MMD ROCK CRUSHING PLANT

DESCRIPTION

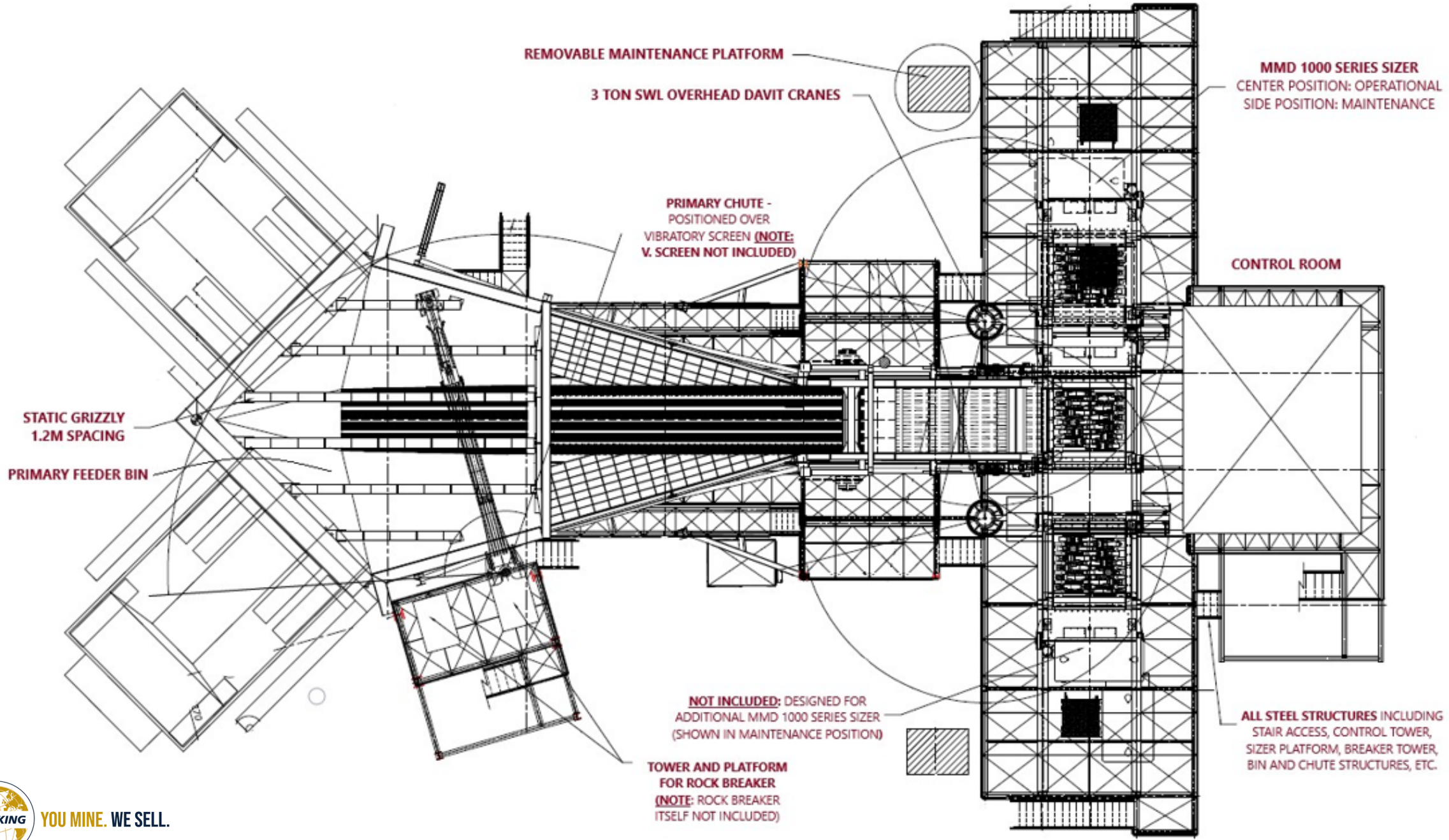
NEVER USED, NEVER ASSEMBLED – This MMD Rock Crushing Plant has been stored in an indoor warehouse and stored with regular care and maintenance. The plant includes and is designed around an MMD 1000 Series, 6-Ring Sizer sitting on rails for ease of maintenance. It is also designed to allow the end user to add an additional MMD sizer on the same the rail system for continual operations during maintenance. This MMD Plant includes the following equipment

