

PRILOGA D: REZULTATI POŽARNE ANALIZE (program MACS+)

MACS+ - Membrane Action Of Composite Structures In
Case Of Fire


ArcelorMittal

REPORT

1. Project properties

Project name:	Projektno območje A	Prepared by:	Žiga Plevel
Client name:	/	Company name:	/
Client company:	/	Date:	13 September 2016, 19:27
Job number:	/	Checked by:	
Comments:			

2. General arrangement

- Spans
Span 1: 8 m
Span 2: 10 m
- Unprotected beams
Number of internal unprotected beams: 2

3. Deck details

- Deck properties
HI Bond 55/750 Type: Trapezoidal
Deck: Top flange: 61.5 mm
Depth: 55 mm Bottom flange: 61.5 mm
Pitch: 150 mm
Stiffener height: 0 mm

4. Slab details

- Concrete
Concrete type: Normal Slab depth: 120 mm
Cylinder compressive strength of concrete (f_{ck}): 25 N/mm²

- Mesh
Mesh type: User defined
Longitudinal mesh area: 257 mm²/m Bar size: 7 mm
Transverse mesh area: 257 mm²/m Bar size: 7 mm
Average mesh axis distance: 40 mm Mesh yield stress: 500 N/mm²

5. Beams details

- Unprotected beams
Beam type: Solid beam
Section family: European sections Steel grade: S235
Degree of shear connection: 40 %

Section size: IPE 400
Details: h = 400 mm, b = 180 mm, t_w = 8.6 mm, t_f = 13.5 mm
- Side A perimeter beam
Beam type: Solid beam
Section family: European sections Steel grade: S235

- Section size: IPE 400
Details: h = 400 mm, b = 180 mm, t_w = 8.6 mm, t_f = 13.5 mm
Beam location: Edge beam Construction type: Non composite
- Side B perimeter beam
Beam type: Solid beam
Section family: European sections Steel grade: S275
Section size: IPE 550
Details: h = 550 mm, b = 210 mm, t_w = 11.1 mm, t_f = 17.2 mm
Beam location: Internal beam Construction type: Composite
Degree of shear connection: 50 %
- Side C perimeter beam
Beam type: Solid beam
Section family: European sections Steel grade: S235
Section size: IPE 400
Details: h = 400 mm, b = 180 mm, t_w = 8.6 mm, t_f = 13.5 mm
Beam location: Internal beam Construction type: Composite
Degree of shear connection: 40 %
- Side D perimeter beam
Beam type: Solid beam
Section family: European sections Steel grade: S275
Section size: IPE 550
Details: h = 550 mm, b = 210 mm, t_w = 11.1 mm, t_f = 17.2 mm
Beam location: Edge beam Construction type: Non composite

6. Loading details

- Normal (Cold)
Leading variable action: 3.5 kN/m²
Accompanying variable action: 0 kN/m²
Dead load including beam, excluding slab: 1.42 kN/m²
Calculated slab weight including mesh: 2.22 kN/m²
- Fire (Hot)
Combination factor for permanent action: 1.0
Combination factor for leading variable action: 0.5
Combination factor for other variable action: 0.3

7. Fire & Analysis

- Standard temperature-time curve
Fire resistance period: 60 min

8. Summary output

- Default mesh direction
Maximum unity factor: 0.81 **Floor slab adequate**
Factored load in fire: 5.39 kN/m²
Fire curve: Standard temperature-time curve

