

**Annex 3: List of Principal Equipment – Changes to
Copper Smelting**



DOE RUN - PERÚ
 "DETAILED ENGINEERING LA OROYA COPPER SMELTING MODERNIZATION" PROJECT
LIST OF MECHANICAL EQUIPMENT
 No. 214-D-000-LE-ME-001_R2



NOTE : The power listed for the different equipment and systems are estimated values, which will be confirmed as the detailed engineering study progresses.

EQUIPMENT TAG No.	EQUIPMENT DESCRIPTION	QTY.	Design and Operating Data					POWER kW	REMARKS
			m ³ / hr (Nm ³ /hr)	t / hr (kg/hr)	kcal/hr	kPa (mmca)	°C		
AREA 000	GENERAL	10						120.7	
Air Conditioning and Pressurization Equipment		10						120.7	
313 27 ECP 9101	Air Conditioning equipment No. 1 Electrical Room and Main Control (No. 1)	1	23786 Nm ³ /hr				18 to 25° C +/- 0.5 °C	35.0	
313 27 ECP 9102	Air Conditioning equipment No. 2 Electrical Room and Main Control (No. 1)	1	23786 Nm ³ /hr				18 to 25° C +/- 0.5 °C	35.0	
314 27 ECP 9103	Air Conditioning equipment No. 3 Electrical Room and Main Control (No. 1)	1	13592 Nm ³ /hr				18 to 25° C +/- 0.5 °C	22.0	
314 27 ECP 9104	Air Conditioning equipment No. 4 Electrical Room and Control area 400	1	13592 Nm ³ /hr				18 to 25° C +/- 0.5 °C	22.0	
314 27 ECP 9105	Air recirculation ventilator	1	3398 Nm ³ /hr					0.4	
314 27 ECP 9106	Pressurization Equipment No. 1	1	5947 m ³ /hr			12 to 25 Pa		2.2	
314 27 ECP 9107	Pressurization Equipment No. 2	1	2599 m ³ /hr			12 to 25 Pa		1.1	
314 27 ECP 9108	Air Conditioning equipment Converters room	1	2718 Nm ³ /hr				18 to 25° C +/- 1° C	1.0	
314 27 ECP 9109	Air Conditioning equipment CPS Separator room	1	2718 Nm ³ /hr				18 to 25° C +/- 1° C	1.0	
314 27 ECP 9110	Air Conditioning equipment Plunger room	1	2718 Nm ³ /hr				18 to 25° C +/- 1° C	1.0	
AREA 100	CARGO PREPARATION SYSTEM	35						250.1	
Conveyor Belts and Feeders		15						188.4	
311 17 FAT 1428	Conveyor Belt Retractable (L=4 m)	1		180 (max)				7.5	
311 17 FAT 1429	Conveyor Belt Silo Feed (L=129.214 m, Inclined 13.2°)	1		180 (max)				37.3	
311 17 FAT 1430	Conveyor Belt Silo Feed (L=45.7 m, Horizontal)	1		180 (max)				22.4	with Tripper
311 17 FAT 1431	Conveyor Belt Silo Unloader and Pallet Mixer feeder (L=33.73 m, horizontal + L=27.507 m, inclined 15°)	1		58 (nom)				11.2	
311 17 FAT 1432	Conveyor Belt reversible (L= 7.62 m, Horizontal)	1		58 (nom)				5.6	
311 17 FAT 1433	Conveyor Belt Main Feed to ISASMELT Furnace (L=60.4 m, Inclined 13°)	1		58 (nom)				11.2	
311 17 FAT 1434	Conveyor Belt Main Feed to ISASMELT Furnace (L=44.442 m, Inclined 13.8°)	1		58 (nom)				11.2	
311 17 FAP 1435	Conveyor Belt ISASMELT Feed (L=33.25 m, Horizontal)	1		58 (nom)				7.5	w/ weightometer
311 17 FAT 1411	Feeder Belt Unload Concentrate Silo No. 1 (L=6.5 m; horizontal)	1		50 (max)				15.0	with VDF
311 17 FAT 1412	Feeder Belt Unload Concentrate Silo No. 2 (L=6.5 m; horizontal)	1		50 (max)				15.0	with VDF