- *MMD 1000 Series, 3T, 6-Ring Sizer*
- Fully Outfitted, Air-Conditioned Control Cabin
- Allen-Bradley Rockwell PCC 3000 Control Panel and PLCs
- Primary Feeder Bin
- Static Grizzly
- Primary Feeder and Discharge Chutes
- All Steel Structures Including:
  - Structure for Primary Bin and Chute
  - Tower and Platform for the Control Room
  - Tower and Platform for a Rock Breaker (rock breaker not included in this package)
- 2 Davit Cranes
- Spare Parts including Gearboxes, Motors and MORE

I.D.	18C-AR03
OEM	MMD
YOM	2013
Location	Indoor Warehouse Dunkirk, France
Condition	NEVER USED
Packaging	Original Packaging

PRIMARY	SPECIFICATIONS
Feed Material	0 – 1000mm
Discharge Material	0 – 300mm
Design Flow Rate	2050 t/h
Nominal Flow Rate	1780 t/h
Peak Flow Rate	2300 t/h

MMD ROCK CRUSHING PLANT OVERVIEW



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MMD ROCK CRUSHING PLANT

MMD SIZER

One (1) Primary 6-Ring Sizer is included in this package with a carriage and rail system to easily move the Sizer from operational position into maintenance position. The rail system includes an additional carriage and rail space to add a second Sizer for continuous crushing operations while one machine is in standby.

The Sizer is mechanically controlled by its Gearbox which is mechanically protected by a Fluid Coupling and Shaft Rotating monitoring sensor. The Gearbox also has its own dedicated cooling and filtration system consisting of an Oil Pump, Duplex Filter and Oil Cooler. The Oil Cooler in automatic mode is controlled by the Gearbox oil temperature transmitter. The Oil Pump motor will run continuously whilst the main Sizer motor is running. The differential of the pressure is monitored by the PLC on either side of the Duplex filter utilizing two Pressure Transmitters on each Sizer

Primary Sizer has its own dedicated automated lubrication system. This system basically consists of a grease pump (which starts when the Sizer is called to Start) and a grease tank with a level probe which is used for monitoring the grease tank level by the PLC located with the PLC master control panel (PCC-3000).

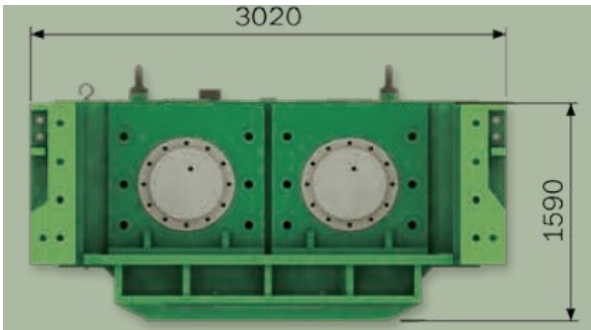
MAIN COMPONENTS INCLUDE:

- *Primary 6-Ring Sizer*
- *Complete R400 60:1 Gearbox / Drive Assembly*
- *Voith 650 TSVC Fluid Coupling Set with under-speed sensor*
- *High Voltage Induction Motor (400kW, 6600v 50Hz, 3 Phase)*
- *Oil Pump and Oil Air Cooler with motors*
- *Grease Pump and Grease Tanks with motors*
- *Trolly / Wheel Carriage with motor for Mobile Rail System*
- *Various sensors to monitor speed, temperature, levels, etc.*
- *Includes installation, operations and maintenance manuals as well as many drawings of various types.*