9. Default mesh direction

• Tabular results

Longitudinal mesh area: 257 mm²/m Bar size: 7 mm

Transverse mesh area: 257 mm²/m Bar size: 7 mm

Factored load in fire: 5.39 kN/m²

Time	Beam	Mesh	Slab top	Slab bottom	Beam capacity	Maximum allowable deflection	Slab yield	Enhancement	Slab capacity	Total capacity	Unity factor
mins	°C	°C	°C	°C	kN/m²	mm	kN/m²		kN/m²	kN/m²	
0	20	20	20	20	18.82	211	1.45	2.23	3.23	22.06	0.24
5	158	39	20	152	18.82	268	1.45	2.57	3.73	22.55	0.24
10	378	76	24	350	18.80	352	1.45	3.08	4.47	23.27	0.23
15	578	101	32	495	11.81	411	1.45	3.43	4.99	16.79	0.32
20	708	154	44	597	4.94	450	1.45	3.67	5.33	10.26	0.53
25	779	198	60	668	3.04	474	1.45	3.81	5.54	8.57	0.63
30	821	228	72	721	2.25	492	1.45	3.92	5.69	7.94	0.68
35	850	265	85	762	1.92	504	1.45	3.99	5.80	7.72	0.70
40	873	298	93	796	1.66	515	1.45	4.06	5.90	7.56	0.71
45	893	328	109	824	1.44	520	1.43	4.09	5.84	7.28	0.74
50	910	357	125	848	1.31	524	1.41	4.11	5.77	7.09	0.76
55	925	384	145	869	1.25	524	1.38	4.11	5.68	6.93	0.78
60	939	410	170	887	1.18	522	1.34	4.08	5.45	6.63	0.81

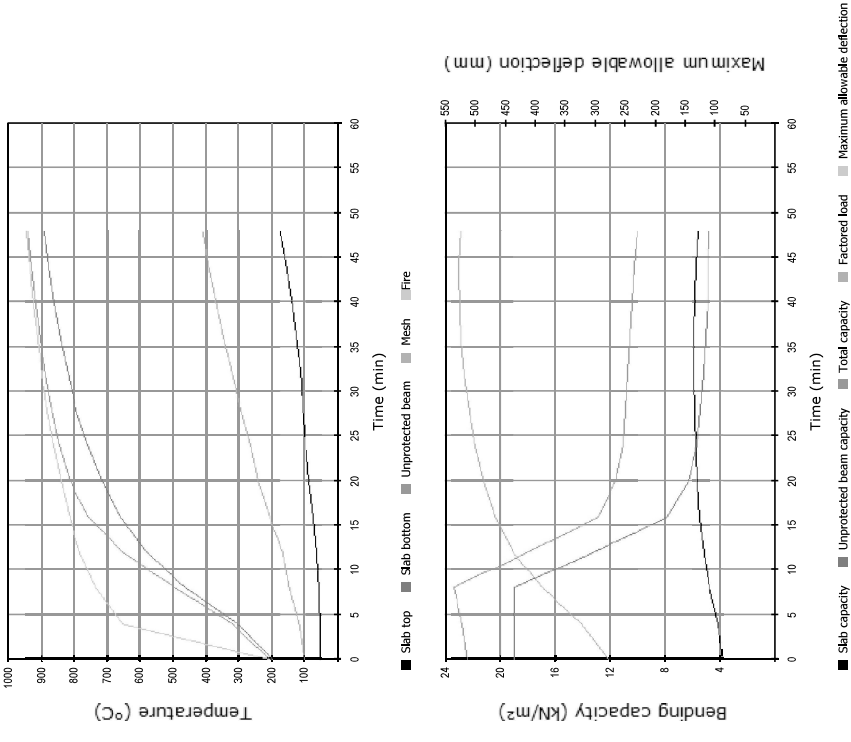
Maximum unity factor: 0.81 **Floor slab adequate**

• Perimeter beam check

Side A	Beam type:	Solid beam	Non composite	Edge beam
	Section size:	IPE 400		
	Required moment resistance in fire situation:	230.84 kNm		
	Line load in fire situation:	28.85 kN/m		
	Degree of utilization:	0.79		
	Critical temperature:	494 °C		
Side B	Beam type:	Solid beam	Composite	Internal beam
	Section size:	IPE 550		
	Required moment resistance in fire situation:	339.67 kNm		
	Line load in fire situation:	33.97 kN/m		
	Shear connection:	50 %		
	Degree of utilization:	0.34		
	Critical temperature:	693 °C		
Side C	Beam type:	Solid beam	Composite	Internal beam
	Section size:	IPE 400		
	Required moment resistance in fire situation:	230.84 kNm		
	Line load in fire situation:	28.85 kN/m		
	Shear connection:	40 %		
	Degree of utilization:	0.51		

