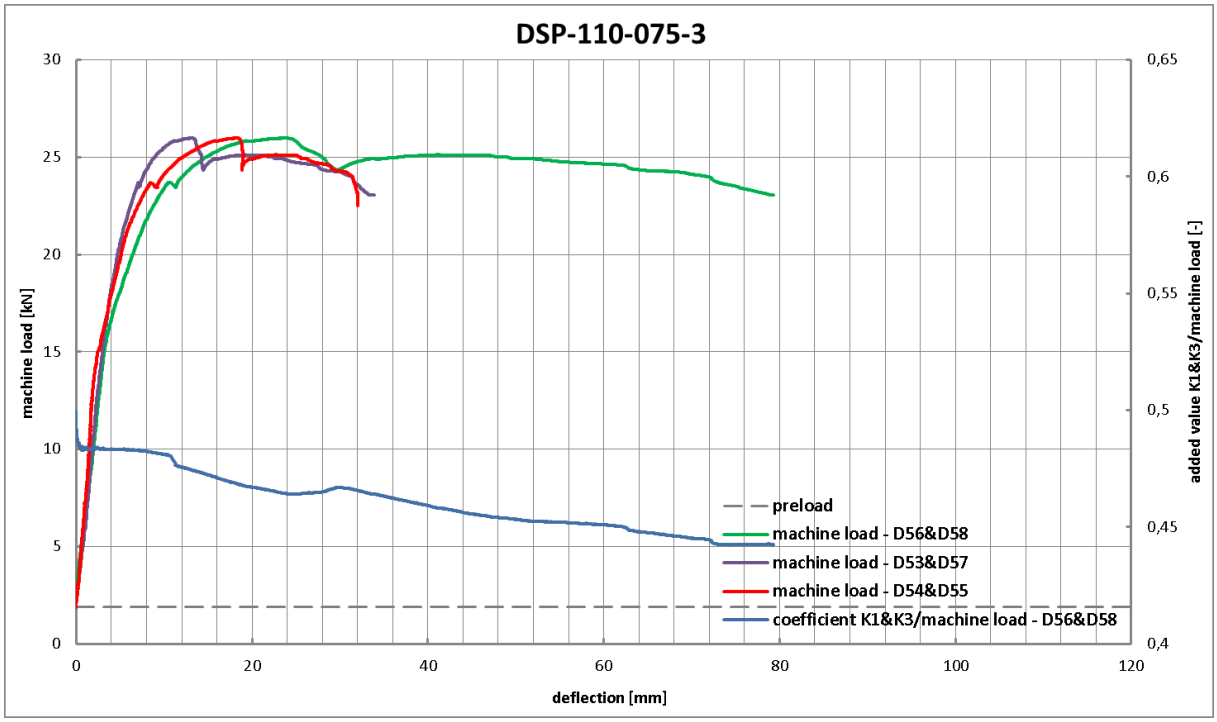
Figure D.16: Deformation of the lower flange of the liner tray at the maximum load (test without outer cladding)

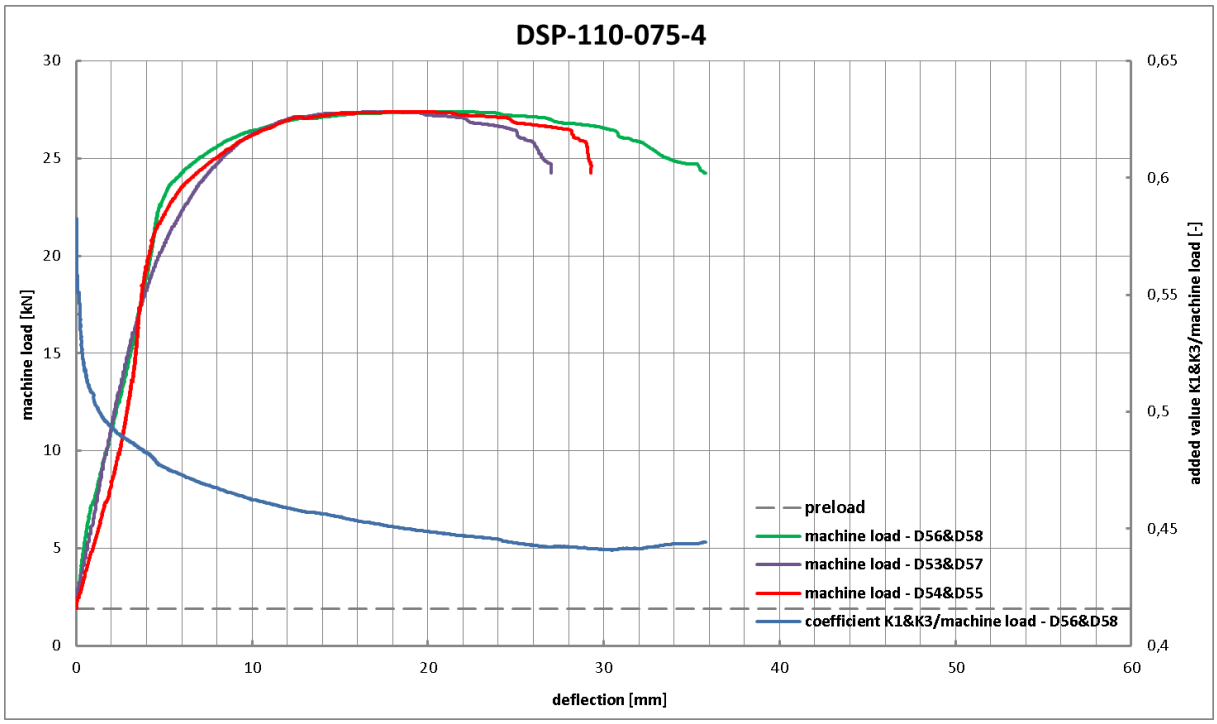
Figure D.17: Failure mode (torsional buckling of the upper flange in combination with web-crippling und the Z-profile h = 50 mm)