SPARE PARTS

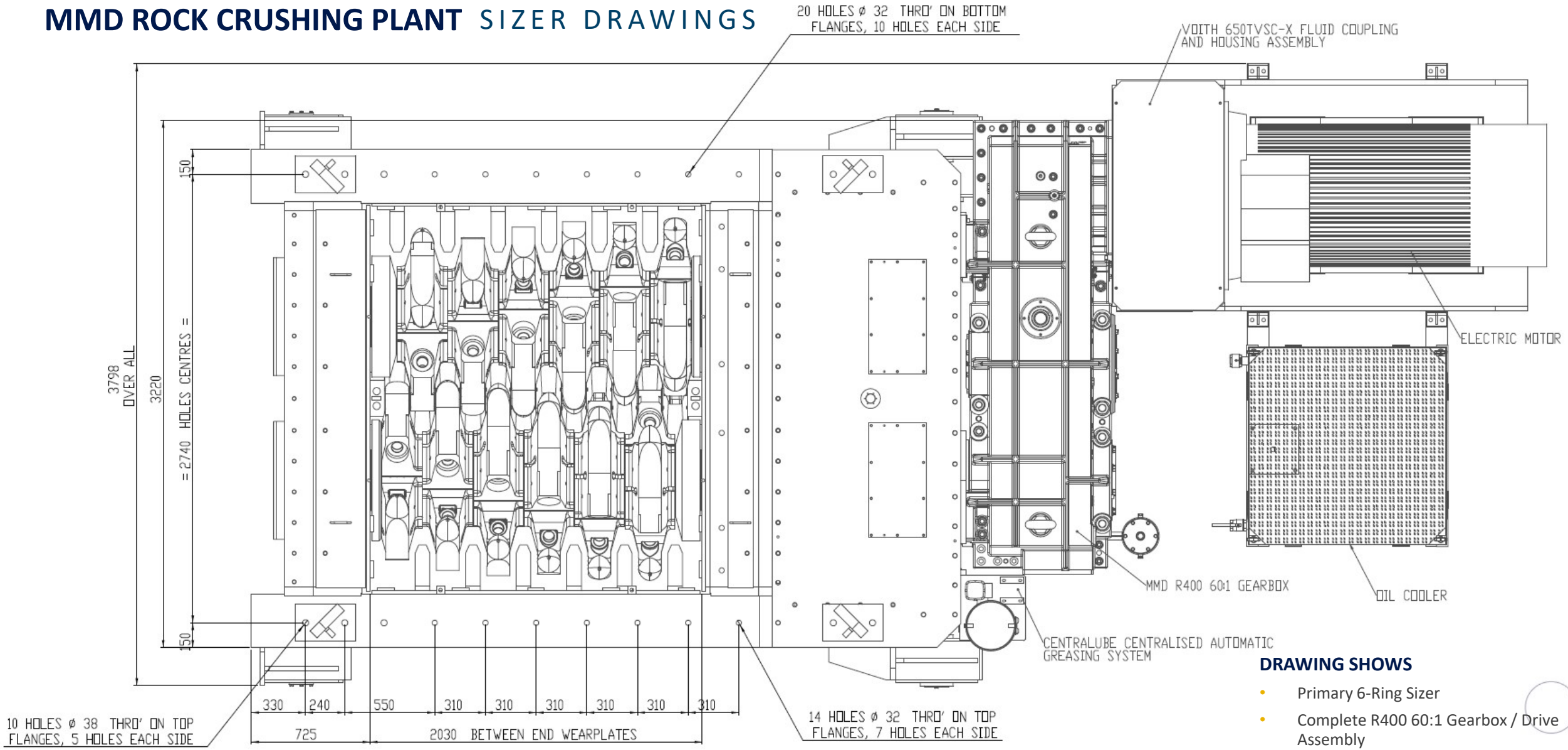
- Gearbox / Drive Assembly
- 2 Voith 650 TSVC Fluid Couplings, and multiple associated Voith parts, e.g., sensors, fusible plugs, thermal switch, fitting tools, and hardware
- (2) High Voltage Induction Motor (400kW, 6600v 50Hz, 3 Phase)
- Multiple Low Voltage Induction Motors, Pumps, Fans, etc.

SIZER	SPECIFICATIONS
SERIAL NO. SIZER	S100-0049
SERIAL NO. GEARBOX	S1794600-020
SERIAL NO. COUPLER	7559456
CONDITION	NEVER USED
SERIES	1000
RINGS	6
TEETH PER RING	3
SPEED	25 rpm
ROLL TIP SPEED	1.5 m/s
BREAKER BAR	Installed below crushing rolls, full width
DRIVE SYSTEM TYPE	Electrical via Fluid Couplings
DRIVE POWER / VOLTAGE	400kw / 6.6kV
REDUCER IN /OUT RATIO	60 / 1 rpm
REDUCER TORQUE	156 kN
COUPLING	VOITH 650 TVSC fluid coupling / 450 kW
LUBRICATION SYSTEM	Auto Grease Supply for crusher bearings



1000 Series

MMD ROCK CRUSHING PLANT SIZER DRAWINGS



DRAWING SHOWS

- Primary 6-Ring Sizer
- Complete R400 60:1 Gearbox / Drive Assembly
- Voith 650 TSVC Fluid Coupling
- High Voltage Induction Motor
- Auto Oil System
- Auto Grease System