Side D	Critical temperature:	633 °C	Non composite	Edge beam
	Beam type:	Solid beam		
	Section size:	IPE 550		
	Required moment resistance in fire situation:	339.67 kNm		
	Line load in fire situation:	33.97 kN/m		
	Degree of utilization:	0.54		
	Critical temperature:	603 °C		

10. Graphical output



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Case Of Fire


ArcelorMittal

REPORT

1. Project properties

Project name:	Projektno območje B	Prepared by:	Žiga Plevel
Client name:	/	Company name:	/
Client company:	/	Date:	13 September 2016, 19:28
Job number:	/	Checked by:	
Comments:			

2. General arrangement

- Spans
Span 1: 8 m
Span 2: 10 m
- Unprotected beams
Number of internal unprotected beams: 2

3. Deck details

- Deck properties
Deck: HL Bond 55/750 Type: Trapezoidal
Depth: 55 mm Top flange: 61.5 mm
Pitch: 150 mm Bottom flange: 61.5 mm
Stiffener height: 0 mm

4. Slab details

- Concrete
Concrete type: Normal Slab depth: 120 mm
Cylinder compressive strength of concrete (f_{ck}): 25 N/mm²

- Mesh
Mesh type: User defined
Longitudinal mesh area: 257 mm²/m Bar size: 7 mm
Transverse mesh area: 257 mm²/m Bar size: 7 mm
Average mesh axis distance: 40 mm Mesh yield stress: 500 N/mm²

5. Beams details

- Unprotected beams
Beam type: Solid beam
Section family: European sections Steel grade: S235
Degree of shear connection: 40 %

Section size: IPE 400
Details: h = 400 mm, b = 180 mm, t_w = 8.6 mm, t_f = 13.5 mm
- Side A perimeter beam
Beam type: Solid beam
Section family: European sections Steel grade: S235

- Section size: IPE 400
Details: h = 400 mm, b = 180 mm, t_w = 8.6 mm, t_f = 13.5 mm
Beam location: Internal beam Construction type: Composite
Degree of shear connection: 40 %
- Side B perimeter beam
Beam type: Solid beam
Section family: European sections Steel grade: S275
Section size: IPE 550
Details: h = 550 mm, b = 210 mm, t_w = 11.1 mm, t_f = 17.2 mm
Beam location: Edge beam Construction type: Non composite
- Side C perimeter beam
Beam type: Solid beam
Section family: European sections Steel grade: S235
Section size: IPE 400
Details: h = 400 mm, b = 180 mm, t_w = 8.6 mm, t_f = 13.5 mm
Beam location: Internal beam Construction type: Composite
Degree of shear connection: 40 %
- Side D perimeter beam
Beam type: Solid beam
Section family: European sections Steel grade: S275
Section size: IPE 550
Details: h = 550 mm, b = 210 mm, t_w = 11.1 mm, t_f = 17.2 mm
Beam location: Internal beam Construction type: Composite
Degree of shear connection: 50 %

6. Loading details

- Normal (Cold)
Leading variable action: 3.5 kN/m²
Accompanying variable action: 0 kN/m²
Dead load including beam, excluding slab: 1.42 kN/m²
Calculated slab weight including mesh: 2.22 kN/m²
- Fire (Hot)
Combination factor for permanent action: 1.0
Combination factor for leading variable action: 0.5
Combination factor for other variable action: 0.3

7. Fire & Analysis

- Standard temperature-time curve
Fire resistance period: 60 min

8. Summary output

- Default mesh direction
Maximum unity factor: 0.81 **Floor slab adequate**
Factored load in fire: 5.39 kN/m²