311 17 FAT 1413	Feeder Belt Unload Coal Silo (L=6.5 m; horizontal)	1		10 (max)				7.5	with VDF
311 17 FAT 1414	Feeder Belt Unload Quartz (L=6.5 m; horizontal)	1		10 (max)				7.5	with VDF
311 17 FAT 1415	Feeder Belt Unload Circulating (L=6.5 m; horizontal)	1		10 (max)				7.5	with VDF
16	Conveyor Belt existing modified	1							
16-A	Feeder Belt new	1		180 (max)				22.4	
Silos		5						0.0	
311 17 TOL 1411	Concentrate Storage Silo No. 1	1		250 ton				0.0	
311 17 TOL 1412	Concentrate Storage Silo No. 2	1		250 ton				0.0	
311 17 TOL 1413	Coal Storage Silo	1		150 ton				0.0	
311 17 TOL 1414	Quartz Storage Silo	1		150 ton				0.0	
311 17 TOL 1415	Circulating storage Silo	1		150 ton				0.0	

Weightometer Feeders		5						5.6	
311 17 FAP 1421	Weightometer Feeder No. 1 Concentrate Silo No. 1 (L=6,5 m, Horizontal)	1		50 (max)				1.1	with VDF
311 17 FAP 1422	Weightometer Feeder No. 2 Concentrate Silo No. 2 (L=6,5 m, Horizontal)	1		50 (max)				1.1	with VDF
311 17 FAP 1423	Weightometer Feeder No. 3 Coal Silo (L=6,5 m, Horizontal)	1		10 (max)				1.1	with VDF
311 17 FAP 1424	Weightometer Feeder No. 4 Quartz (L=6,5 m, Horizontal)	1		10 (max)				1.1	with VDF
311 17 FAP 1425	Weightometer Feeder No. 5 Circulating (L=6,5 m, Horizontal)	1		10 (max)				1.1	with VDF
Mixer		1						37.3	
311 17 MIX 1375	Pallet Mixer	1		148 (max)				37.3	
Sample Taking System		1						0.7	
311 17 MUA 1201	Sample Taking System No. 1 (Dry concentrate)	1		10 kg c/ 8 hrs				0.7	
Lifting Systems		7						13.1	
311 17 GRU 1101	Maintenance lifting system No. 1 (transfer belt No. 16 to No. 1428)	1		2 ton				0.0	Tackle and manual car (rail); H=6m
311 17 GRU 1102	Monorail System maintenance No. 2 (Belt Tripper No. 1430)	1		5 ton				3.5	Tackle and motorized car (rail); H=30 m
311 17 GRU 1103	Lifting system No. 3 maintenance feeders	1		2 ton				0.0	Tackle and manual car (rail); H=12 m
311 17 GRU 1104	Lifting system No. 4 maintenance feeders	1		2 ton				0.0	Tackle and manual car (rail); H=12 m
311 17 GRU 1105	Maintenance lifting system No. 5 mixing building	1		3 ton				3.2	Motorized tackle and manual car (rail); H=10 m
311 17 GRU 1106	Maintenance lifting system No. 6 (transfer Belt No. 1433 & 1434)	1		3 ton				3.2	Motorized tackle and manual car (rail); H=25 m
311 17 GRU 1107	Maintenance lifting system No. 7 (transfer Belt No. 1434 & 1435)	1		3 ton				3.2	Motorized tackle and manual car (rail); H=25 m
Tripper		1						5.0	
311 17 TRI 1601	Tripper Correa Silo Feed	1		180 (max)				5.0	
AREA 200	FUSION	68						1,969.7	
Unloading Area		1						0	
313 27 CDC 2601	Unloading channel ISASMELT Furnace	1		160 (max)			1230° C (max)	0.0	
Furnace		1						0	
313 27 HOR 2401	Vertical ISASMELT furnace	1		120 t/hr				0.0	
Nozzle		1						0.0	
313 27 LZA 2601	Nozzle Isasmelt furnace	1						0.0	
Burners		6						0	
313 27 QMD 2402	Burner Maintenance Isasmelt Furnace	1						0.0	