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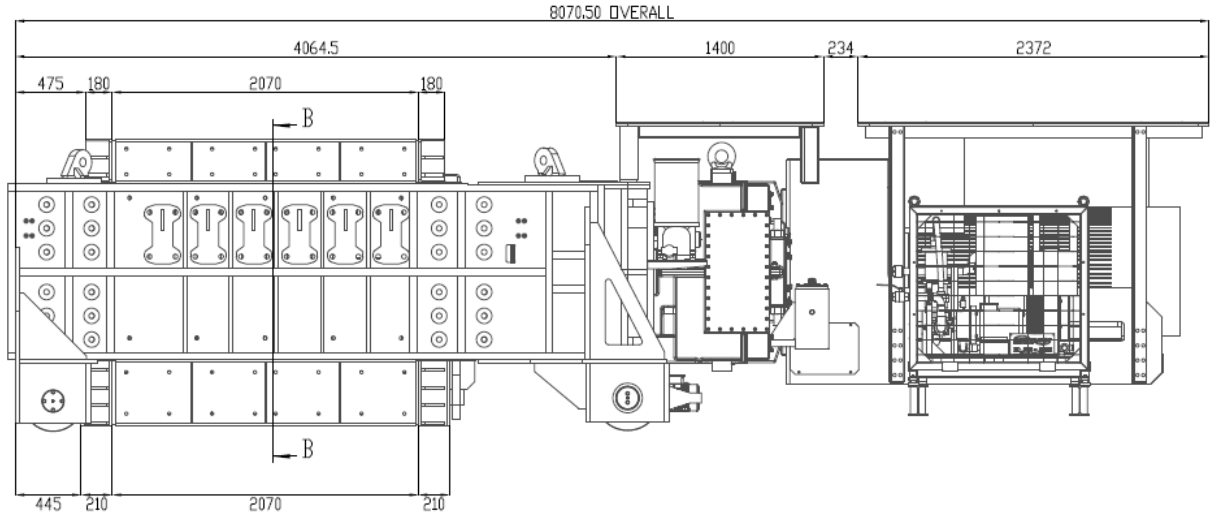