Fire curve: Standard temperature-time curve

9. Default mesh direction

- Tabular results

Longitudinal mesh area: 257 mm²/m Bar size: 7 mm

Transverse mesh area: 257 mm²/m Bar size: 7 mm

Factored load in fire: 5.39 kN/m^2

Time	Beam	Mesh	Slab top	Slab bottom	Beam capacity	Maximum allowable deflection	Slab yield	Enhancement	Slab capacity	Total capacity	Unity factor
mins	°C	°C	°C	°C	kN/m ²	mm	kN/m ²		kN/m ²	kN/m ²	
0	20	20	20	20	18.82	211	1.45	2.23	3.23	22.06	0.24
5	158	39	20	152	18.82	268	1.45	2.57	3.73	22.55	0.24
10	378	76	24	350	18.80	352	1.45	3.08	4.47	23.27	0.23
15	578	101	32	495	11.81	411	1.45	3.43	4.99	16.79	0.32
20	708	154	44	597	4.94	450	1.45	3.67	5.33	10.26	0.53
25	779	198	60	668	3.04	474	1.45	3.81	5.54	8.57	0.63
30	821	228	72	721	2.25	492	1.45	3.92	5.69	7.94	0.68
35	850	265	85	762	1.92	504	1.45	3.99	5.80	7.72	0.70
40	873	298	93	796	1.66	515	1.45	4.06	5.90	7.56	0.71
45	893	328	109	824	1.44	520	1.43	4.09	5.84	7.28	0.74
50	910	357	125	848	1.31	524	1.41	4.11	5.77	7.09	0.76
55	925	384	145	869	1.25	524	1.38	4.11	5.68	6.93	0.78
60	939	410	170	887	1.18	522	1.34	4.08	5.45	6.63	0.81

Maximum unity factor: 0.81 **Floor slab adequate**

- Perimeter beam check

Side A	Beam type:	Solid beam	Composite	Internal beam
Summer beam check				

Section size:

Required mo

Line load in fire situation: 29.22 kN/m

Shear connection: 40 %

Degree of utilization: shear connection.

Critical temperature:

Side B Beam type. Critical temperature.

Beam type: Section size:

Required mo

Line load in fire situation	33.97 kN/m
required moment resistance in fire situation	522.67 kNm

55.27 KIN/IN

Degree of utilization:

Critical temperature:

Side C	Beam type	Critical temperature
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13
14	14	14
15	15	15
16	16	16
17	17	17
18	18	18
19	19	19
20	20	20
21	21	21
22	22	22
23	23	23
24	24	24
25	25	25
26	26	26
27	27	27
28	28	28
29	29	29
30	30	30
31	31	31
32	32	32
33	33	33
34	34	34
35	35	35
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37	37	37
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39	39	39
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41	41	41
42	42	42
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46	46	46
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52	52	52
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59	59	59
60	60	60
61	61	61
62	62	62
63	63	63
64	64	64
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67	67	67
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83	83	83
84	84	84
85	85	85
86	86	86
87	87	87
88	88	88
89	89	89
90	90	90
91	91	91
92	92	92
93	93	93
94	94	94
95	95	95
96	96	96
97	97	97
98	98	98
99	99	99
100	100	100

Beam type: Section size:

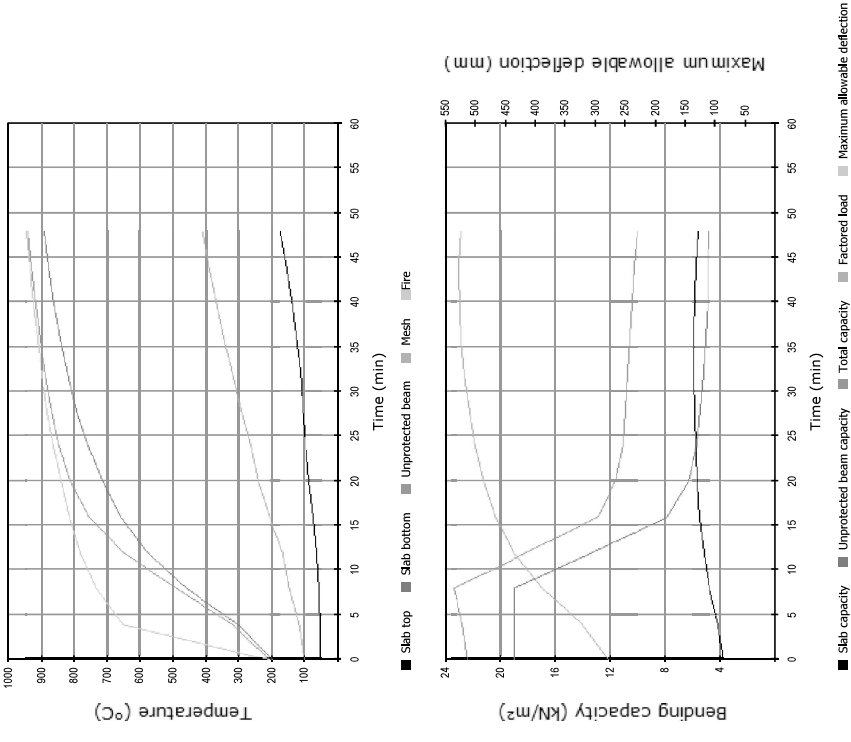
Required mo-

required moment resistance in the situation: 235.75 kNm
Line load in fire situation: 29.22 kN/m

Line load in the situation.

Side D	Composite	Internal beam
Shear connection:	40 %	
Degree of utilization:	0.51	
Critical temperature:	631 °C	
Beam type:	Solid beam	
Section size:	IPE 550	
Required moment resistance in fire situation:	339.67 kNm	
Line load in fire situation:	33.97 kN/m	
Shear connection:	50 %	
Degree of utilization:	0.34	
Critical temperature:	693 °C	

10. Graphical output



MACS+ - Membrane Action Of Composite Structures In
Case Of Fire

REPORT


ArcelorMittal

1. Project properties

Project name:	Projektno območje C	Prepared by:	Žiga Plevel
Client name:	/	Company name:	/
Client company:	/	Date:	13 September 2016, 19:29
Job number:	/	Checked by:	
Comments:			

2. General arrangement

- Spans
Span 1: 9 m
Span 2: 10 m
- Unprotected beams
Number of internal unprotected beams: 2

3. Deck details

- Deck properties
Deck: HL Bond 55/750 Type: Trapezoidal
Depth: 55 mm Top flange: 61.5 mm
Pitch: 150 mm Bottom flange: 61.5 mm
Stiffener height: 0 mm

4. Slab details

- Concrete
Concrete type: Normal Slab depth: 120 mm
Cylinder compressive strength of concrete (f_{ck}): 25 N/mm²

- Mesh
Mesh type: User defined
Longitudinal mesh area: 257 mm²/m Bar size: 7 mm
Transverse mesh area: 257 mm²/m Bar size: 7 mm
Average mesh axis distance: 40 mm Mesh yield stress: 500 N/mm²

5. Beams details

- Unprotected beams
Beam type: Solid beam
Section family: European sections Steel grade: S235
Degree of shear connection: 40 %

Section size: IPE 400
Details: h = 400 mm, b = 180 mm, t_w = 8.6 mm, t_f = 13.5 mm

• Side A perimeter beam
Beam type: Solid beam
Section family: European sections Steel grade: S235

- Section size: IPE 400
Details: h = 400 mm, b = 180 mm, t_w = 8.6 mm, t_f = 13.5 mm
Beam location: Internal beam Construction type: Composite
Degree of shear connection: 40 %

• Side B perimeter beam
Beam type: Solid beam
Section family: European sections Steel grade: S275
Section size: IPE 550
Details: h = 550 mm, b = 210 mm, t_w = 11.1 mm, t_f = 17.2 mm
Beam location: Internal beam Construction type: Composite
Degree of shear connection: 50 %

• Side C perimeter beam
Beam type: Solid beam
Section family: European sections Steel grade: S235
Section size: IPE 450
Details: h = 450 mm, b = 190 mm, t_w = 9.4 mm, t_f = 14.6 mm
Beam location: Edge beam Construction type: Non composite

