

FSFE - MONTHLY PROCESS REVIEW

Selected Production Month

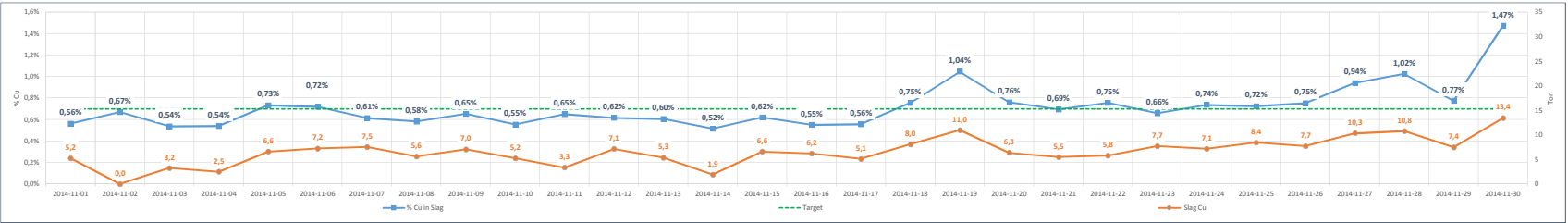
November 2014

PROCESS KPIs

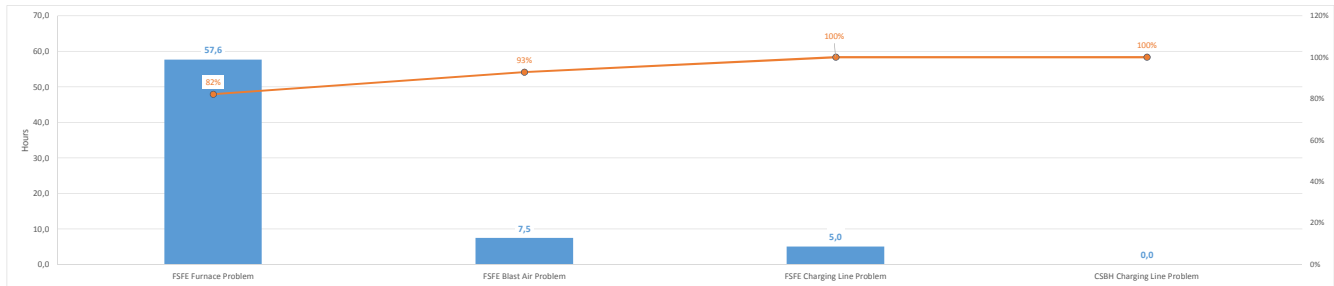
Item	Cu Loss Parameter	Range/Target	Unit	Month																% Compliance																			
				Month				11-30	11-29	11-28	11-27	11-26	11-25	11-24	11-23	11-22	11-21	11-20	11-19	11-18	11-17	11-16	11-15	11-14	11-13	11-12	11-11	11-10	11-09	11-08	11-07	11-06	11-05	11-04	11-03	11-02	11-01		
				Aug	Min	Max	Std																																
1	% Cu in Granulated Slag	0,7	% Cu	0,77	0,45	5,04	0,37	48%	0%	0%	0%	0%	0%	38%	11%	56%	25%	33%	0%	30%	45%	88%	100%	78%	100%	71%	89%	40%	100%	90%	70%	80%	0%	29%	100%	100%	0%	100%	
2	% Cu in Melt Slag	0,7	% Cu	0,68	0,52	2,52	0,13	74%	33%	64%	85%	38%	59%	93%	50%	93%	59%	64%	59%	25%	88%	46%	79%	94%	88%	93%	86%	100%	100%	82%	88%	100%	71%	44%	71%	91%	0%	88%	
3	Fe/SiO2	0.98-1.02	ratio	1,00	0,96	1,10	0,02	77%	87%	93%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
4	Slag Temperature	above 1250	degC	1252	1163	1319	24	89%	38%	38%	69%	69%	85%	70%	33%	50%	14%	40%	37%	62%	45%	20%	44%	58%	100%	50%	19%	0%	31%	32%	5%	27%	21%	43%	40%	31%	25%	50%	
5	Matte Grade	52% w- 2	% Cu	54,28	51,38	62,46	4,38	86%	15%	0%	33%	21%	41%	33%	8%	21%	12%	62%	30%	7%	7%	70%	93%	0%	60%	77%	50%	0%	46%	53%	4%	0%	0%	63%	93%	100%	0%	76%	
6	Matte + Scum Level	less than 80	cm	74	63	92	4	92%	79%	100%	100%	100%	74%	96%	88%	95%	92%	100%	96%	100%	87%	96%	72%	95%	87%	100%	94%	96%	100%	94%	63%	100%	100%	100%	100%	100%	85%	80%	100%
7	Slag Level	below 50	cm	48	6	82	11	63%	63%	28%	58%	91%	92%	71%	68%	33%	78%	50%	64%	80%	72%	52%	41%	90%	100%	86%	54%	40%	55%	31%	40%	61%	46%	79%	75%	95%	100%	53%	