313 27 QMD 2403	Burner Heating Isasmelt Furnace	1						0.0	
313 27 QMD 2404	Burner No. 1 Unloading channel Isasmelt (cargo end)	1		25.5 kg/hr (comb. consumpt.)	250000 (max)	90 PSI		0.0	
313 27 QMD 2405	Burner No. 2 Unloading channel Isasmelt (cargo end)	1		25.5 kg/hr (comb. consumpt.)	250000 (max)	90 PSI		0.0	
313 27 QMD 2406	Burner No. 3 Unloading channel Isasmelt (cargo end)	1		25.5 kg/hr (comb. consumpt.)	250000 (max)	90 PSI		0.0	
313 27 QMD 2407	Burner No. 4 Unloading channel Isasmelt (cargo end)	1		25.5 kg/hr (comb. consumpt.)	250000 (max)	90 PSI		0.0	
Lifting Systems		5						91.92	
313 27 GRU 2401	Lifting system Nozzles (w/ counterweight)	1						18.5	
313 27 GRU 2409	Lifting System measurement bar Isasmelt	1		0,8 ton				4.0	
313 27 GRU 2410	Lifting system maintenance burner Isasmelt furnace	1		2 ton				4.6	
313 27 GRU 2411	Bridge crane Isasmelt furnace building	1		15 ton				52.2	
313 27 GRU 2412	Tackle maintenance Isasmelt furnace chute	1		7.5 ton				12.7	
Elevator		1						45	
313 27 ELV 2101	Service elevator Isasmelt furnace building	1		1.6 ton				45.0	

Fans and Sleeve filter		3					279.82	
313 27 VEN 2501	Induced draft fans for fugitive and combustion gases	1	113109 m3/hr (g. fugitive)			507.5 (P static g. fugitive) 482.5 (P	173° C (max)	260.8
313 27 VEN 2502	Fan for cooling motor of motorized lifting system nozzles	1						0.5
313 27 PCM 2501	Sleeve filters ISA fugitive gas train	1	45214 Nm3/h (max)			508 mmca (max)	260° C (max)	18.6
Conveyors		2						9.74
313 27 FAT 2401	Final conveyor belt ISASMELT furnace	1		130				7.5
313 27 FAT 2402	ISASMELT Conveyor screw	1		6 ton/h (max)			45° C (max)	2.2
Tandish		2						0
313 27 CUM 2407	Tandish 1	1						0.0
313 27 CUM 2408	Tandish 2	1						0.0
Blower		1						1005.8
313 27 SOP 2501	Blower ISASMELT Furnace	1	17000 Nm3/h (max)			120 kPa (P manom discharge design) 202 kPa (P mano max discharge)	46° C (max)	1005.8
Plugging and Drilling Machine		1						38.6
313 27 PER 2601	Plugging and Drilling Machine	1	5 Nm3/min (compressed air					38.6
Gas Valves		2						3
313 27 VAL 2201	Guillotine Valve Ø 1400 for fugitive gases	1				-4250 Kpa	160° C (operating)	1.5
313 27 VAL 2202	Guillotine Valve Ø 1200 for combustion gases	1				-4010 Kpa	210° C (operating)	1.5
Expansion Joints		20						0
313 27 JEX 2301	Expansion Joint Ø 600	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
314 27 JEX 2302	Expansion Joint Ø 750	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
314 27 JEX 2303	Expansion Joint Ø 785 No. 1	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
315 27 JEX 2304	Expansion Joint Ø 785 No. 2	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
315 27 JEX 2305	Expansion Joint Ø 1000 No. 1	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
316 27 JEX 2306	Expansion Joint Ø 1000 No. 2	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