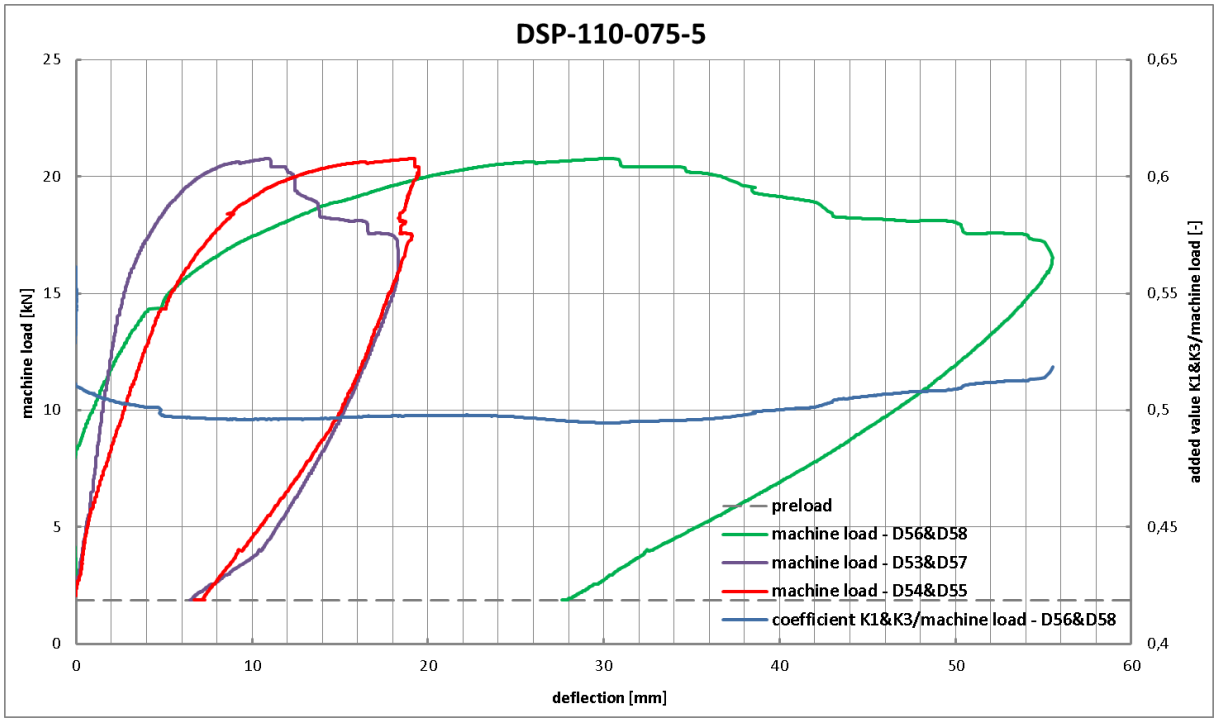
Load-deflection curves:

