

COMPFIRE

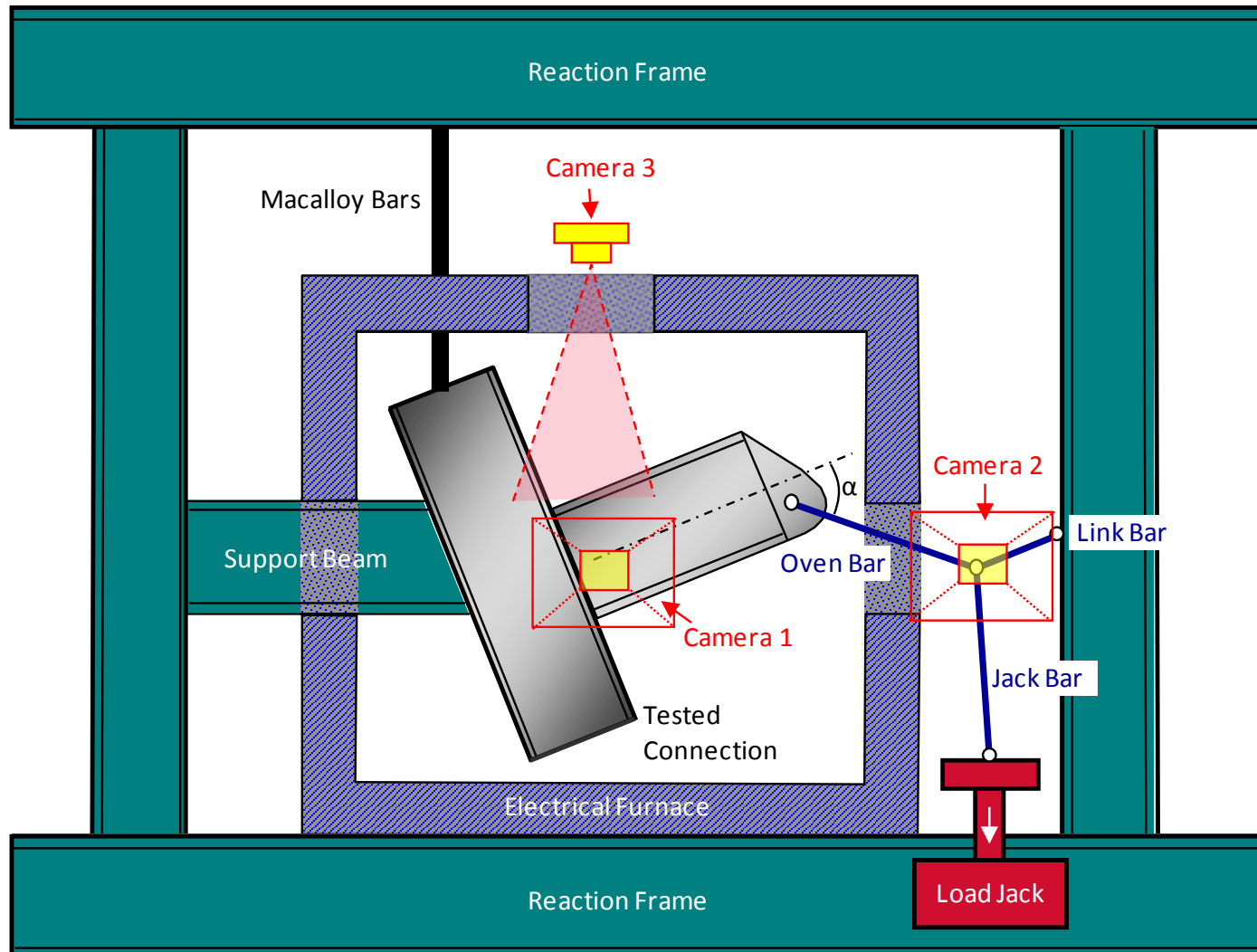
PE-UKPFC150_650_55_19-01-2011

19 January 2011 Reverse-Channel Connection to Partially-Encased H-Section Column Test Result

RFSR-CT-2009-0021

Design of joints to composite columns for improved fire robustness

[ftp://openspace.dec.uc.pt/](http://openspace.dec.uc.pt/)