316 27 JEX 2307	Expansion Joint Ø 1200 No. 1	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
317 27 JEX 2308	Expansion Joint Ø 1200 No. 2	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
317 27 JEX 2309	Expansion Joint Ø 1200 No. 3	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
318 27 JEX 2310	Expansion Joint Ø 1200 No. 4	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
318 27 JEX 2311	Expansion Joint Ø 1400 No. 1	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
319 27 JEX 2312	Expansion Joint Ø 1400 No. 2	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
319 27 JEX 2313	Expansion Joint Ø 1400 No. 3	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
320 27 JEX 2314	Expansion Joint Ø 1400 No. 4	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
320 27 JEX 2315	Expansion Joint Ø 1400 No. 5	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
321 27 JEX 2316	Expansion Joint Ø 1400 No. 6	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
321 27 JEX 2317	Expansion Joint Ø 1500 No. 1	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
322 27 JEX 2318	Expansion Joint Ø 1500 No. 2	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
322 27 JEX 2319	Expansion Joint Ø 1500 No. 3	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0
323 27 JEX 2320	Expansion Joint Ø 1500 No. 4	1	46000 Nm3/h (average flow)			-500 a +500 mmca	750° C (max)	0.0

Refrigerated Plates		3					0	
313 27 PRF 2601	Splash Block	1					0.0	
313 27 PRF 2602	Front plate tap Isasmelt furnace	1					0.0	
313 27 PRF 2603	Rear plate tap Isasmelt furnace	1					0.0	
Tanks		7					0	
313 27 TAQ 2601	High [pressure?] compressed air accumulator tank (Level No. 4)	1		(3)			0.0	
313 27 TAQ 2602	High [pressure?] compressed air accumulator tank (Level No. 7)	1		(3)			0.0	
313 27 TAQ 2603	High [pressure?] compressed air accumulator tank (Level No. 15)	1		(2)			0.0	
313 27 TAQ 2604	Oil Storage Tank No. 2	1		(76)			0.0	
TAQ 9XXX	Condensate accumulator tank (Steam Drum)	1					0.0	(Ozchatz)
TAQ 9XXX	Water feed reservoir	1					0.0	(Ozchatz)
TAQ 9XXX	Blow Down Tank	1					0.0	(Ozchatz)
Damper		1					2.2	
FDP 9707	Damper gas inlet to boiler	1					2.2	(Ozchatz)
Pumps		7					490.98	
313 27 BOM 2601	Pump No. 1 Oil No. 2 (Isasmelt fusion feed system)	1		570 kg/hr	1200 kPa	15.6° C (operating)	5.6	IMO - (DRP)
313 27 BOM 2602	Pump No. 2 Oil No. 2 (Isasmelt fusion feed system)	1		570 kg/hr	1200 kPa	15.6° C (operating)	5.6	IMO - (DRP)
06 BOM 9301A	Boiler water feed pump	1					150.0	(Ozchatz)
06 BOM 9301B	Boiler water feed pump	1					150.0	(Ozchatz)
06 BOM 9302A	Boiler water recirculation pump	1					75.0	(Ozchatz)
06 BOM 9302B	Boiler water recirculation pump	1					75.0	(Ozchatz)
313 27 BOM 2303	Pump feed booster for roof water furnace	1	51 m ³ /h			91.35 m.c.a (differential height)	29.8	