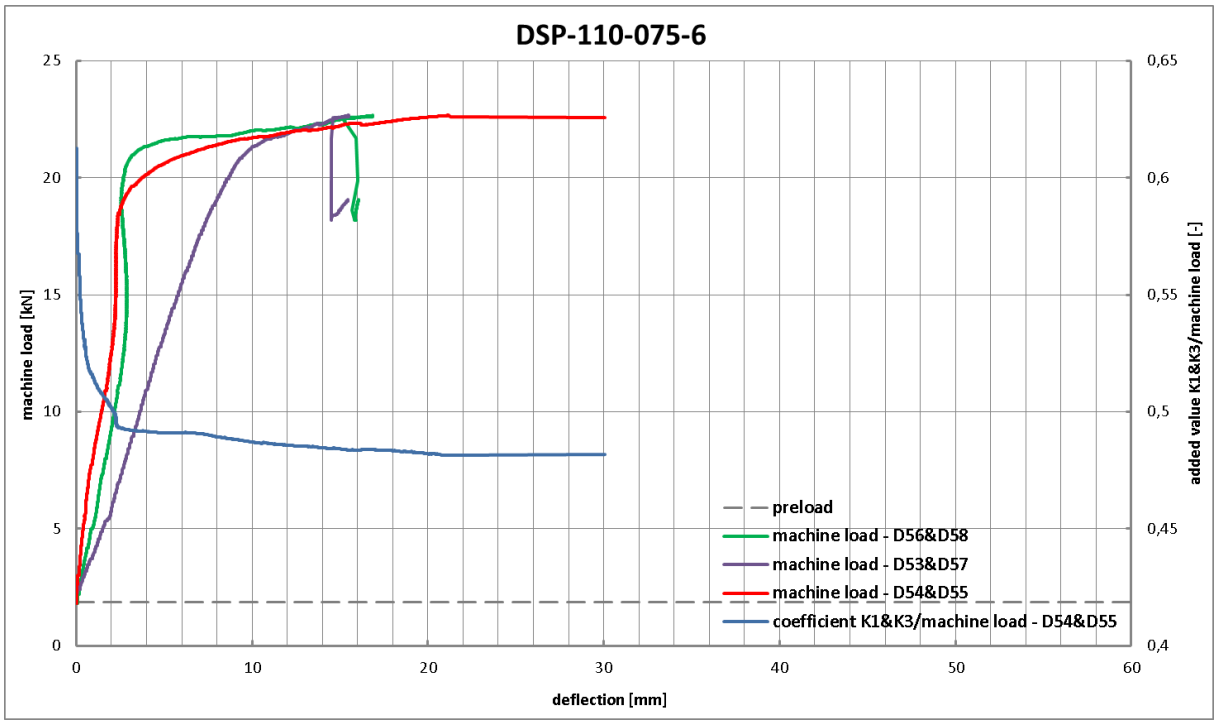


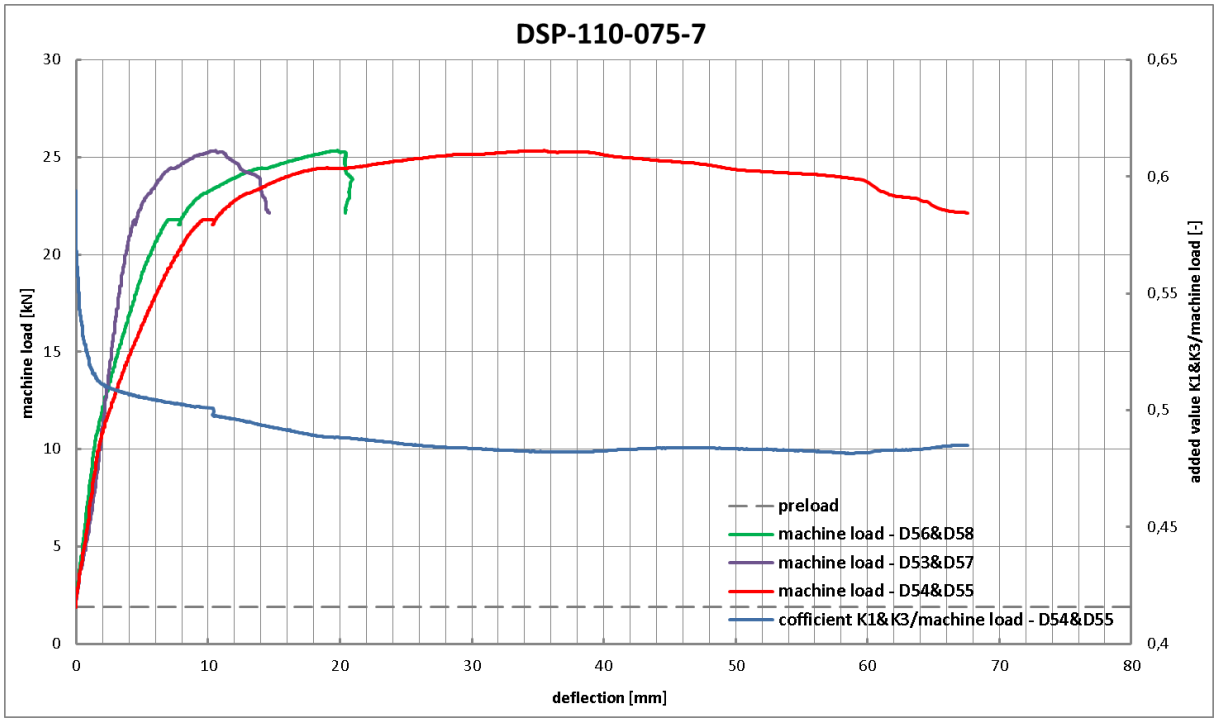


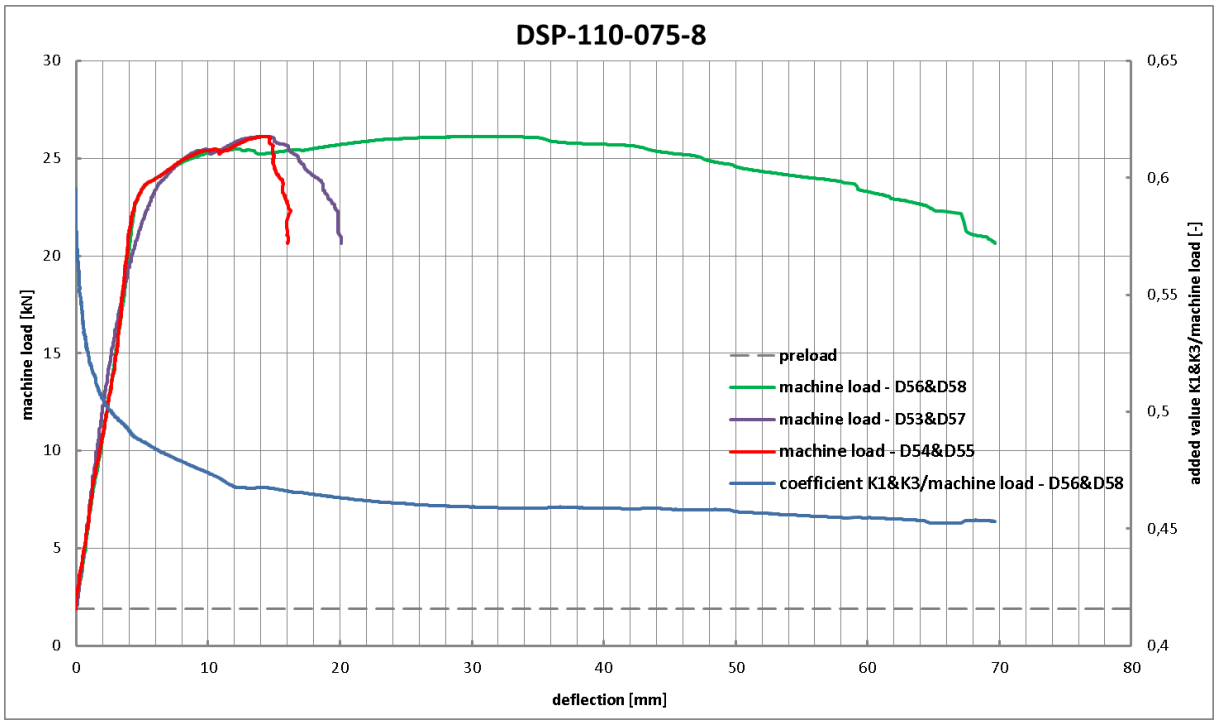

DSP-110-075-3
machine load [kN]
added value K1&K3/machine load [-]
deflection [mm]
preload
machine load - D56&D58
machine load - D53&D57
machine load - D54&D55
coefficient K1&K3/machine load - D56&D58

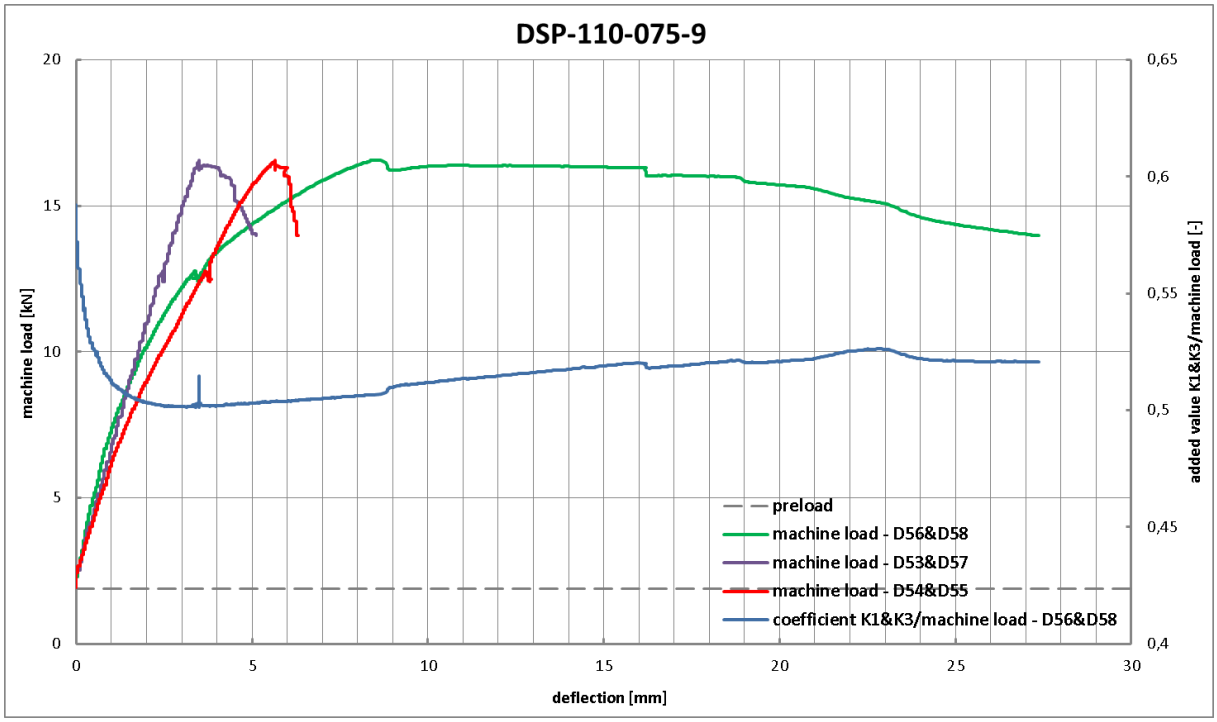

DSP-110-075-4
machine load [kN]
added value K1&K3/machine load [-]
deflection [mm]
preload
machine load - D56&D58
machine load - D53&D57
machine load - D54&D55
coefficient K1&K3/machine load - D56&D58


DSP-110-075-5
machine load [kN]
added value K1&K3/machine load [-]
deflection [mm]
preload
machine load - D56&D58
machine load - D53&D57
machine load - D54&D55
coefficient K1&K3/machine load - D56&D58


DSP-110-075-6
machine load [kN]
added value K1&K3/machine load [-]
deflection [mm]
preload
machine load - D56&D58
machine load - D53&D57
machine load - D54&D55
coefficient K1&K3/machine load - D54&D55