COMPFIRE

PE-UKPFC150_650_55_19-01-2011

19 January 2011 Reverse-Channel Connection to Partially-Encased H-Section Column Test Result

RFSR-CT-2009-0021

Design of joints to composite columns for improved fire robustness

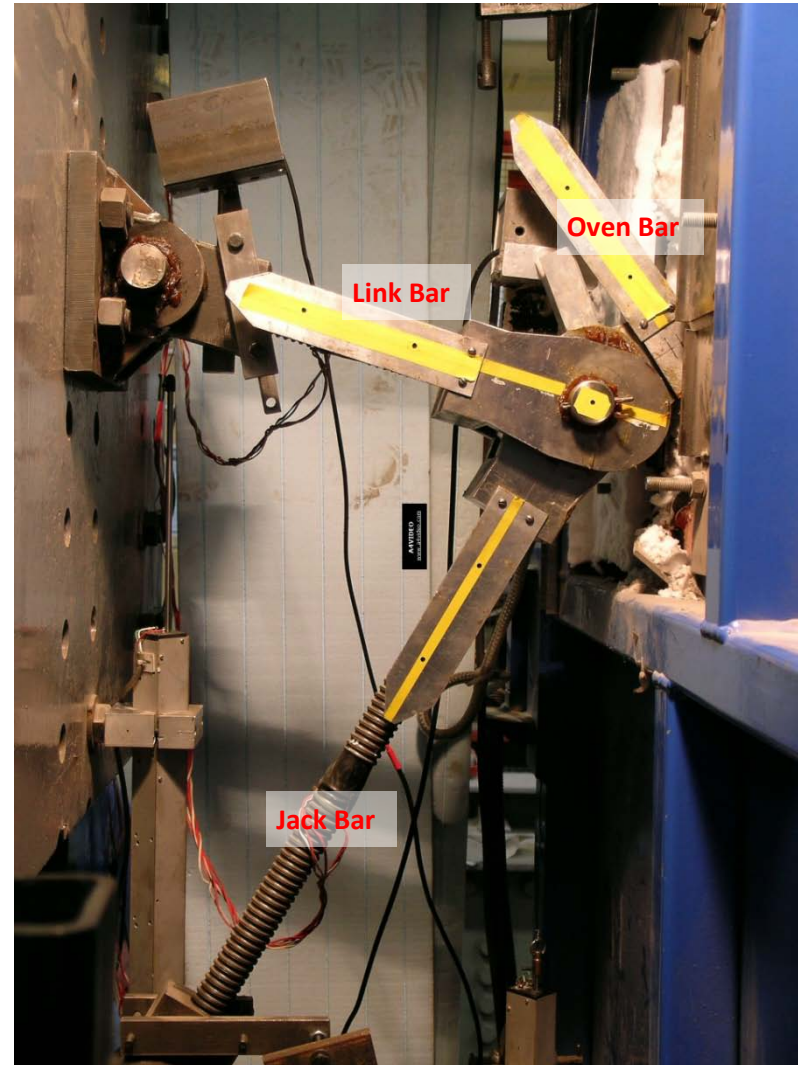
<ftp://openspace.dec.uc.pt/>



View of Camera 1



View of Camera 3

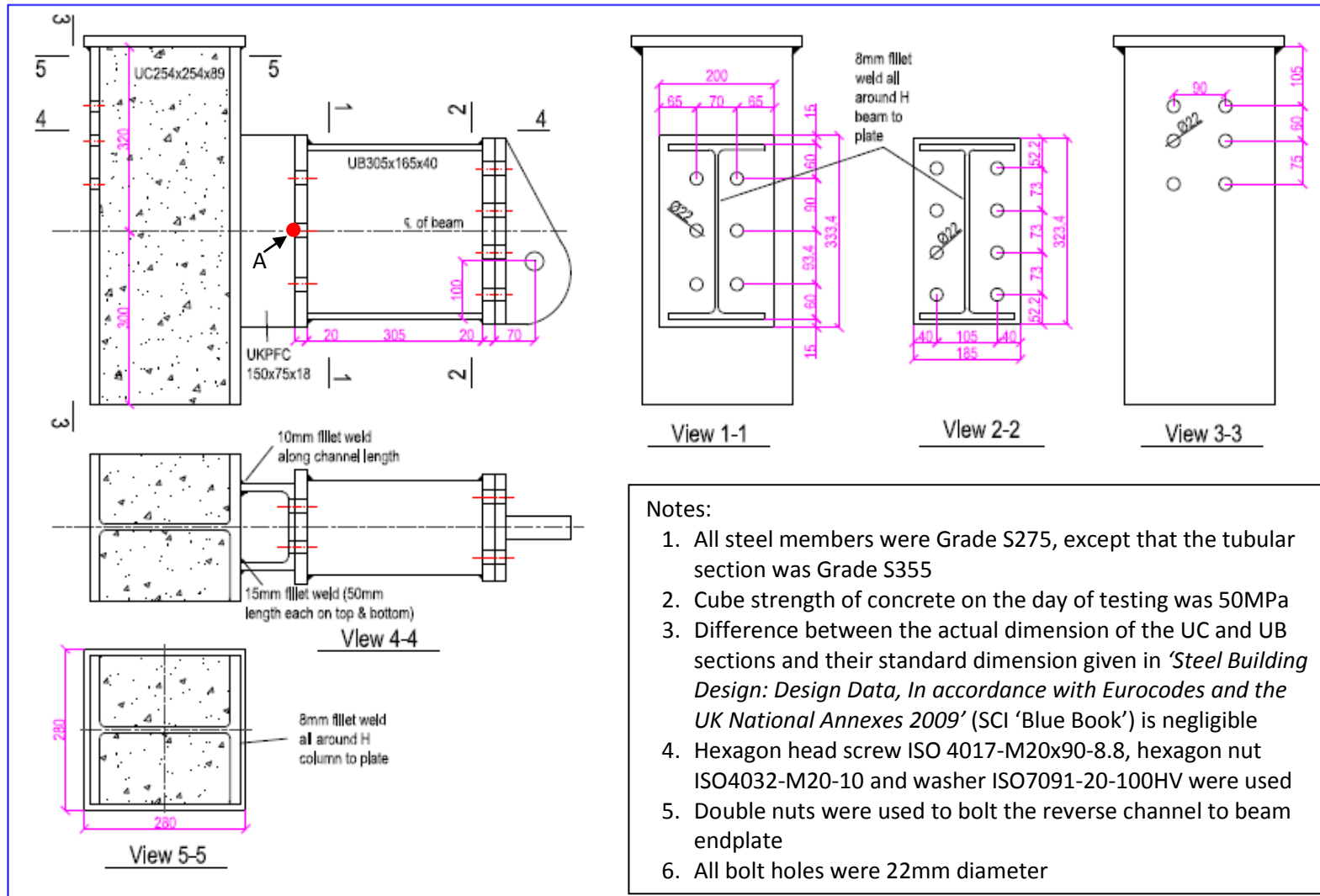


View of Camera 2

COMPFIRE

PE-UKPFC150_650_55_19-01-2011

19 January 2011 Reverse-Channel Connection to Partially-Encased H-Section Column Test Result



COMPFIRE

RFSR-CT-2009-0021

Design of joints to composite columns for improved fire robustness

<ftp://openspace.dec.uc.pt/>

PE-UKPFC150_650_55_19-01-2011

19 January 2011 Reverse-Channel Connection to Partially-Encased H-Section Column Test Result

Nominal Temperature: 650°C

Time	Temperature*	Jack Displacement	Load Angle	Beam Rotation	Column Rotation	Connection Rotation	Oven Bar Force	Tension	Shear	Moment**
(minute)	Average (°C)	(mm)	α (°)	(°)	(°)	(°)	(kN)	(kN)	(kN)	(kNm)
0	653.30	0.06	51.31	0.00	0.00	0.00	-11.96	-7.48	-9.33	-3.49
1	653.38	1.00	51.15	0.14	0.12	0.02	-5.66	-3.55	-4.41	-1.65
2	653.48	2.88	51.06	0.22	0.16	0.06	-1.66	-1.04	-1.29	-0.48
3	653.54	4.47	51.04	0.23	0.18	0.06	-1.14	-0.71	-0.88	-0.33
4	653.66	6.08	50.98	0.30	0.17	0.13	-1.10	-0.69	-0.85	-0.32
5	653.68	7.60	50.97	0.31	0.18	0.12	-1.18	-0.74	-0.91	-0.34