Dosing Plant		2					2.7	
06 BOM 9303	Dosing Plant 1	1					1.5	(Ozchatz)
06 BOM 9304	Dosing Plant 2	1					1.2	(Ozchatz)
Sample Cooler		2					0	
06 INC 9XXX	Sample Cooler 1	1					0.0	(Ozchatz)
06 INC 9XXX	Sample Cooler 2	1					0.0	(Ozchatz)
AREA 300	CONVERSION	141					146.3	
Punching Machine		1					9.6	
313 29 PMC 4301	Punching Machine	1	342 Nm ³ /h (flow air cylinder)		620.5 kPa (P min. air)		9.6	
Converters		2					0	
313 29 CVT 4201	Pierce Smith Converter No. 1	1					0.0	
313 29 CVT 4202	Pierce Smith Converter No. 2	1					0.0	
Motors		2					112	
313 29 MOE 4201	Electric motor Pierce Smith Converter No. 1	1				40° C (max) -15 °C (min)	56.0	
313 29 MOE 4202	Electric motor Pierce Smith Converter No. 2	1				40° C (max) -15 °C (min)	56.0	
Couples		4					0	
313 29 ACO 4201	High [pressure?] Couple Pierce Smith Converter No. 1	1					0.0	
313 29 ACO 4202	Low [pressure?] Couple Pierce Smith Converter No. 1	1					0.0	
313 29 ACO 4203	High [pressure?] Couple Pierce Smith Converter No. 2	1					0.0	
313 29 ACO 4204	Low [pressure?] Couple Pierce Smith Converter No. 2	1					0.0	
Reducers		2					0	
313 29 RED 4201	Reducer Pierce Smith Converter No. 1	1					0.0	
313 29 RED 4202	Reducer Pierce Smith Converter No. 2	1					0.0	

Conveyor Belts		4					17.135	
313 29 FAT 4401	Conveyor Belt feed Hopper (L= 18.6m); inclined 15°	1		72 tph (max)			5.6	
313 29 FAT 4402	Conveyor belt Hopper (L=2.25 m); Horizontal Reversible	1		72 tph (max)			5.6	
313 29 FAP 4403	Weightometric Feed Belt (L=5.5 m); horizontal	1		72 tph (max)			1.1	
313 29 FAT 4404	Conveyor belt reversible (L=5 m)	1		72 tph (max)			4.8	
Vibrating Feeder		2					4.4	
313 29 ALV 4701	Vibrating Feeder No. 1	1		70 tph (max)		260° C (max)	2.2	
313 29 ALV 4702	Vibrating Feeder No. 2	1		70 tph (max)		260° C (max)	2.2	
Tanks		1					0	
313 29 TAQ 4601	Punching compressed air accumulation tank	1		(5)			0.0	
Hoppers		2					0	
313 29 TOL 4401	Daily Hopper Silica	1		(24)			0.0	
313 29 TOL 4402	Daily Hopper Circulating	1		(24)			0.0	
Nozzles		56					0	
313 29 TOB 4601 @ 56	Nozzles for CPS No. 1 and CPS No. 2	56	1000 Nm ³ /h (max)			207 kPa (max)	0.0	
Mufflers		56					0	
313 29 SIL 4601 @ 56	Mufflers Nozzles for CPS No. 1 and CPS No. 2	56					0.0	
Lifting Systems		5					3.2	
313 29 GRU 4101	Maintenance lifting system No. 1 (motorized head belt No. 4401)	1		2 ton			0.0	Tackle and manual car with davit; H=6 m; B=6 m
313 29 GRU 4102	Maintenance lifting system No. 2 (Vibrating feeder area)	1		3 ton			3.2	Motorized tackle and manual car with davit; H=18 m; B=4 m
313 29 GRU 4103	Maintenance lifting system No. 3 (Punching area)	1		3 ton			0.0	Tackle and manual car with davit; H=6 m; B=5 m
313 29 GRU 4104	Maintenance lifting system No. 4 (Motor system zone CPS No. 1)	1		10 ton			0.0	Tackle and manual car with rail; H=6 m
