

#	Year	Country	Company	Plant	BF n°	BF Volume [m3]	Installation technique	Scope	Hearth diameter [m]	Daily production [tone / day]	Zone under repair	Product used	Tone	Total	Product type	Technology	Contract	Comment
1	2011	Russia	Novolipetsk Iron & Steel	Lipetsk	7	4,200	Robotic installation	Capital relining	13.2	12,000	Hearth and tysons belt Back	Seven Grou 48 N Seven Shot 65 NM Seven Shot 75 NB O1 X	41 123 180	164	Grouting	Pumping	TBC	TBC
2		Russia	Novolipetsk Iron & Steel	Lipetsk	5	3,200	By lifting platform	Partial reprofiling	12.0	8,000	Tysons belt Lower stack Upper stack Tysons ring Back staves filling	Seven Shot 65 NM O1 X Seven Shot 60 NH CO Seven Shot 75 NB O1 X Seven Shot 60 NH CO Seven Flam 4350 KR Seven Grou 48 NM Seven Cast 51 N SIC	100 224 181 25 80	760	Castable	Shotcreting	TBC	TBC
3	2012	Russia	EVRAZ - NTMK	Nizhny Tagil	5	2,200	Robotic installation	Copper staves change	11.8	7,000	Bosh & belly	Seven Flam 4350 KR Seven Grou 55 NM	5 5	86	Plastic	Ramming	TBC	TBC
4		Russia	Tulachermet	Tula	1	1,386	Precasted pieces	Capital relining	8.6	2,800	Bosh Belly & lower stack Upper stack Lower and medium stack	Seven Cast 51 N SIC Seven Shot 65 NM CO Seven Cast 55 N SIC-SP Seven Shot 75 NB O1 X Seven Flam 4350 KR Seven Grou 48 NM	28 25 100 100 28 63	486	Castable	Vibrating cast Self-flowing cast Shotcreting Ramming Pumping	TBC	TBC
5	2013	Russia	Tulachermet	Tula	2	1,234	By lifting platform	Capital relining	8.3	2,500	Bosh Belly & lower stack Upper stack Back staves filling Staves joints upper stack Staves joints lower stack	Seven Shot 65 NM O1 X Seven Shot 60 NH CO Seven Shot 60 NH CO Seven Shot 60 NH CO Seven Flam 4350 KR Seven Shot 75 NB O1 X	140 126 34 6 15 84	485	Castable	Shotcreting Pumping Pumping Ramming Grouting	TBC	TBC
6		Ukraine	Alchevsk Metallurgical Kombinat	Alchevsk	1	2,100	Robotic installation	Partial repair	11.3	5,200	Lower stack	Seven Shot 75 NB O1 X Seven Shot 60 NH CO	140 140	880	Castable	Shotcreting		
7	2014	Ukraine	Alchevsk Metallurgical Kombinat	Alchevsk	4	1,386	By lifting platform	Partial repair	8.2	3,100	Bosh Lower stack Middle stack Dome	Seven Shot 30 N SIC Seven Shot 75 NB O1 X Seven Shot 60 NH CO Seven Shot 60 NH CO	40 140 210 20	410	Castable	Shotcreting		
8		Russia	Novolipetsk Iron & Steel	Lipetsk	5	3,200	From outside the furnace	Injection inside the furnace	12.0	8,000	Lower stack	Seven Grou 84 CB	30	80	Grouting	Pumping		
9	2014	Russia	Novolipetsk Iron & Steel	Lipetsk	5	3,200	Robotic installation	Partial repair	12.0	8,000	Belly	Seven Shot 75 NB O1 X Seven Shot 60 NH CO	37 280	887	Castable	Shotcreting		
10		Ukraine	MMK licha	Mariupol	5	2,300	Robotic installation	Partial repair	12.6	3,800	Belly	Seven Shot 65 NM O1 X Seven Shot 60 NH CO	170 200	870	Castable	Shotcreting		
11	2015	Russia	KMZ - Kosogorskiy Metallurgical Zavod	Tula	1	1,066	From outside the furnace	Injection inside the furnace	7.2	2,300	Bosh & belly	Seven Grou 84 CB	30	80	Grouting	Pumping		
12		Russia	KMZ - Kosogorskiy Metallurgical Zavod	Tula	1	1,066	From outside the furnace	Injection inside the furnace	7.2	2,300	Bosh & belly	Seven Grou 84 CB	30	80	Grouting	Pumping		
13	2015	India	JSW - Jindal South West	Vijanagar	1	1,250	From inside the hearth	Partial relining	8.0	2,200	Hearth and tysons belt	Seven Cast 5975 LR Seven Cast 3462 LR Seven Shot 75 NB O1 X Seven Shot 60 NH CO Seven Shot 65 NM O1 X Seven Shot 48 NM CO	104 76 21 15 64 15	885	Castable	Pumping Shotcreting		