6	653.77	8.97	50.92	0.33	0.18	0.15	-0.72	-0.45	-0.56	-0.21
7	653.86	10.18	50.90	0.35	0.18	0.17	-0.06	-0.04	-0.05	-0.02
8	653.87	11.64	50.78	0.39	0.21	0.19	0.91	0.58	0.71	0.26
9	653.95	13.06	50.66	0.50	0.22	0.28	2.77	1.76	2.14	0.80
10	653.97	14.49	50.59	0.55	0.24	0.32	4.42	2.81	3.41	1.27
11	654.05	15.93	50.49	0.64	0.26	0.38	6.36	4.05	4.91	1.83
12	654.17	17.45	50.39	0.73	0.29	0.44	9.04	5.76	6.96	2.59
13	654.17	18.93	50.29	0.82	0.31	0.50	11.26	7.19	8.66	3.22
14	654.31	20.27	50.21	0.90	0.32	0.57	12.39	7.93	9.52	3.54
15	654.38	21.58	50.13	0.96	0.33	0.64	13.67	8.77	10.50	3.90
16	654.37	22.99	50.06	1.04	0.35	0.68	14.87	9.55	11.40	4.24
17	654.42	24.47	49.96	1.13	0.37	0.77	16.05	10.32	12.29	4.56
18	654.46	26.02	49.87	1.22	0.38	0.84	16.89	10.89	12.92	4.80
19	654.59	27.45	49.76	1.32	0.39	0.93	17.91	11.57	13.67	5.07
20	654.61	29.01	49.62	1.45	0.41	1.04	18.98	12.29	14.46	5.36
21	654.68	30.59	49.47	1.57	0.42	1.16	19.92	12.94	15.14	5.61



COMPFIRE

PE-UKPFC150_650_55_19-01-2011

19 January 2011 Reverse-Channel Connection to Partially-Encased H-Section Column Test Result

22	654.76	31.95	49.37	1.68	0.44	1.24	21.07	13.72	15.99	5.93
23	654.84	33.55	49.21	1.83	0.43	1.41	21.98	14.36	16.64	6.16
24	654.92	35.23	49.07	1.96	0.45	1.52	22.77	14.92	17.20	6.37
25	654.92	36.79	48.93	2.09	0.45	1.64	23.53	15.46	17.74	6.56