313 29 GRU 4105	Maintenance lifting system No. 5 (Motor system zone CPS No. 2)	1		10 ton			0.0	Tackle and manual car with rail; H=6 m
Retractable Chute and valves		4					0.0	
313 29 ALM 4701	Retractable chute Feed Bell CPS 1	1					0.0	
313 29 ALM 4702	Retractable chute Feed Bell CPS 2	1					0.0	
313 29 VAL 4501	Hopper bar valve silica	1					0.0	
313 29 VAL 4502	Hopper bar valve circulating	1					0.0	

AREA 500	GAS AND METAL DUST HANDLING SYSTEM	63					624.0	
Gas Bells		2					44	
313 31 CAM 6801	Bell for Primary Gases CPS 1	1					22	complete bell, semi-wheels, bell gate motor system
313 31 CAM 6802	Bell for primary Gases CPS 2	1					22	complete bell, semi-wheels, bell gate motor system
Prechambers and Chambers		7					94.1	
313 31 CMR 6701	Gas Prechamber CPS 1	1					0.0	Prechamber - dust retention screen - Cooled chute
313 31 CMR 6702	Gas Prechamber CPS 2	1					0.0	Prechamber - dust retention screen - Cooled chute
313 31 CMR 6703	Radiative chamber CPS 1	1					32.8	primary, secondary, and tertiary radiative chamber
313 31 CMR 6704	Radiative chamber CPS 2	1					32.8	primary, secondary, and tertiary radiative chamber
313 31 CMR 6705	Prechamber No. 1 Isasmelt	1					20.0	prechamber 1
313 31 CMR 6706	Prechamber No. 2 Isasmelt	1					0.0	prechamber 1
313 31 CMR 6707	Radiative Chamber Isasmelt	1					8.5	prechamber 2, primary and secondary radiative chamber
Expansion Joints		22					0.0	
313 31 JEX 6301	Expansion Joint Bell / prechamber CPS 1 (3300 x 3000)	1	40000 Nm ³ /h			7 kPa	750° C (max)	0.0
313 31 JEX 6302	Expansion Joint Bell / prechamber CPS 2 (3300 x 3000)	1	40000 Nm ³ /h			7 kPa	750° C (max)	0.0
313 31 JEX 6303	Junta de expansion outlet chamber CPS 1 Ø 1600	1	40000 Nm ³ /h			7 kPa	500° C (max)	0.0
313 31 JEX 6304	Junta de expansion outlet chamber CPS 2 Ø 1600	1	40000 Nm ³ /h			7 kPa	500° C (max)	0.0
313 31 JEX 6305	Junta de expansion No. 1 High-Speed Duct CPS Ø 1600	1	40000 Nm ³ /h			7 kPa	500° C (max)	0.0
313 31 JEX 6306	Junta de expansion No. 2 High-Speed Duct CPS Ø 1600	1	40000 Nm ³ /h			7 kPa	500° C (max)	0.0
313 31 JEX 6307	Junta de expansion No. 3 High-Speed Duct CPS Ø 1600	1	40000 Nm ³ /h			7 kPa	500° C (max)	0.0
313 31 JEX 6308	Junta de expansion No. 4 High-Speed Duct CPS Ø 1600	1	40000 Nm ³ /h			7 kPa	500° C (max)	0.0
313 31 JEX 6309	Junta de expansion No. 5 High-Speed Duct CPS Ø 1600	1	40000 Nm ³ /h			7 kPa	500° C (max)	0.0
313 31 JEX 6310	Junta de expansion outlet chamber Isasmelt Ø 1600	1	41500 Nm ³ /h			7 kPa	500° C (max)	0.0
313 31 JEX 6311	Junta de expansion No. 1 High-Speed Duct Isasmelt Ø 1600	1	41500 Nm ³ /h			7 kPa	500° C (max)	0.0
313 31 JEX 6312	Junta de expansion No. 2 High-Speed Duct Isasmelt Ø 1600	1	41500 Nm ³ /h			7 kPa	500° C (max)	0.0
313 31 JEX 6315	Expansion Joint No. 1 Inlet duct ESP Ø 2300	1	81000 Nm ³ /h			7 kPa	500° C (max)	0.0
313 31 JEX 6316	Expansion Joint No. 2 Inlet duct ESP Ø 2300	1	81000 Nm ³ /h			7 kPa	500° C (max)	0.0