• Side D perimeter beam
Beam type: Solid beam
Section family: European sections Steel grade: S275
Section size: IPE 550
Details: h = 550 mm, b = 210 mm, t_w = 11.1 mm, t_f = 17.2 mm
Beam location: Internal beam Construction type: Composite
Degree of shear connection: 50 %

6. Loading details

- Normal (Cold)
Leading variable action: 3.5 kN/m²
Accompanying variable action: 0 kN/m²
Dead load including beam, excluding slab: 1.42 kN/m²
Calculated slab weight including mesh: 2.22 kN/m²

• Fire (Hot)
Combination factor for permanent action: 1.0
Combination factor for leading variable action: 0.5
Combination factor for other variable action: 0.3

7. Fire & Analysis

- Standard temperature-time curve
Fire resistance period: 60 min

8. Summary output

- Default mesh direction
Maximum unity factor: 0.82 **Floor slab adequate**
Factored load in fire: 5.39 kN/m²

Fire curve: Standard temperature-time curve

9. Default mesh direction

• Tabular results

Longitudinal mesh area: 257 mm²/m Bar size: 7 mm
Transverse mesh area: 257 mm²/m Bar size: 7 mm
Factored load in fire: 5.39 kN/m²

Time	Beam	Mesh	Slab top	Slab bottom	Beam capacity	Maximum allowable deflection	Slab yield	Enhance-ment	Slab capacity	Total capacity	Unity factor
mins	°C	°C	°C	°C	kN/m²	mm	kN/m²		kN/m²	kN/m²	
0	20	20	20	20	14.93	211	1.27	2.31	2.94	17.87	0.30
5	158	39	20	152	14.93	283	1.27	2.78	3.54	18.46	0.29
10	378	76	24	350	14.91	389	1.27	3.47	4.41	19.32	0.28
15	578	101	32	495	9.37	465	1.27	3.95	5.03	14.40	0.37
20	708	154	44	597	3.91	514	1.27	4.27	5.43	9.34	0.58
25	779	198	60	668	2.40	544	1.27	4.47	5.68	8.09	0.67
30	821	228	72	721	1.78	567	1.27	4.61	5.87	7.65	0.70
35	850	265	85	762	1.52	582	1.27	4.71	5.99	7.51	0.72
40	873	298	93	796	1.31	596	1.27	4.80	6.11	7.43	0.73
45	893	328	109	824	1.14	602	1.25	4.84	6.06	7.20	0.75
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55	925	384	145	869	0.98	608	1.21	4.86	5.90	6.88	0.78
60	939	410	170	887	0.94	604	1.17	4.83	5.66	6.59	0.82

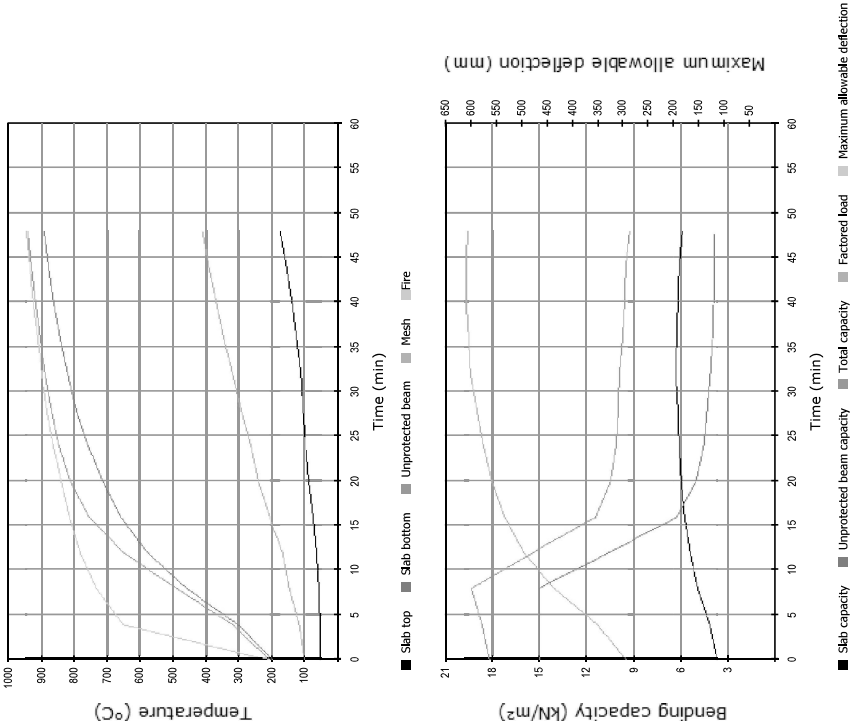
Maximum unity factor: 0.82 Floor slab adequate