PRODUCTION KPIs

Item	Production Parameters	Unit	Month																														
			11-30	11-29	11-28	11-27	11-26	11-25	11-24	11-23	11-22	11-21	11-20	11-19	11-18	11-17	11-16	11-15	11-14	11-13	11-12	11-11	11-10	11-09	11-08	11-07	11-06	11-05	11-04	11-03	11-02	11-01	
1	Synchronized Plant Availability	%	92,00%	99,62%	100,00%	91,83%	98,69%	99,50%	98,17%	99,07%	98,90%	97,59%	98,47%	98,68%	96,16%	97,37%	97,76%	97,76%	98,21%	100,00%	100,00%	100,00%	50,00%	99,53%	97,25%	96,58%	100,00%	91,91%	96,65%	58,01%	100,00%	34,55%	67,63%
2	Feed rate	tph	93	110	93	103	109	109	109	112	110	103	90	108	108	99	101	109	93	52	102	111	49	106	107	102	112	96	91	52	48	0	102
3	Cu in Feed	%	23,4%	23,4%	23,5%	23,2%	23,6%	23,9%	23,3%	23,8%	22,8%	23,5%	23,3%	23,1%	23,3%	22,9%	22,7%	23,2%	22,9%	23,2%	23,2%	23,7%	23,5%	23,5%	23,6%	23,6%	23,9%	23,3%	23,9%	24,0%	23,6%	24,4%	23,4%
4	Dust rate	tph	2,7	2,5	2,4	1,7	3,4	2,5	2,6	4,3	4,2	2,9	1,9	2,8	5,0	4,2	4,2	3,6	2,8	0,9	1,6	2,9	1,6	3,2	3,4	4,3	4,6	2,5	1,0	1,3	1,6	0,0	2,4
5	Cu in Dust	%	27,1%	27,4%	27,1%	26,9%	27,0%	27,0%	27,1%	27,1%	27,1%	26,9%	26,8%	26,9%	27,0%	26,8%	26,9%	26,8%	27,2%	27,0%	26,8%	27,1%	27,1%	26,9%	27,7%	27,8%	27,6%	27,1%	27,3%	27,2%	26,7%	0,0%	26,7%
6	Slag	tph	37	38	40	44	46	43	48	40	49	32	33	35	44	44	38	47	44	15	37	48	21	39	45	40	51	42	37	19	25	0	39
7	Ton Slag per Ton Charged Cu	ton	1,7	1,4	1,8	1,8	1,7	1,6	1,8	1,5	1,9	1,3	1,5	1,4	1,6	1,9	1,6	1,8	2,0	1,3	1,5	1,8	1,8	1,5	1,7	1,6	1,8	1,8	1,7	1,5	2,1	0,1	1,6
8	Weighted Cu in Slag	%	0,72%	1,47%	0,77%	1,02%	0,94%	0,75%	0,72%	0,74%	0,66%	0,75%	0,69%	0,76%	1,04%	0,75%	0,56%	0,55%	0,62%	0,52%	0,60%	0,62%	0,65%	0,55%	0,58%	0,61%	0,72%	0,73%	0,54%	0,54%	0,67%	0,56%	
9	Cu Recovery	%	98,8%	97,9%	98,6%	98,2%	98,4%	98,8%	98,7%	98,9%	98,8%	99,0%	98,9%	99,0%	98,3%	98,6%	99,1%	99,0%	98,8%	99,4%	99,1%	98,9%	98,8%	99,2%	98,9%	99,1%	98,9%	98,7%	98,8%	99,2%	98,9%	100,0%	99,1%
10	Matte	tph	42	50	41	45	49	40	41	52	51	42	42	43	43	42	50	51	35	33	51	50	24	59	42	50	42	43	42	25	18	0	47
11	Matte grade	%	54,28%	55,19%	56,39%	54,35%	54,09%	54,40%	54,99%	55,47%	55,22%	56,20%	46,15%	55,67%	55,28%	57,59%	53,37%	53,34%	47,16%	52,90%	52,77%	54,11%	54,88%	54,30%	53,67%	55,36%	57,04%	57,64%	54,41%	53,46%	53,16%	0,00%	52,98%
12	Cu in Matte	tph	22,7	27,4	23,1	24,6	26,5	26,5	22,6	28,8	28,2	23,7	19,3	24,1	23,8	23,9	26,5	27,0	16,3	17,5	26,8	27,3	13,3	32,2	22,5	27,9	23,7	24,8	22,8	13,6	9,6	0,0	25,1