14		Ukraine	JSC Zaporizhstal	Zaporozhye	2	1,503	From outside the furnace	Capital relining	8.0	3,300	Back stave filling [Tysons Belt, Bosh, Belly, Lower and Middle Back]	Seven Grou 48 NM	60	80	Grouting	Pumping		
15	2016	Ukraine	MMK licha	Mariupol	3	2,000	Robotic installation	Partial relining	9.6	3,700	Back - Belly - Bosh	Seven Shot 65 N SIC Seven Shot 65 NM CO Seven Shot 65 NH CO	230 150 40	400	Castable	Shotcreting		
16		Russia	Tulachermet	Tula	3	2,200	By lifting platform	Partial repair	9.0	4,250	Back - Belly - Bosh	Seven Shot 75 NB O1 X Seven Shot 65 N SIC Seven Shot 65 NM CO Seven Shot 65 NH CO	389 225 187	876	Castable	Shotcreting		
17	2016	Ukraine	MMK licha	Mariupol	2	1,720	Robotic installation	Partial relining	7.8	3,000	Back - Belly - Bosh	Seven Shot 65 N SIC Seven Shot 65 NH CO Seven Shot 71 NB O1 Y - 10 Seven Shot 75 NB O1 X Seven Shot 65 NH CO	65 75 75 243 440	885	Castable	Shotcreting Vibrating cast Shotcreting		
18		Russia	MMK	Magnitogorsk	9	2,014	By lifting platform	Capital relining	10.0	4,500	Back - Belly - Bosh with precasted cooling staves	Seven Shot 65 N SIC Seven Shot 65 NM CO Seven Shot 65 NH CO Seven Cast 51 N SIC-SP	21 21 21 21	779	Castable	Grouting		
19	2016	Russia	EVRAZ - ZSMK	Novokuznetsk	3	3,000	From outside the furnace	Injection inside the furnace	11.8	6,500	Back - Bosh	Seven Grou 45 CM-3	26	86	Grouting	Pumping		
20		Russia	EVRAZ - ZSMK	Novokuznetsk	2	2,000	From outside the furnace	Injection inside the furnace	8.8	5,400	Back - Belly	Seven Grou 45 CM-3	33	83	Grouting	Pumping		
21	2016	Russia	EVRAZ - ZSMK	Novokuznetsk	3	3,000	From outside the furnace	Injection inside the furnace	11.8	6,500	Back - Belly	Seven Grou 45 CM-3	26	86	Grouting	Pumping		
22		Russia	Novolipetsk Iron & Steel	Lipetsk	6	3,200	From inside the pipes and tysons	Partial repair	12.0	8,000	Cyclone and gas cleaning	Seven Gun 63 NH CO Seven Shot 75 NB O1 X Seven Cast 60 NH CO Seven Shot 60 NH CO Seven Shot 65 N SIC Seven Shot 65 NH CO Seven Flam 4350 KR Seven Grou 55 NM Seven Shot 60 NH CO Seven Shot 60 NH CO-3 Seven Shot 62 NH CO	67 283 144 182 274 84 17 50 28 135 280	87	Castable	Grouting Shotcreting Vibrating cast Shotcreting Grouting Pumping Grouting Pumping		
23	2016	Russia	MMK	Magnitogorsk	4	1,371	By lifting platform	Capital relining	8.4	3,460	Bosh - Belly Back with precasted cooling staves Uncooled part of Back	Seven Shot 65 N SIC Seven Shot 65 NM CO Seven Shot 65 NH CO Seven Gun 80 K SIC-SP Seven Flam 4350 KR Seven Grou 55 NM Seven Shot 60 NH CO Seven Shot 60 NH CO-3 Seven Shot 62 NH CO	144 182 274 84 17 50 28 135 280	1,018	Castable	Vibrating cast Shotcreting Grouting Pumping Grouting Pumping		
24		Ukraine	PJSC Azovstal Iron & Steel Works	Mariupol	6	1,717	Robotic installation	Partial relining	8.4	2,700	Back - Belly	Seven Shot 65 N SIC Seven Shot 65 NH CO Seven Shot 60 NH CO-3 Seven Shot 62 NH CO	145 145 145 280	865	Castable	Shotcreting		
25	2016	Ukraine	MMK licha	Mariupol	5	2,300	From outside the furnace	Partial relining	12.6	3,800	Back - Belly	Seven Shot 65 N SIC-3 Seven Shot 65 NM CO Seven Shot 65 NH CO	145 145 50	880	Castable	Shotcreting		
26		Russia	Novolipetsk Iron & Steel	Lipetsk	6	3,200	By lifting platform	Capital relining	12.0	8,000	Hearth in cooperation with SCL, Carbon Bosh with precasted cooling staves Belly - Back Uncooled part of Back	RET 16 ECU (SCL, Carbon) RET 16 ECU (SCL, Carbon) RET 17 ECU (SCL, Carbon) RET 16 ECU (SCL, Carbon) Seven Cast 51 N SIC-SP Seven Shot 65 NM O1 X Seven Shot 65 NH CO Seven Shot 65 NH CO Seven Shot 65 NH CO Seven Shot 48 NM CO Seven Cast 3462 LR Seven Grou 55 NM Seven Flam 4350 KR Seven Grou 80 K SIC-SP Seven Grou 55 NM Seven Flam 80 AKR Seven Flam 82 KR	441 21 60 10 1 107 104 148 115 50 28 42 69 23 38	558	Castable	Carbon blocks Microporous carbon blocks Ramming Ramming Ramming Ramming Vibrating cast Shotcreting Shotcreting Shotcreting Shotcreting Shotcreting Grouting Pumping Grouting Pumping Ramming		