313 31 JEX 6317	Expansion Joint 2000 x 3000 outlet duct de gases ESP	1	84000 Nm ³ /h			7 kPa	500° C (max)	0.0
313 31 JEX 6318	Expansion Joint 800 x 3400 inlet duct VTI process gases	1	84000 Nm ³ /h			7 kPa	500° C (max)	0.0
313 31 JEX 6319	Expansion Joint 800 x 3400 inlet duct VTI process gases	1	84000 Nm ³ /h			7 kPa	500° C (max)	0.0
313 31 JEX 6320	Expansion Joint No. 1 outlet duct VTI process gases Ø 2300	1	85000 Nm ³ /h			7 kPa	500° C (max)	0.0
313 31 JEX 6321	Expansion Joint No. 2 outlet duct VTI process gases Ø 2300	1	85000 Nm ³ /h			7 kPa	500° C (max)	0.0
313 31 JEX 6322	Expansion Joint No. 3 outlet duct VTI process gases Ø 2300	1	85000 Nm ³ /h			7 kPa	500° C (max)	0.0
313 31 JEX 6323	Expansion Joint connection to Quench Tower Ø 2300	1						0.0
313 31 JEX 6324	Expansion Joint No. 1 emergency gas pipeline Ø 2300	1						0.0
313 31 JEX 6325	Expansion Joint No. 2 emergency gas pipeline Ø 2300	1						0.0
313 31 JEX 6326	Expansion Joint No. 3 emergency gas pipeline Ø 2300	1						0.0
313 31 JEX 6327	Expansion Joint No. 4 emergency gas pipeline Ø 2300	1						0.0
313 31 JEX 6328	Expansion Joint No. 5 emergency gas pipeline Ø 2300	1						0.0
Guillotine Valves for gases (Motorized)		4					9	
313 31 VAL 6201	Guillotine valve outlet chamber CPS 1 Ø 1600	1	39318 Nm ³ /h (design)			-457 Pa	480° C (max)	1.5
313 31 VAL 6202	Guillotine valve outlet chamber CPS 2 Ø 1600	1	39318 Nm ³ /h (design)			-457 Pa	480° C (max)	1.5
313 31 VAL 6203	Guillotine valve outlet VTI to acid plant Ø 2300	1	84441 Nm ³ /h (design)			466 Pa	550° C (max)	3.0
313 31 VAL 6204	Guillotine valve emergency duct Ø 2300	1	84441 Nm ³ /h (design)			466 Pa	550° C (max)	3.0

Butterfly valves for gases (Motorized)		2						0.372	
313 31 VAL 6205	Butterfly valve for gases - high-speed duct Principal CPS Ø 1600	1	42000 Nm ³ /h			+/- 1387 Pa	550° C (max)	0.2	
313 31 VAL 6206	Butterfly valve for gases - high-speed duct Principal Isasmelt Ø 1600	1	42000 Nm ³ /h			+/- 1387 Pa	550° C (max)	0.2	
Precipitator		1						157	
313 31 PRE 6401	Electrostatic Precipitator	1	83000 Nm ³ /h (nominal flow)	600 mg/Nm ³ (dust charge to		-150 mmca (pressure drop)	350° C (nominal)	157	
Fans		1						220	
313 31 VEN 6501	Induced Process gas fan	1	89900 Nm ³ /h (max) 47700 Nm ³ /h (min)			215 mmca (max pressure diff)	310° C (max)	220	with VDF (supplier)
Nowels		3						13.2	
313 31 TPR 6601	Principal collector nowel for Radiative Chamber CPS 1 & 2	1		600 kg/h (max)			500° C (Tmax dust)	5.5	
313 31 TPR 6602	Nowel for dust	1		2800 kg/h (max)			500° C (Tmax dust)	5.5	
313 31 TPR 6603	Dust collector nowel	1		2800 kg/h (max)			500° C (Tmax dust)	2.2	
Rotating Valves		5						7.45	
313 31 VAL 6207	Rotating valve discharge manifold entrada Precipitator (12")	1		1 tph			300° C (dust)	1.5	