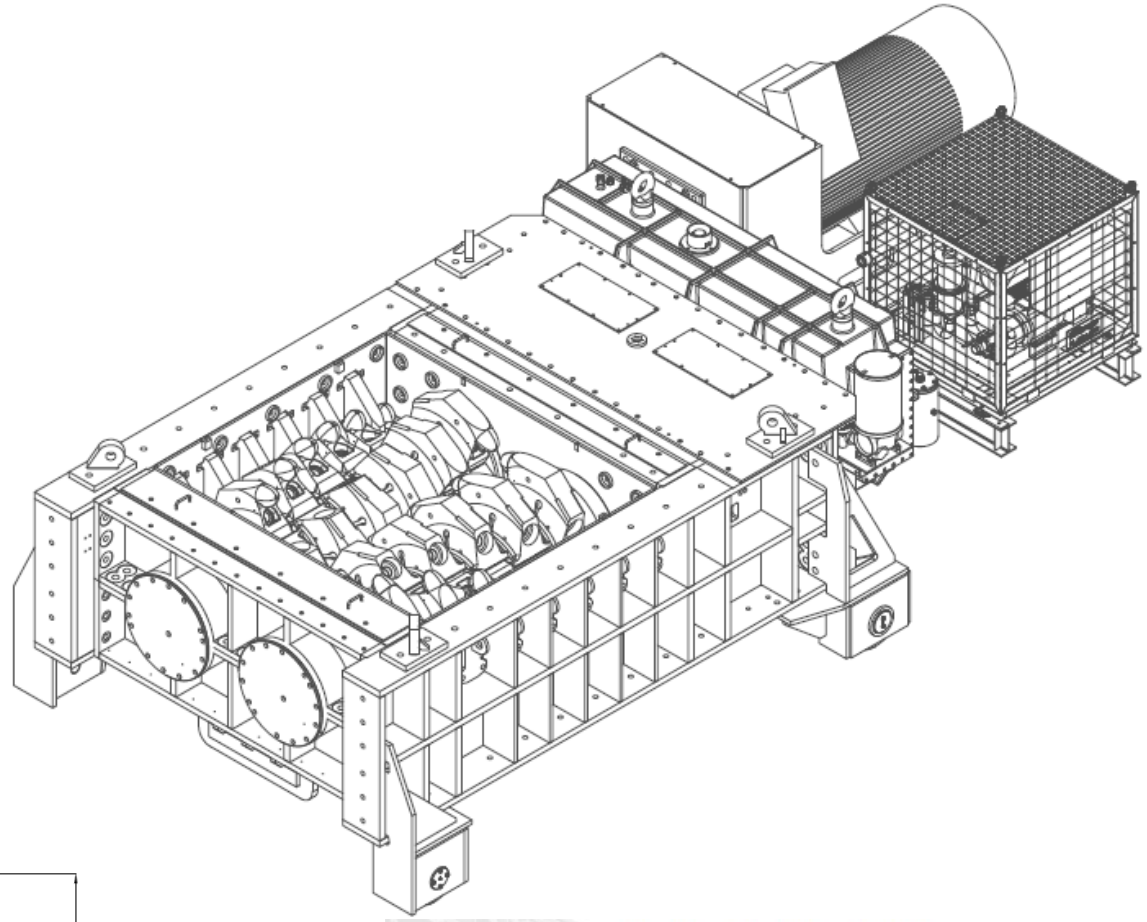
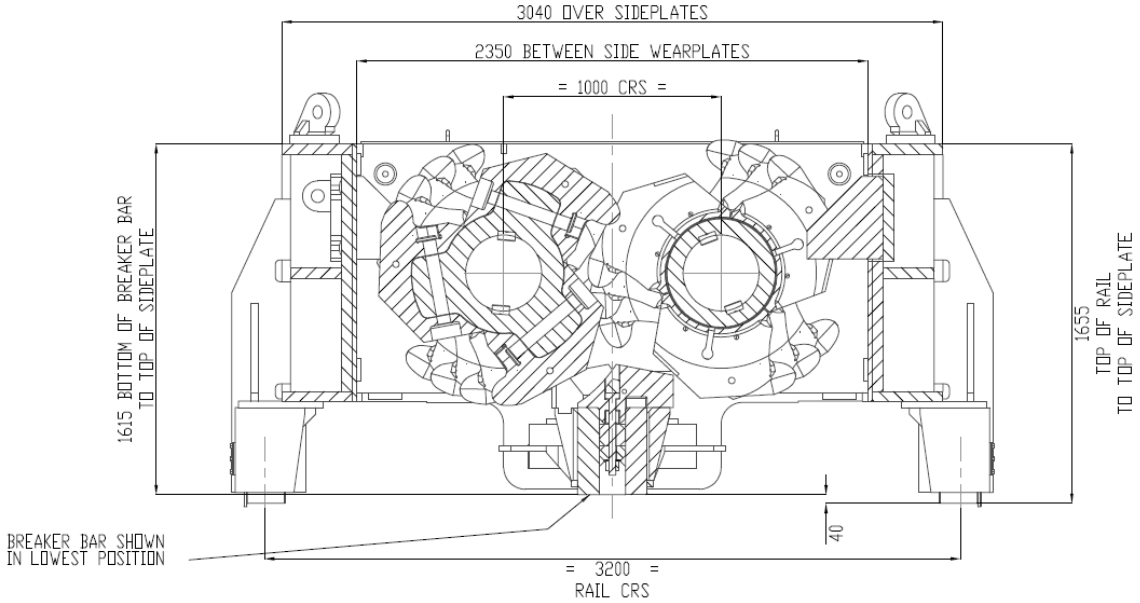
MMD ROCK CRUSHING PLANT SIZER DRAWINGS