DOWNTIMES REASONS



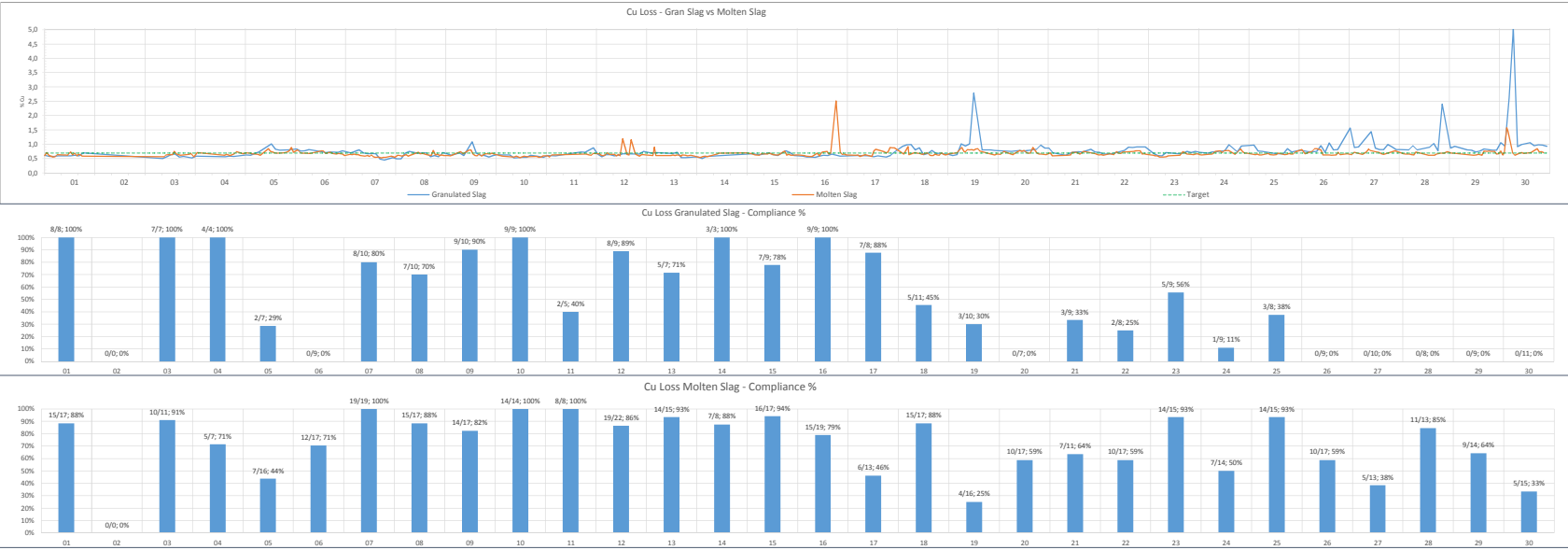
Downtime Reasons	Hours	Cumulative %
FSFE Furnace Problem	57,6	82%
FSFE Blast Air Problem	7,5	93%
FSFE Charging Line Problem	5,0	100%
CSBH Charging Line Problem	0,0	100%
TOTAL	70,2	