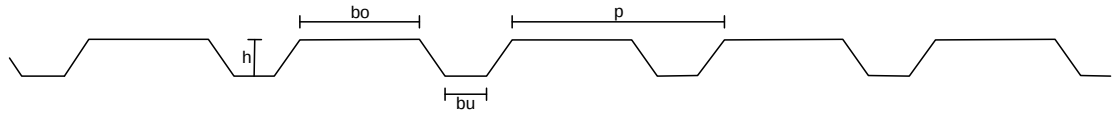

DSP-110-075-7
machine load [kN]
added value K1&K3/machine load [-]
deflection [mm]
preload
machine load - D56&D58
machine load - D53&D57
machine load - D54&D55
cofficient K1&K3/machine load - D54&D55


DSP-110-075-8
machine load [kN]
added value K1&K3/machine load [-]
deflection [mm]
preload
machine load - D56&D58
machine load - D53&D57
machine load - D54&D55
coefficient K1&K3/machine load - D56&D58


DSP-110-075-9
machine load [kN]
added value K1&K3/machine load [-]
deflection [mm]
preload
machine load - D56&D58
machine load - D53&D57
machine load - D54&D55
coefficient K1&K3/machine load - D56&D58
0
5
10
15
20
25
30
0,4
0,45
0,5
0,55
0,6
0,65

5 Annex E: Measurement of the profile geometry

Trapezoidal sheet for the outer cladding:



Delivery 1:

	JID_35-207-1035				JID_35-207-1035			
	1st Rib	2nd Rib	3rd Rib	4th Rib	1st Rib	2nd Rib	3rd Rib	4th Rib
Thickness t_N	0,626	0,631	0,632	0,630	0,637	0,638	0,647	0,644
Depth of profile h	35,3	34,6	35,2	36,0	35,3	35,0	35,2	36,2
Widths of crown b_o	120,5	119,5	119,5	120,0	120,5	120,0	120,0	120,5
Widths of valley b_u	40,0	39,5	40,0	40,0	40,0	39,5	39,5	40,0
Pitch of the profile p	206,5	207,0	206,5	206,5	206,0	207,5	206,5	206,0
Radius of bends r_o	5,0	Radius of bends r_u		5,0	5,0	Radius of bends r_u		5,0

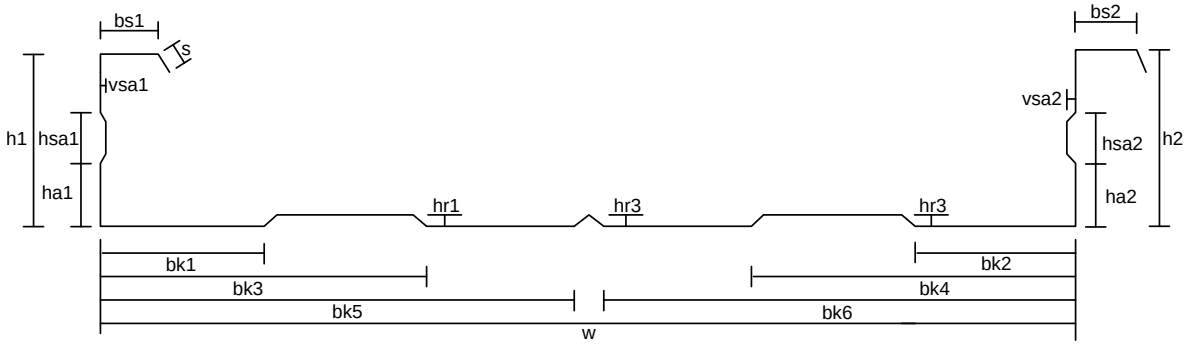
	JID_35-207-1035			
	1st Rib	2nd Rib	3rd Rib	4th Rib
Thickness t_N	0,642	0,648	0,648	0,646
Depth of profile h	35,5	34,7	35,3	36,0
Widths of crown b_o	120,0	119,5	119,5	120,0
Widths of valley b_u	39,5	39,5	39,5	40,0
Pitch of the profile p	206,0	207,5	206,0	205,5
Radius of bends r_o	5,0	Radius of bends r_u		5,0

Delivery 2:

	JID_35-207-1035				JID_35-207-1035			
	1st Rib	2nd Rib	3rd Rib	4th Rib	1st Rib	2nd Rib	3rd Rib	4th Rib
Thickness t_N	0,648	0,656	0,661	0,643	0,658	0,643	0,647	0,642
Depth of profile h	35,3	35,3	37,0	35,6	35,3	35,2	36,9	35,8
Widths of crown b_o	120,5	119,5	120,0	120,0	120,0	120,5	120,5	120,0
Widths of valley b_u	40,0	39,5	39,0	40,0	40,5	40,0	39,5	39,5
Pitch of the profile p	206,0	204,0	204,0	205,0	204,0	206,0	205,0	206,0
Radius of bends r_o	5,0	Radius of bends r_u		6,0	5,0	Radius of bends r_u		5,0

	JID_35-207-1035			
	1st Rib	2nd Rib	3rd Rib	4th Rib
Thickness t_N	0,642	0,644	0,647	0,644
Depth of profile h	35,2	35,3	36,3	35,8
Widths of crown b_o	120,0	120,0	119,5	120,5
Widths of valley b_u	39,5	39,0	39,0	39,5
Pitch of the profile p	205,0	205,0	206,0	207,0
Radius of bends r_o	5,0	Radius of bends r_u		5,0

Liner Trays:



Delivery 1:

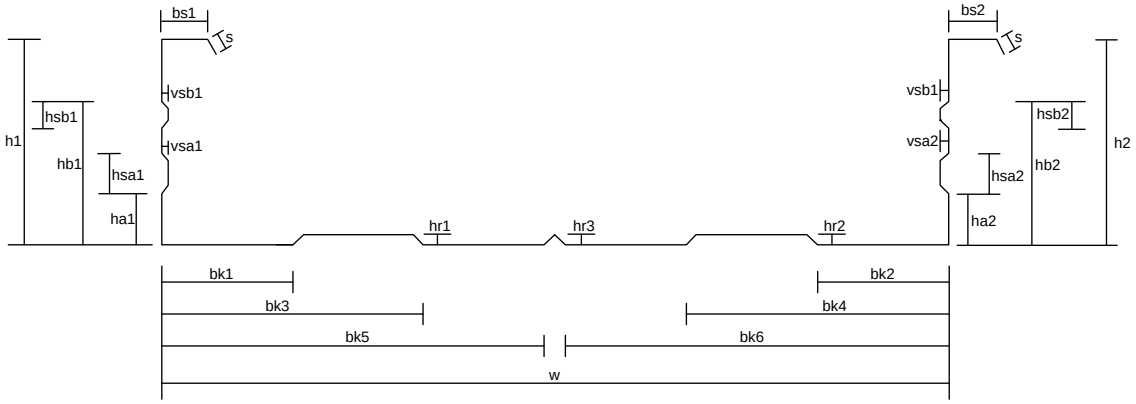
	JID 600.110 t_N = 0.75 mm								
Thickness t_N	0,733	0,733	0,73	0,729	0,734	0,737	0,73	0,729	0,726
Depth of profile h_1	108,5			108,5			108,5		
Depth of profile h_2	110,5			112			110,5		
Position of web stiff. h_{a1}/h_{a2}	41,9	39,5		42,4	39		41,7	39,5	
Position of web stiff. h_{sa1}/h_{sa2}	32,2	32,5		32,2	33,1		32	32,8	
Depth of web stiffeners v_{sa1}/v_{sa2}	4,45	4,23		3,88	4,12		3,9	3,92	
Depth of stiffeners $h_{r1}/h_{r2}/h_{r3}$	6,78	7,31	6,86	6,92	6,74	6,96	6,11	6,7	7,9
Cover width w	600			602			599		
Position of flange stiff. b_{k1}/b_{k2}	99	99		98	100		99,5	99	
Position of flange stiff. b_{k3}/b_{k4}	199,5	201		201	200		200	200,5	
Position of flange stiff. b_{k5}/b_{k6}	292	291		291	291		291,5	291	
Widths of flanges b_{s1}	37			38			38		
Widths of flanges b_{s2}	40			40			39,5		
Longitudinal edge upstand s	14	16,5		15	16,5		14,5	16,5	
Radius of bends r_{o1}, r_{o2}	6,5	3,5		6,5	3		7	3,5	
Radius of bends r_{u1}, r_{u2}	3	4		2,75	3,5		3	4	
Radius of bends r_{l1}, r_{l2}	6	6,5		7	6,5		6,5	6,5	

	JID 600.110 t_N = 1.00 mm								
Thickness t_N	0,981	0,982	0,978	0,987	0,991	0,991	0,976	0,975	0,976
Depth of profile h_1	108			108			112		
Depth of profile h_2	111			111			109,5		
Position of web stiff. h_{a1}/h_{a2}	43	39		43	40		43	37	
Position of web stiff. h_{sa1}/h_{sa2}	32,5	32		31,5	32,2		31,6	33,6	
Depth of web stiffeners v_{sa1}/v_{sa2}	3,56	4,1		3	3,1		3,71	3,59	
Depth of stiffeners $h_{r1}/h_{r2}/h_{r3}$	6,1	6,3	6,7	7,25	6,2	6,8	6,6	6,04	6,39
Cover width w	601			600			601		
Position of flange stiff. b_{k1}/b_{k2}	97,5	99		99	99		95	98	
Position of flange stiff. b_{k3}/b_{k4}	199	201		199	199		200	203	
Position of flange stiff. b_{k5}/b_{k6}	290	291		289	290		290	289	
Widths of flanges b_{s1}	37,5			37			36,5		
Widths of flanges b_{s2}	38			37,5			38,5		
Longitudinal edge upstand s	11,5	19		12	18		12,5	16	
Radius of bends r_{o1}, r_{o2}	6,5	3,5		6,5	3,5		5,5	3	
Radius of bends r_{u1}, r_{u2}	4	3,5		4	4		3,5	4	
Radius of bends r_{l1}, r_{l2}	6	6		5	6,5		4	5,5	

Delivery 2:

	JID 600.110 t_N = 0,75 mm								
Thickness t_N	0,73	0,729	0,726	0,721	0,722	0,72	0,725	0,73	0,731
Depth of profile h_1	108,5			111			110		
Depth of profile h_2	110,5			108			108,5		
Position of web stiff. h_{a1}/h_{a2}	41,7	40		39	36		40	36	
Position of web stiff. h_{sa1}/h_{sa2}	32,03	32,76		33	33		31,5	32,5	
Position of web stiff. h_{b1}/h_{b2}	-	-		-	-		-	-	
Position of web stiff. h_{sb1}/h_{sb2}	-	-		-	-		-	-	
Depth of web stiffeners v_{sa1}/v_{sa2}	3,9	3,92		4,33	4,85		3,97	3,55	
Depth of web stiffeners v_{sb1}/v_{sb2}	-	-		-	-		-	-	
Depth of stiffeners $h_{r1}/h_{r2}/h_{r3}$	6,11	6,7	7,9	7,8	6,7	6,2	7,31	6,88	6,25
Cover width w	599			599	600		599	599	
Position of flange stiff. b_{k1}/b_{k2}	99,5	99		101	96		101	96	
Position of flange stiff. b_{k3}/b_{k4}	200	200,5		203	199		203	197	
Position of flange stiff. b_{k5}/b_{k6}	291,5	291		292	287		293	286	
Widths of flanges b_{s1}	38			34,5			34		
Widths of flanges b_{s2}	36			37,5			37		
Longitudinal edge upstand s	14,5	16,5		22	11		22,5	10,5	
Radius of bends r_{o1}, r_{o2}	7	3,5		4	3,5		4	3,5	
Radius of bends r_{u1}, r_{u2}	3	4		4,5	4,5		4,5	4	
Radius of bends r_{l1}, r_{l2}	6,5	6,5		-	-		-	-	
Lenght of the profile l	-			2400			2400		

	JID 600.110 t_N = 1.00 mm								
Thickness t_N	0,984	0,983	0,971	0,981	0,979	0,976	0,991	0,99	0,985
Depth of profile h_1	110			110			110		
Depth of profile h_2	108			107			109		
Position of web stiff. h_{a1}/h_{a2}	39,5	40		40	40		40	38	
Position of web stiff. h_{sa1}/h_{sa2}	32,5	30,5		32	30,5		31,5	33	
Position of web stiff. h_{b1}/h_{b2}	-	-		-	-		-	-	
Position of web stiff. h_{sb1}/h_{sb2}	-	-		-	-		-	-	
Depth of web stiffeners v_{sa1}/v_{sa2}	3,75	4,43		3,67	4,73		3,98	4,81	
Depth of web stiffeners v_{sb1}/v_{sb2}	-	-		-	-		-	-	
Depth of stiffeners $h_{r1}/h_{r2}/h_{r3}$	6,08	6,15	6,42	7,06	6,53	6,32	6,83	6,67	6,31
Cover width w	599	600		597	598		599	598	
Position of flange stiff. b_{k1}/b_{k2}	97	100		99	98		96	100	
Position of flange stiff. b_{k3}/b_{k4}	199	202		202	200		199	202,5	
Position of flange stiff. b_{k5}/b_{k6}	289	291		290	288		288	291	
Widths of flanges b_{s1}	35			35,5			34,5		
Widths of flanges b_{s2}	37,5			38			38		
Longitudinal edge upstand s	24	12		22,5	14		23	13,5	
Radius of bends r_{o1}, r_{o2}	3,0	4,0		3,5	4,0		3,0	4,0	
Radius of bends r_{u1}, r_{u2}	3,0	3,5		3,5	4,0		4,0	4,0	
Radius of bends r_{l1}, r_{l2}	-	-		-	-		-	-	
Lenght of the profile l	2399			2400			2400		



Delivery 1:

	JID 600.160 t_N = 0.75 mm								
Thickness t_N	0,727	0,735	0,733	0,733	0,732	0,735	0,738	0,737	0,734
Depth of profile h_1	159			159			159		
Depth of profile h_2	162			162			162		
Position of web stiff. h_{a1}/h_{a2}	38,5		43	38,7		43	37,5		43
Position of web stiff. h_{sa1}/h_{sa2}	31,9		30,1	31,8		31,1	32,5		32,4
Position of web stiff. h_{b1}/h_{b2}	88,6		92	88,6		91	87,3		91
Position of web stiff. h_{sb1}/h_{sb2}	20,9		21,5	21,4		21	20,8		21,6
Depth of web stiffeners v_{sa1}/v_{sa2}	5,63		6,22	5,4		6,4	5,72		6
Depth of web stiffeners v_{sb1}/v_{sb2}	5,24		5,92	5,8		5,5	6,41		5,68
Depth of stiffeners $h_{r1}/h_{r2}/h_{r3}$	6,61	6,67	5,99	6,84	6,55	6,66	7,1	6,08	6,46
Cover width w	597			598			599		
Position of flange stiff. b_{k1}/b_{k2}	99		95	99		97	99		96
Position of flange stiff. b_{k3}/b_{k4}	199		197	199		197	199		197
Position of flange stiff. b_{k5}/b_{k6}	290		287	291		288	291		287
Widths of flanges b_{s1}	36			36			36		
Widths of flanges b_{s2}	39,5			40			40		
Longitudinal edge upstand s	10		18	10		17	10		16
Radius of bends r_{o1}, r_{o2}	7		2,75	7		2,75	7		3,5
Radius of bends r_{u1}, r_{u2}	2,5		3	2,5		3	2,75		3
Radius of bends r_{l1}, r_{l2}	6,5		6	6,5		6,5	6,5		7