26	655.02	38.42	48.78	2.23	0.46	1.77	24.13	15.90	18.15	6.71
27	655.13	40.03	48.64	2.37	0.46	1.91	24.48	16.18	18.37	6.79
28	655.20	41.63	48.50	2.50	0.48	2.03	25.08	16.62	18.78	6.93
29	655.29	43.22	48.35	2.65	0.49	2.15	25.95	17.25	19.39	7.16
30	655.34	44.78	48.20	2.78	0.50	2.28	26.33	17.55	19.63	7.24
31	655.38	46.44	48.07	2.91	0.50	2.41	26.74	17.87	19.89	7.33
32	655.51	47.98	47.90	3.06	0.51	2.55	27.43	18.39	20.35	7.50
33	655.55	49.50	47.76	3.19	0.53	2.67	28.08	18.88	20.79	7.65
34	655.62	51.15	47.61	3.34	0.54	2.80	28.61	19.29	21.13	7.77
35	655.67	52.82	47.45	3.48	0.55	2.93	29.09	19.67	21.43	7.88
36	655.71	54.38	47.27	3.65	0.54	3.11	29.59	20.08	21.73	7.98
37	655.74	56.02	47.13	3.79	0.57	3.21	30.06	20.45	22.03	8.09
38	655.79	57.47	46.97	3.95	0.58	3.37	30.53	20.84	22.32	8.19
39	655.86	58.90	46.81	4.09	0.59	3.49	30.87	21.12	22.50	8.25
40	655.92	60.50	46.66	4.24	0.60	3.64	31.57	21.67	22.96	8.41
41	655.99	62.08	46.50	4.39	0.62	3.77	31.87	21.94	23.12	8.46
42	656.02	63.47	46.32	4.55	0.62	3.93	32.44	22.40	23.46	8.58
43	656.03	65.05	46.18	4.70	0.64	4.06	32.59	22.57	23.51	8.59
44	656.14	66.49	46.00	4.87	0.65	4.22	33.01	22.93	23.74	8.67
45	656.20	68.19	45.83	5.03	0.66	4.36	33.45	23.30	23.99	8.75
46	656.24	69.66	45.69	5.17	0.66	4.51	33.86	23.65	24.23	8.83
47	656.32	71.37	45.49	5.36	0.68	4.67	33.94	23.79	24.20	8.82
48	656.37	72.88	45.33	5.50	0.70	4.80	34.33	24.13	24.41	8.88