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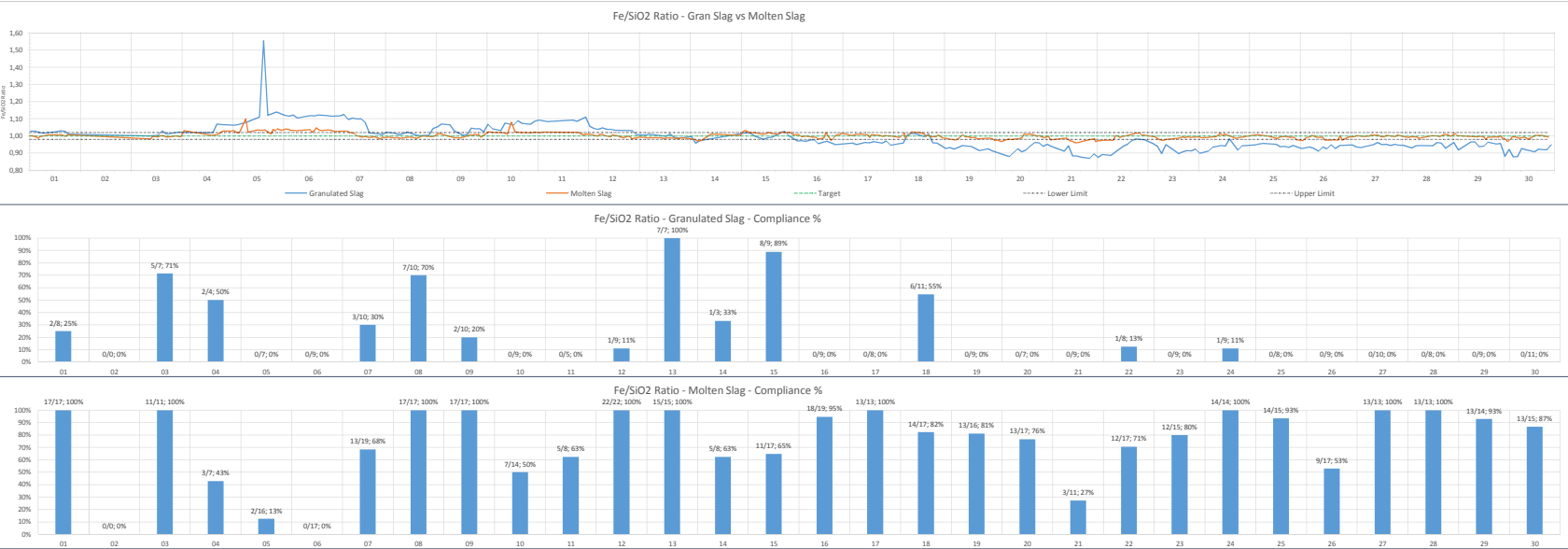
Selected Production Month

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% CU IN GRANULATED SLAG - % CU IN MOLTEN SLAG