313 31 VAL 6208	Rotating valve discharge dust gas butterfly valve CPS (12")	1		1 tph			300° C (dust)	1.5	
313 31 VAL 6209	Rotating valve discharge dust gas butterfly valve Isasmelt (12")	1		1 tph			300° C (dust)	1.5	
313 31 VAL 6215	Rotating valve discharge dust hopper CPS (12")	1		1 tph			300° C (dust)	1.5	
313 31 VAL 6218	Rotating valve discharge dust hopper ESP (12")	1		1 tph			300° C (dust)	1.5	
Guillotine Valves for dust (manual)		7						0	
313 31 VAL 6210	Guillotine Valve discharge Main Nowel CPS	1					300° C (design)	0.0	
313 31 VAL 6211	Guillotine Valve discharge inlet manifold ESP	1					300° C (design)	0.0	
313 31 VAL 6212	Guillotine Valve Dust Discharge butterfly gas Valve CPS	1					300° C (design)	0.0	
313 31 VAL 6213	Guillotine Valve Dust Discharge butterfly gas Valve Isasmelt	1					300° C (design)	0.0	
313 31 VAL 6214	Guillotine Valve discharge dust hopper CPS	1					300° C (design)	0.0	
313 31 VAL 6216	Guillotine Valve discharge dust collector Nowel ESP	1					300° C (design)	0.0	
313 31 VAL 6217	Guillotine Valve discharge dust hopper ESP	1					300° C (design)	0.0	
Hoppers for dust		2						0	
313 31 TOL 6901	Dust storage hopper CPS	1		(2.4)				0.0	
313 31 TOL 6902	Dust storage hopper ESP	1		(10)				0.0	
Pneumatic Transport Systems for Dust		4						4.4	
313 31 STN 6901	Pneumatic Transport Pump No. 1 for Dust CPS	1						1.1	
313 31 STN 6902	Pneumatic Transport Pump No. 2 for Dust CPS	1						1.1	Stand By
313 31 STN 6903	Pneumatic Transport Pump No. 1 for Dust ESP	1						1.1	
313 31 STN 6904	Pneumatic Transport Pump No. 2 for Dust ESP	1						1.1	Stand By
Centrifuge pumps and tanks		3						74.5	
313 31 BOM 6601	Return pump No. 1 cooling water	1	484 m ³ /h			20.6 mca (differential height)		37.3	
313 31 BOM 6602	Return pump No. 2 cooling water	1	484 m ³ /h			0.6 mca (differential height)		37.3	Stand By
313 31 TAQ 6603	Water storage tank (Conversion Circuit)	1		(80)					

AREA 600	SERVICES	7						780.6	
Compressors		3						780.59	
319 27 COP 0201	Instrumentation Compressor	1	458 Nm ³ /h (max)			910 kPag (max)	65° C (max)	75.0	ISA-HA-CPS
319 27 COP 0202	High [pressure?] Air Compressor (centrifuge)	1	6053 Nm ³ /h (max)			1035 kPag (max)	40° C (max)	700.0	ISA-HA-CPS
329 27 BOM 0201	Pump No. 3 Oil No. 2	1		4805 kg/h		1200 kPa	15.6° C (ambient)	5.6	
Dryers		2						0.0	
319 27 SEC 0301	Instrumentation Air Dryer (regenerative)	1	538 Nm ³ /h (max)			690 kPa (P operating)	35° C (T outlet)	0.0	
319 27 SEC 0302	Instrumentation Air Dryer (regenerative)	1	538 Nm ³ /h (max)			690 kPa (P operating)	35° C (T outlet)	0.0	
Tanks		1						0	
319 27 TAQ 0601	Main compressed air accumulator tank for instrumentation	1		(10)					
Electricity Generator		1						0	
319 27 GEE 0601	Emergency Generator	1	102.6 m ³ /min (flow gases escape max)	115.1 l/h fuel cons. at full load	350 kW (max gen power)		40° C (max) -14 °C (min)		
TOTAL POWER								4,385	