The Three-Stage Breaking Action

Initially, the material is gripped by the leading faces of opposed rotor teeth. These subject the rock to multiple point loading, inducing stress into the material to exploit any natural weaknesses.

At the second stage, material is broken in tension by being subjected to a three point loading, applied between the front tooth faces on one rotor and rear tooth faces on the other rotor.

Any lumps of material that still remain oversize are broken as the rotors chop through the fixed teeth of the breaker bar, thereby achieving a three dimensional controlled product size.

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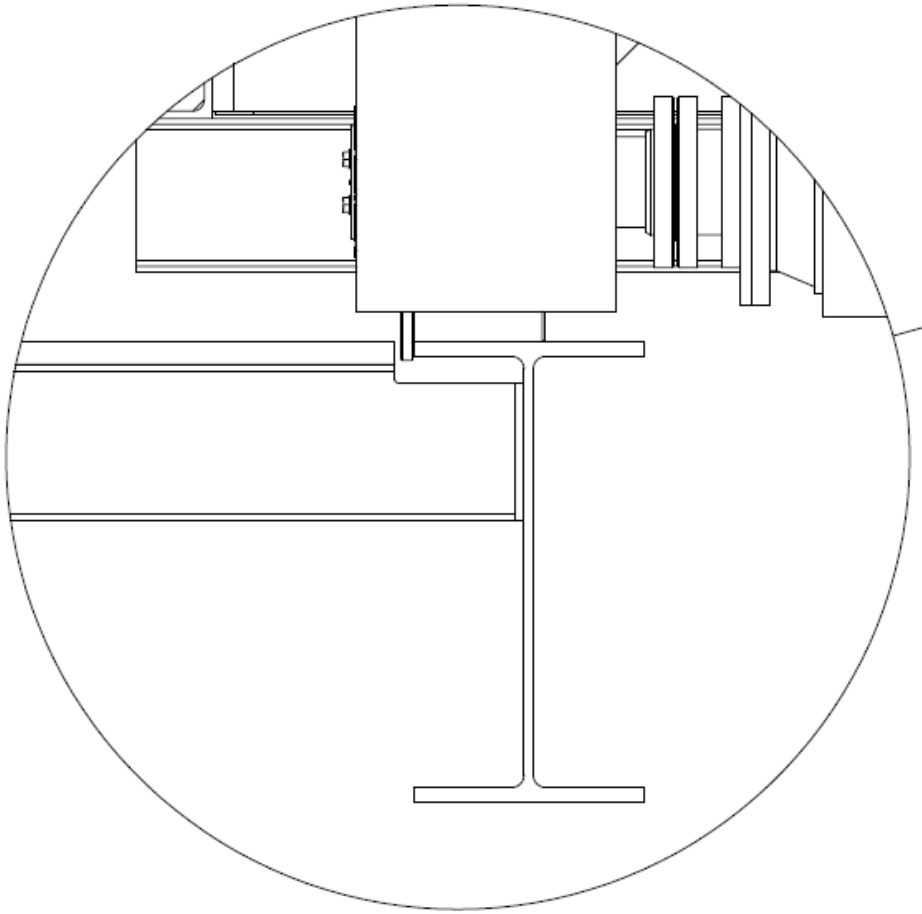
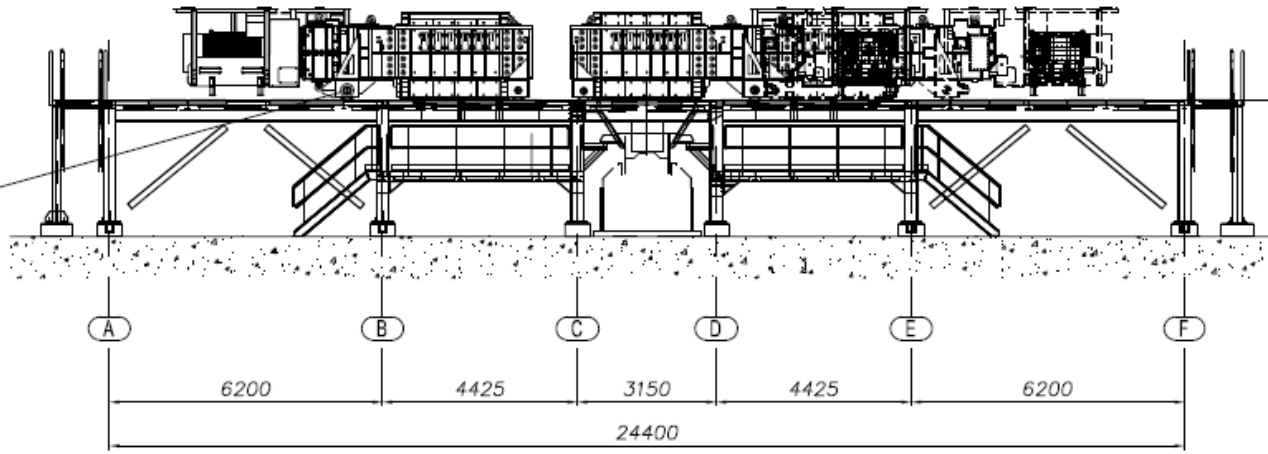
MMD ROCK CRUSHING PLANT

SIZER CARRIAGE AND RAIL SYSTEM





VIEW ON GRID REF (4)

MMD ROCK CRUSHING PLANT

PRIMARY FEEDER BIN AND CHUTES

DESCRIPTION

The feed bin is designed to receive feed directly from 100 ton+ dumper trucks with valley angles 60° to the horizontal. The dumping spots are arranged at 90° to each other. The is made from 15mm steel walls and includes a cover plate to bridge the gap between feed bin and retaining wall.