• Perimeter beam check

Side A	Beam type:	Solid beam	Composite	Internal beam
	Section size:	IPE 400		
	Required moment resistance in fire situation:	309 kNm		
	Line load in fire situation:	30.52 kN/m		
	Shear connection:	40 %		
	Degree of utilization:	0.68		
	Critical temperature:	581 °C		
Side B	Beam type:	Solid beam	Composite	Internal beam
	Section size:	IPE 550		
	Required moment resistance in fire situation:	385.31 kNm		
	Line load in fire situation:	34.25 kN/m		
	Shear connection:	50 %		
	Degree of utilization:	0.39		
	Critical temperature:	679 °C		
Side C	Beam type:	Solid beam	Non composite	Edge beam
	Section size:	IPE 450		
	Required moment resistance in fire situation:	309 kNm		

Line load in fire situation:	30.52 kN/m		
Degree of utilization:	0.81		
Critical temperature:	488 °C		
Beam type:	Solid beam	Composite	Internal beam
Section size:	IPE 550		
Required moment resistance in fire situation:	385.31 kNm		
Line load in fire situation:	34.25 kN/m		
Shear connection:	50 %		
Degree of utilization:	0.39		
Critical temperature:	679 °C		

10. Graphical output



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Case Of Fire


ArcelorMittal

REPORT

1. Project properties

Project name:	Projektno območje D	Prepared by:	Žiga Plevel
Client name:	/	Company name:	/
Client company:	/	Date:	13 September 2016, 19:29
Job number:	/	Checked by:	
Comments:			

2. General arrangement

- Spans
Span 1: 9 m
Span 2: 10 m
- Unprotected beams
Number of internal unprotected beams: 2

3. Deck details

- Deck properties
Deck: HI Bond 55/750 Type: Trapezoidal
Depth: 55 mm Top flange: 61.5 mm
Pitch: 150 mm Bottom flange: 61.5 mm
Stiffener height: 0 mm

4. Slab details

- Concrete
Concrete type: Normal Slab depth: 120 mm
Cylinder compressive strength of concrete (f_{ck}): 25 N/mm²

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Mesh type: User defined
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Average mesh axis distance: 40 mm Mesh yield stress: 500 N/mm²

5. Beams details

- Unprotected beams
Beam type: Solid beam
Section family: European sections
Steel grade: S235
Degree of shear connection: 40 %
- Section size: IPE 400
Details: h = 400 mm, b = 180 mm, t_w = 8.6 mm, t_f = 13.5 mm
- Side A perimeter beam
Beam type: Solid beam
Section family: European sections
Steel grade: S235

- Section size: IPE 400
Details: h = 400 mm, b = 180 mm, t_w = 8.6 mm, t_f = 13.5 mm
Beam location: Internal beam
Construction type: Composite
Degree of shear connection: 40 %
- Side B perimeter beam
Beam type: Solid beam
Section family: European sections
Section size: IPE 550
Details: h = 550 mm, b = 210 mm, t_w = 11.1 mm, t_f = 17.2 mm
Beam location: Internal beam
Construction type: Composite
Degree of shear connection: 50 %
- Side C perimeter beam
Beam type: Solid beam
Section family: European sections
Section size: IPE 400
Details: h = 400 mm, b = 180 mm, t_w = 8.6 mm, t_f = 13.5 mm
Beam location: Internal beam
Construction type: Composite
Degree of shear connection: 40 %
- Side D perimeter beam
Beam type: Solid beam
Section family: European sections
Section size: IPE 550
Details: h = 550 mm, b = 210 mm, t_w = 11.1 mm, t_f = 17.2 mm
Beam location: Internal beam
Construction type: Composite
Degree of shear connection: 50 %