	JID 600.160 t_N = 1.00 mm								
Thickness t_N	0,983	0,986	0,999	0,997	0,995	0,997	0,983	0,989	0,989
Depth of profile h_1	163			157			156,5		
Depth of profile h_2	161			161			160		
Position of web stiff. h_{a1}/h_{a2}	37	39,5		37,5	39		36	39,5	
Position of web stiff. h_{sa1}/h_{sa2}	31,5	33,6		32,6	34		30,9	32,5	
Position of web stiff. h_{b1}/h_{b2}	95,5	90		89	90		86	88,5	
Position of web stiff. h_{sb1}/h_{sb2}	22,4	23		21,3	22		21,5	21,1	
Depth of web stiffeners v_{sa1}/v_{sa2}	4,72	4,17		4,75	4,4		4,73	3,67	
Depth of web stiffeners v_{sb1}/v_{sb2}	4,17	4,93		3,6	4,8		4,58	4,85	
Depth of stiffeners $h_{r1}/h_{r2}/h_{r3}$	6,44	6,69	7,39	6,5	6,35	6,8	6,62	6,63	6,95
Cover width w	601			601			602		
Position of flange stiff. b_{k1}/b_{k2}	99	99		99	100		98	100	
Position of flange stiff. b_{k3}/b_{k4}	199	201		199	201		199	201	
Position of flange stiff. b_{k5}/b_{k6}	290	291		289	292		289	291	
Widths of flanges b_{s1}	38			38			37		
Widths of flanges b_{s2}	40			41			41		
Longitudinal edge upstand s	12	11		14	11		12	13	
Radius of bends r_{o1}, r_{o2}	5	3,5		5	3,5		5	3,5	
Radius of bends r_{u1}, r_{u2}	2	5		1,75	5		2,5	5	
Radius of bends r_{l1}, r_{l2}	5,5	6		5	6		4	5,5	

Delivery 2:

	JID 600.160 t_N = 0.75 mm								
Thickness t_N	0,738	0,737	0,734						
Depth of profile h_1	159								
Depth of profile h_2	162								
Position of web stiff. h_{a1}/h_{a2}	37,5	43							
Position of web stiff. h_{sa1}/h_{sa2}	32,5	32,4							
Position of web stiff. h_{b1}/h_{b2}	87,3	91							
Position of web stiff. h_{sb1}/h_{sb2}	20,8	21,6							
Depth of web stiffeners v_{sa1}/v_{sa2}	5,7	6							
Depth of web stiffeners v_{sb1}/v_{sb2}	6	5,7							
Depth of stiffeners $h_{r1}/h_{r2}/h_{r3}$	7,1	6,1	6,5						
Cover width w	599								
Position of flange stiff. b_{k1}/b_{k2}	99	96							
Position of flange stiff. b_{k3}/b_{k4}	199	197							
Position of flange stiff. b_{k5}/b_{k6}	291	287							
Widths of flanges b_{s1}	36								
Widths of flanges b_{s2}	40								
Longitudinal edge upstand s	10	16							
Radius of bends r_{o1}, r_{o2}	7	3,5							
Radius of bends r_{u1}, r_{u2}	2,8	3							
Radius of bends r_{l1}, r_{l2}	6,5	7							

	JID 600.160 t_N = 1.00 mm								
Thickness t_N	0,983	0,984	0,996	0,983	0,994	0,988	0,994	0,997	0,981
Depth of profile h_1	157			157,5			157,5		
Depth of profile h_2	160,5			160			161,5		
Position of web stiff. h_{a1}/h_{a2}	35	41		36,5	42		35	42,5	
Position of web stiff. h_{sa1}/h_{sa2}	32,5	31		34	31,5		33	32,5	
Position of web stiff. h_{b1}/h_{b2}	87	95		89	94		87	95	
Position of web stiff. h_{sb1}/h_{sb2}	23	21		22,5	21		22	22,5	
Depth of web stiffeners v_{sa1}/v_{sa2}	3,78	3,64		3,68	3,45		3,55	3,35	
Depth of web stiffeners v_{sb1}/v_{sb2}	3,7	4,5		3,72	4,75		3,7	4,85	
Depth of stiffeners $h_{r1}/h_{r2}/h_{r3}$	7,3	6,11	6,7	7,06	6,09	6,64	7,82	6,83	6,32
Cover width w	599			602			596		
Position of flange stiff. b_{k1}/b_{k2}	101,5	95		101,5	94		101,5	94,5	
Position of flange stiff. b_{k3}/b_{k4}	203	194,5		203,5	195,4		203	194	
Position of flange stiff. b_{k5}/b_{k6}	295,5	286		294,5	287		294,5	286	
Widths of flanges b_{s1}	35			35,5			36		
Widths of flanges b_{s2}	40,5			40			40,5		
Longitudinal edge upstand s	12,5	16		14	16		13	17	
Radius of bends r_{o1}, r_{o2}	4,5	4,5		4,5	4		4,5	4	
Radius of bends r_{u1}, r_{u2}	5	4,5		4	4		4,5	5	
Radius of bends r_{l1}, r_{l2}	-	-		-	-		4	4	

Results of the measurement of the sheet thickness of the liner tray test specimens (delivery 2)

Test	Measured t_N incl. zinc coating [mm]		
	half profile	whole profile	half profile
SSP-110-075-1242-2	0.715	0.711	0.720
SSP-110-075-1242-3	0.725	0.725	0.726
SSP-110-075-1863-2	0.714	0.718	0.719
SSP-110-075-X-1	0.720	0.721	0.721
SSP-110-100-1242-2	0.978	0.975	0.975
SSP-110-100-1863-2	0.983	0.987	0.984
SSP-110-100-X-1	0.977	0.982	0.981
SSP-110-100-X-2	0.983	0.978	0.982
SSP-160-075-1242-2	0.673	0.667	0.678
SSP-160-075-1863-2	0.732	0.730	0.742
SSP-160-100-1242-2	0.978	0.972	0.982
SSP-160-100-1863-2	0.978	0.972	0.982