COMPFIRE

PE-UKPFC150_650_55_19-01-2011

19 January 2011 Reverse-Channel Connection to Partially-Encased H-Section Column Test Result

49	656.45	74.56	45.17	5.66	0.71	4.96	34.62	24.41	24.55	8.93
50	656.49	76.18	45.00	5.83	0.72	5.11	35.10	24.82	24.82	9.02
51	656.51	77.71	44.84	5.99	0.73	5.25	35.43	25.12	24.98	9.07
52	656.56	79.19	44.67	6.15	0.74	5.42	35.74	25.42	25.13	9.11
53	656.64	80.88	44.49	6.33	0.75	5.58	36.07	25.73	25.28	9.16
54	656.73	82.34	44.31	6.51	0.77	5.73	36.29	25.97	25.35	9.18
55	656.74	83.88	44.13	6.68	0.78	5.90	36.59	26.26	25.47	9.21
56	656.77	85.34	43.95	6.86	0.80	6.06	36.96	26.61	25.65	9.27
57	656.85	86.95	43.77	7.03	0.80	6.23	37.10	26.79	25.66	9.27
58	656.89	88.40	43.60	7.20	0.82	6.38	37.46	27.13	25.83	9.32
59	656.91	89.85	43.42	7.37	0.84	6.53	37.76	27.43	25.96	9.35
60	657.01	91.37	43.21	7.55	0.86	6.70	37.38	27.24	25.59	9.21
61	657.03	92.92	43.05	7.73	0.85	6.88	37.51	27.41	25.60	9.21
62	657.14	94.48	42.88	7.91	0.87	7.04	37.57	27.53	25.57	9.19
63	657.16	96.07	42.69	8.10	0.88	7.22	37.64	27.67	25.52	9.16
64	657.17	97.44	42.52	8.28	0.89	7.39	37.37	27.54	25.26	9.06
65	657.23	99.14	42.33	8.47	0.89	7.58	37.29	27.56	25.11	9.00
66	657.24	100.81	42.16	8.65	0.89	7.76	37.19	27.57	24.96	8.93
67	657.36	102.35	41.96	8.86	0.90	7.95	36.76	27.33	24.58	8.79
68	657.38	103.88	41.77	9.05	0.90	8.15	36.46	27.19	24.29	8.67
69	657.39	105.45	41.60	9.24	0.91	8.33	36.14	27.03	24.00	8.56
70	657.49	107.05	41.40	9.43	0.91	8.52	35.52	26.65	23.49	8.37
71	657.48	108.68	41.21	9.63	0.91	8.72	35.05	26.37	23.09	8.22
72	657.60	110.25	41.00	9.83	0.91	8.92	33.92	25.60	22.25	7.91
73	657.66	111.94	40.80	10.03	0.91	9.12	33.85	25.63	22.12	7.86
74	657.72	113.54	40.60	10.23	0.89	9.34	32.97	25.03	21.46	7.61
75	657.83	115.14	40.37	10.46	0.89	9.58	31.26	23.81	20.25	7.17