6. Loading details

- Normal (Cold)
Leading variable action: 3.5 kN/m²
Accompanying variable action: 0 kN/m²
Dead load including beam, excluding slab: 1.42 kN/m²
Calculated slab weight including mesh: 2.22 kN/m²
- Fire (Hot)
Combination factor for permanent action: 1.0
Combination factor for leading variable action: 0.5
Combination factor for other variable action: 0.3

7. Fire & Analysis

- Standard temperature-time curve
Fire resistance period: 60 min

8. Summary output

- Default mesh direction
Maximum unity factor: 0.82 **Floor slab adequate**

Factored load in fire: 5.39 kN/m²
Fire curve: Standard temperature-time curve

9. Default mesh direction

• Tabular results

Longitudinal mesh area: 257 mm²/m Bar size: 7 mm
Transverse mesh area: 257 mm²/m Bar size: 7 mm
Factored load in fire: 5.39 kN/m²

Time	Beam	Mesh	Slab top	Slab bottom	Beam capacity	Maximum allowable deflection	Slab yield	Enhance-ment	Slab capacity	Total capacity	Unity factor
mins	°C	°C	°C	°C	kN/m²	mm	kN/m²		kN/m²	kN/m²	
0	20	20	20	20	14.93	211	1.27	2.31	2.94	17.87	0.30
5	158	39	20	152	14.93	283	1.27	2.78	3.54	18.46	0.29
10	378	76	24	350	14.91	389	1.27	3.47	4.41	19.32	0.28
15	578	101	32	495	9.37	465	1.27	3.95	5.03	14.40	0.37
20	708	154	44	597	3.91	514	1.27	4.27	5.43	9.34	0.58
25	779	198	60	668	2.40	544	1.27	4.47	5.68	8.09	0.67
30	821	228	72	721	1.78	567	1.27	4.61	5.87	7.65	0.70
35	850	265	85	762	1.52	582	1.27	4.71	5.99	7.51	0.72
40	873	298	93	796	1.31	596	1.27	4.80	6.11	7.43	0.73
45	893	328	109	824	1.14	602	1.25	4.84	6.06	7.20	0.75
50	910	357	125	848	1.04	607	1.23	4.86	5.99	7.03	0.77
55	925	384	145	869	0.98	608	1.21	4.86	5.90	6.88	0.78
60	939	410	170	887	0.94	604	1.17	4.83	5.66	6.59	0.82

Maximum unity factor: 0.82 Floor slab adequate

• Perimeter beam check

Side A Beam type: Solid beam Composite Internal beam

Section size: IPE 400
Required moment resistance in fire situation: 312.28 kNm
Line load in fire situation: 30.84 kN/m
Shear connection: 40 %
Degree of utilization: 0.68
Critical temperature: 580 °C

Side B Beam type: Solid beam Composite Internal beam

Section size: IPE 550
Required moment resistance in fire situation: 385.31 kNm
Line load in fire situation: 34.25 kN/m
Shear connection: 50 %
Degree of utilization: 0.39
Critical temperature: 679 °C

Side C Beam type: Solid beam Composite Internal beam

Section size: IPE 400

Required moment resistance in fire situation: 312.28 kNm
Line load in fire situation: 30.84 kN/m
Shear connection: 40 %
Degree of utilization: 0.68
Critical temperature: 580 °C
Beam type: Solid beam Composite Internal beam
Section size: IPE 550
Required moment resistance in fire situation: 385.31 kNm
Line load in fire situation: 34.25 kN/m
Shear connection: 50 %
Degree of utilization: 0.39
Critical temperature: 679 °C

Side D

10. Graphical output