FE/SIO2 RATIO IN GRANULATED SLAG - FE/SIO2 RATIO IN MOLTEN SLAG

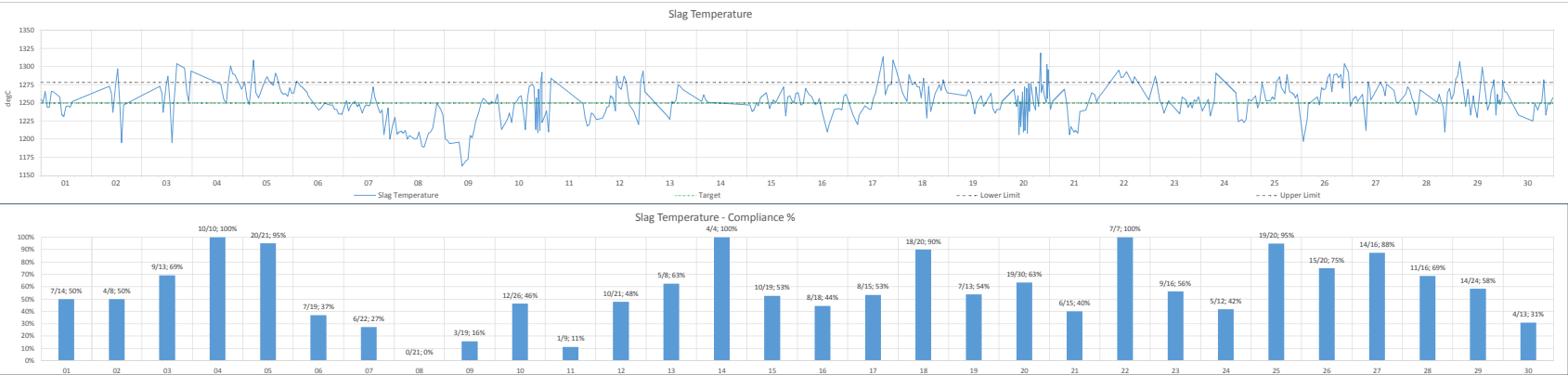


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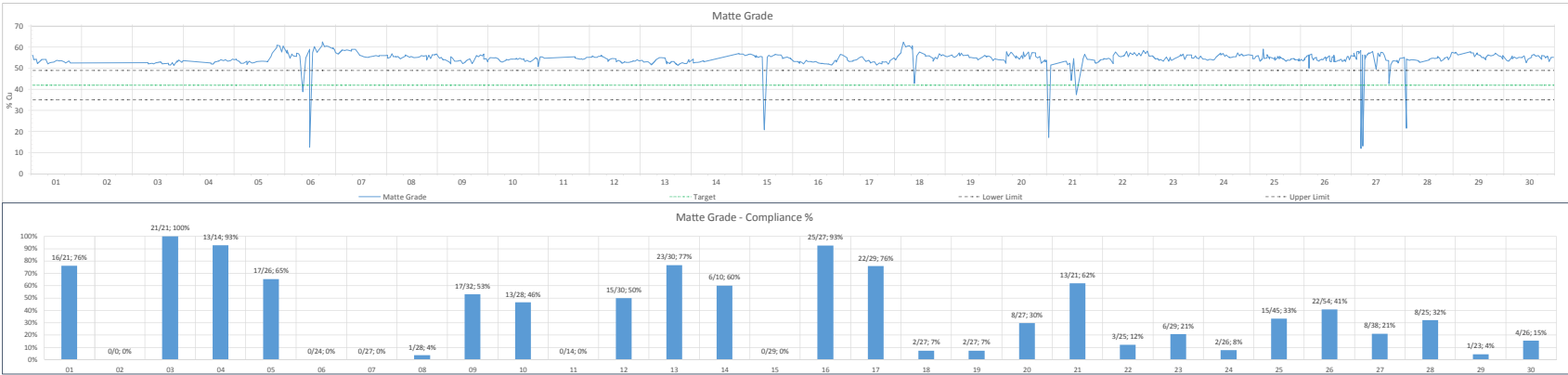
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SLAG TEMPERATURE



MATTE GRADE



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BATH LEVEL