COMPFIRE

RFSR-CT-2009-0021

Design of joints to composite columns for improved fire robustness

<ftp://openspace.dec.uc.pt/>

PE-UKPFC150_650_55_19-01-2011

19 January 2011 Reverse-Channel Connection to Partially-Encased H-Section Column Test Result

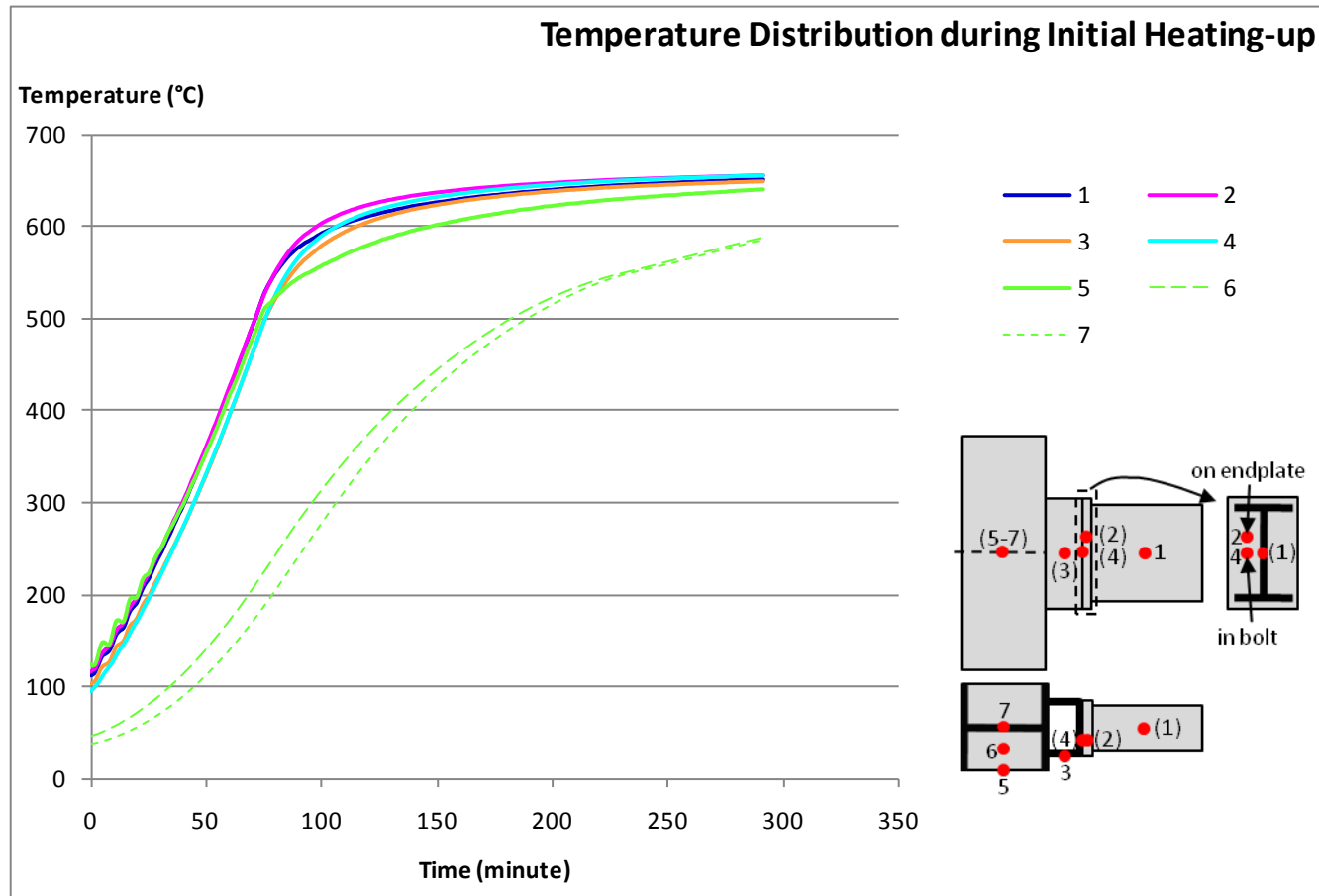
76	657.78	116.95	40.15	10.70	0.88	9.82	28.00	21.40	18.05	6.39
77	657.87	118.54	39.90	10.95	0.87	10.08	25.45	19.52	16.33	5.77
78	657.91	120.09	39.69	11.17	0.86	10.31	23.70	18.24	15.13	5.34
79	657.92	121.68	39.46	11.38	0.85	10.54	22.78	17.59	14.48	5.10