#	Year	Country	Company	Plant	BF n°	BF Volume [m3]	Installation technique	Scope	Hearth diameter [m]	Daily production [tone / day]	Zone under repair	Product used	Tons	Total	Product type	Technology	Context	Comment
58		Russia	TULACHERMET	Tula	1	1.500	By lifting platform	Capital relining	8.4	3.000	Back - Belly - Bosh	Seven Cast 5462 LRF	0	600	Castable	Venting cast		
												Seven Shot 65 N SHC-3 Plast.	30					
59		Ukraine	MMK Iliche	Mariupol	2	1.720	Robotic installation	Partial relining	7.8	3.000	Back - Belly - Bosh	Seven Shot 65 NH CO	190	400	Castable	Shotcreting		
												Seven Shot 65 NH CO	42					
60		Russia	MMK	Magnitogorsk	9	2.014	Robotic installation	Partial relining	10.0	4.500	to	Seven Shot 75 NH O1 X	190	800	Castable	Shotcreting		
												Seven Shot 65 NH CO	70					
61		Ukraine	MMK Iliche	Mariupol	3	2.000	By lifting platform	Partial relining	9.6	3.700	Back - Belly - Bosh	Seven Shot 65 N SHC-3	30	484	Castable	Shotcreting		
												Seven Shot 65 N SHC-3	96					
62		Italy	Arcelor Mittal	Taranto	2	2.008	From inside the furnace	Full relining	9.6	5.200	Tuyeres Bath	Seven Shot 65 N SHC-3	479	707	Castable	Shotcreting		
												Seven Shot 65 NH CO	199					
63		Ukraine	MMK Iliche	Mariupol	5	2.000	By lifting platform	Partial relining	9.6	3.700	Back - Belly - Bosh	Seven Shot 67 N SHC-3	131	600	Castable	Shotcreting		
												Seven Shot 65 NH O1 W	229					
64		Russia	Severstal	Cerepovec	5	5.580	Robotic installation	Partial relining	15.1	12.800	Uncooled part of Back	Seven Shot 60 NH CO	100	100	Castable	Shotcreting		
												Seven Shot 60 NH CO	100					
65		Columbia	Acerio PazDelRio	Sogamoso	Elena	850	Robotic installation	Partial relining	6	1.000	Back - Belly - Bosh	Seven Shot 65 NH O1 W	24	104	Castable	Shotcreting		
												Seven Shot 75 NH O1 X	60					
66		Kazakhstan	AM	Temirtau	2	2.465	Robotic installation	Partial relining	9.8	3.000	Back - Belly - Bosh	Seven Shot 75 NH O1 X	202	801	Castable	Shotcreting		
												Seven Shot 60 NH CO	289					
67	2021	Italy	Arcelor Mittal	Taranto	4	2.500	From inside the furnace	Partial relining	10.6	5.500	Tuyeres Bath	Seven Shot 75 NH O1 X	61	910	Castable	Casting		
												Seven Shot 65 NH O1 W	229					
68		Russia	TULACHERMET	Tula	2	1234	By lifting platform	Capital relining	8.3	2.500	Belly - Bosh	Seven Shot 65 N SHC	182	1.100	Castable	Shotcreting		
												Seven Shot 65 NH CO	300					
69		Turkey	ERDEMIR CELIK	Eregli	2	1.707	Robotic installation	Partial relining	9.7	4.800	Back - Belly - Bosh	Seven Shot 65 N SHC-3 Plast.	29	800	Castable	Shotcreting		Project with camera monitoring
												Seven Shot 65 N SHC-3 Plast.	21					
70	2022	Columbia	Acerio PazDelRio	Sogamoso	Elena	850	Manually & Robotic installation	Partial relining	6	1.000	Tuyere & Bosh/Stack	Seven Shot 65 N SHC-3	104	800	Castable	Shotcreting		Tuyere & Bosh manually on platform
												Seven Shot 65 NH CO	186					
71		Kazakhstan	AM TEMIRTAU	Temirtau	3	3.800	Robotic installation	Partial relining	13.5	5.000	Back - Belly-Bosh	Seven Shot 75 NH O1 X	100	500	Castable	Shotcreting		
												Seven Shot 65 NH CO	381					