* Average temperature of the beam web, endplate, reverse channel and bolt

** Moment about Point A on the specimen drawing

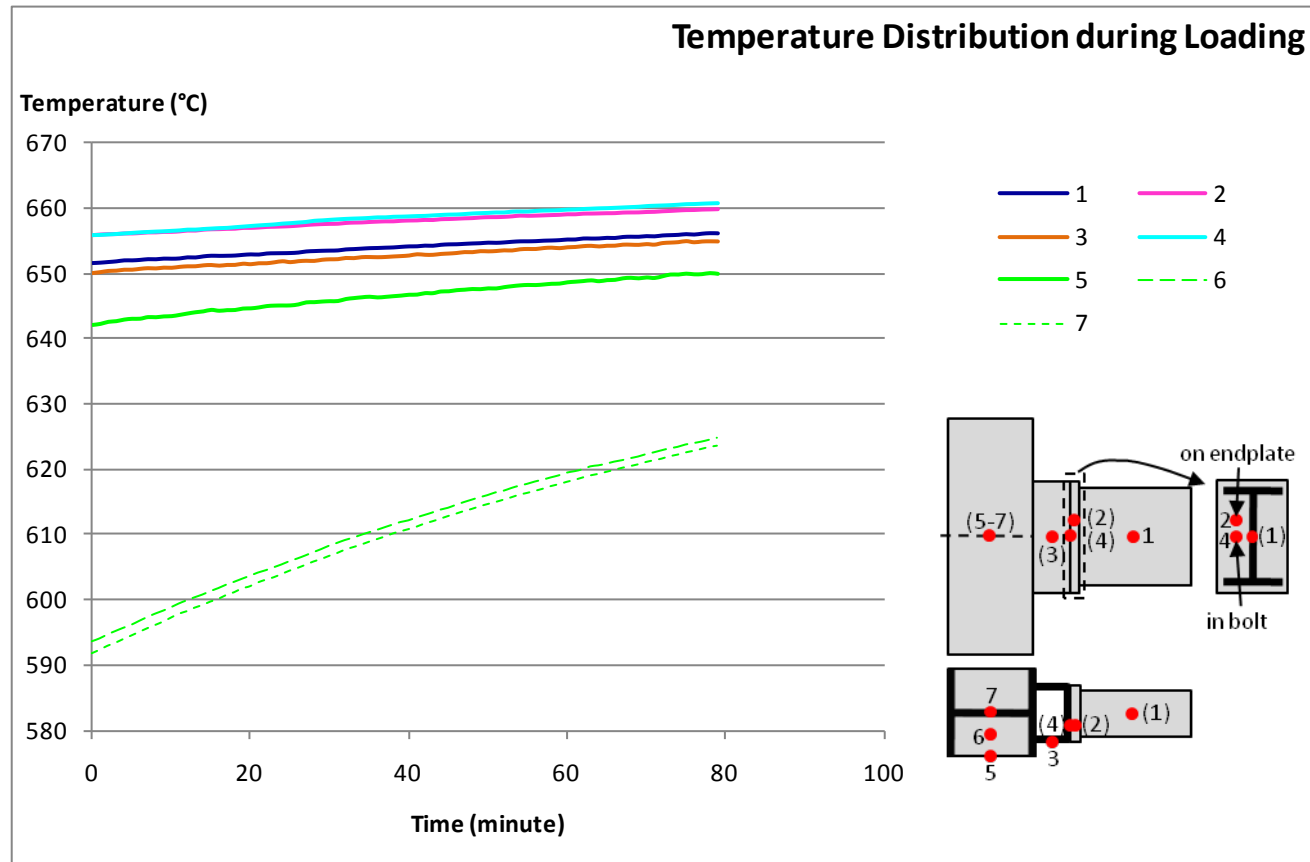
PE-UKPFC150_650_55_19-01-2011

19 January 2011 Reverse-Channel Connection to Partially-Encased H-Section Column Test Result



PE-UKPFC150_650_55_19-01-2011

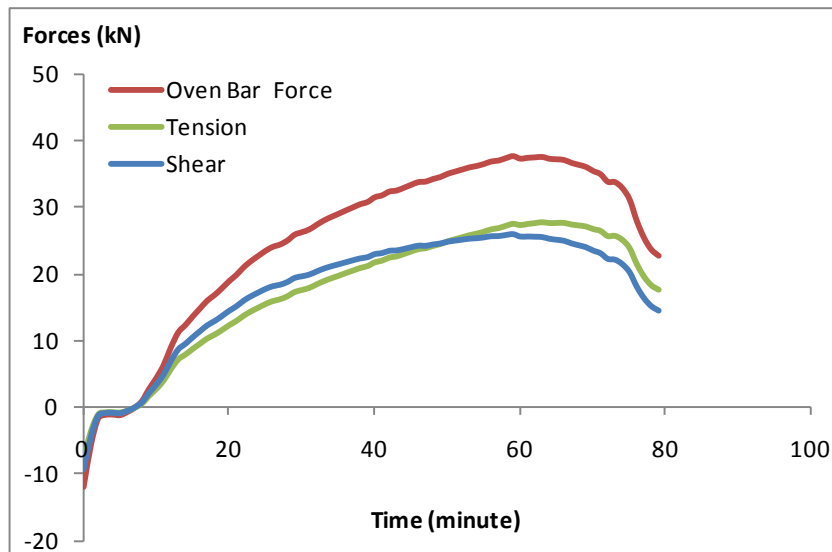
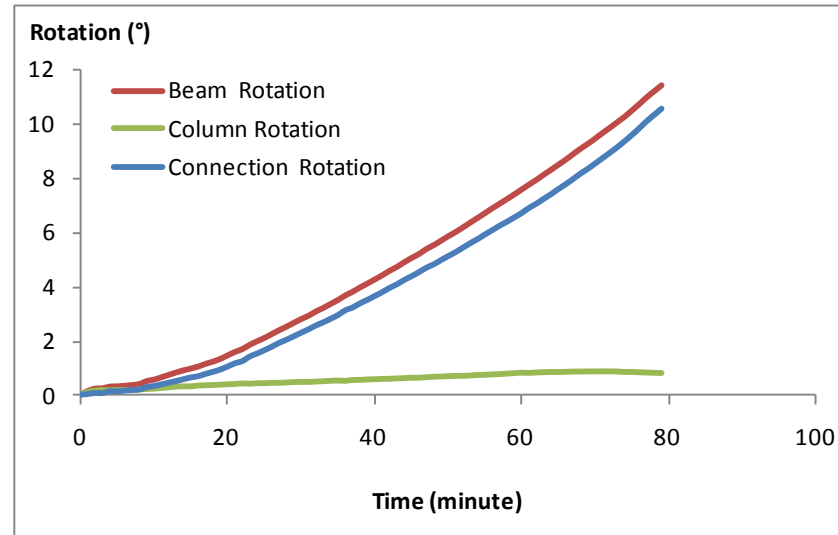
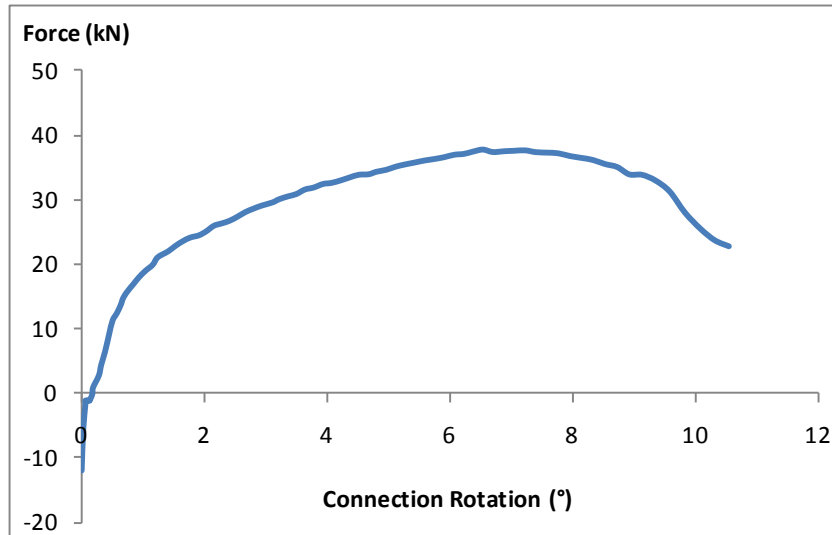
19 January 2011 Reverse-Channel Connection to Partially-Encased H-Section Column Test Result



COMPFIRE

PE-UKPFC150_650_55_19-01-2011

19 January 2011 Reverse-Channel Connection to Partially-Encased H-Section Column Test Result



COMPFIRE

PE-UKPFC150_650_55_19-01-2011

19 January 2011 Reverse-Channel Connection to Partially-Encased H-Section Column Test Result

RFSR-CT-2009-0021

Design of joints to composite columns for improved fire robustness

<ftp://openspace.dec.uc.pt/>

Photographs after Test



COMPFIRE

PE-UKPFC150_650_55_19-01-2011

19 January 2011 Reverse-Channel Connection to Partially-Encased H-Section Column Test Result