The bin is fitted with static grizzly bars (1.2m spacing) parallel to an MMD D7 apron feeder length. The supporting structure of the bin is designed to consider the rocks overload and the rock breaker impact force on the static grizzly bars.

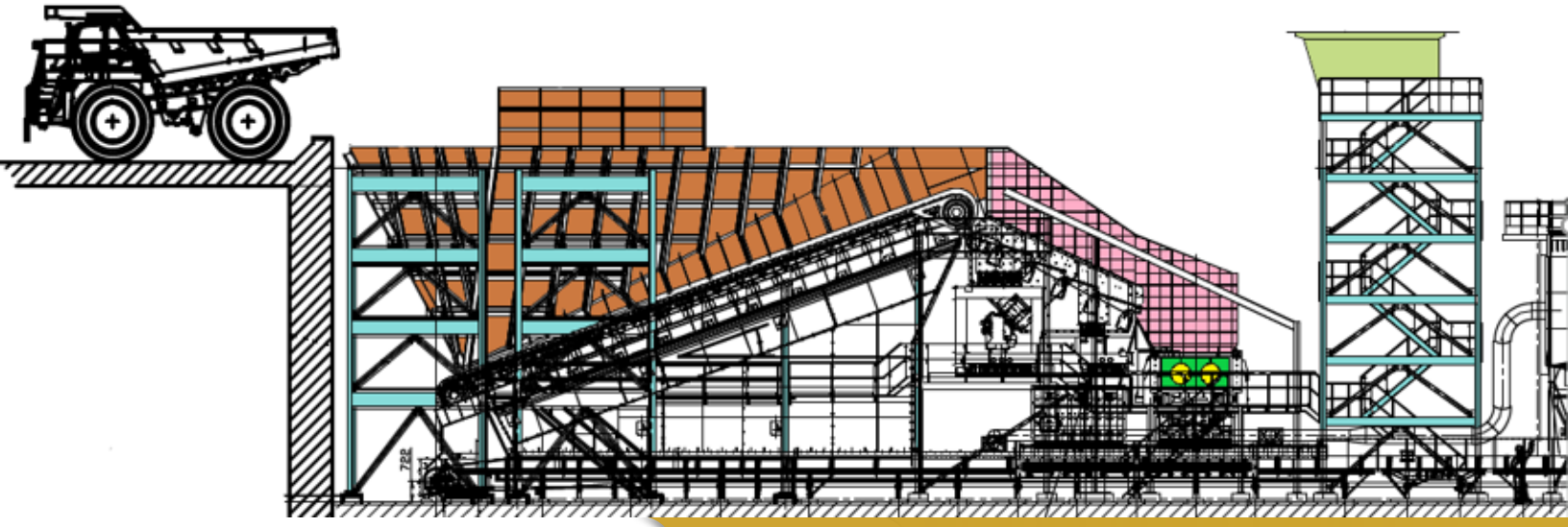
Sections of the bin that are subject to impact by falling material from the dumpers are lined with railway tracks spaced at an appropriate distance such that the ore itself forms a protective layer between the tracks. The tracks should be welded to the bin on-site.

Sections of the hopper not subject to impact from the dumpers will be lined with abrasion resistant replaceable plates. Wear liners are a 25mm thickness. Liners will be bolted to the bin on-site.

PRIMARY BIN	SPECIFICATIONS
FORM	Diamond Shaped
DUMPER CONFIG	Two Dump Ramps at 90°
STATIC GRIZZLY	1.2m Spacing
ASSEMBLY	Welded / Bolted On-Site
L / H / W	19000 / 7500 / 10600 mm
VALLEY ANGLES	60° to horizontal
WALL THICKNESS	15mm / mild steel
HIGH IMPACT LINER	Rail Tracks welded to high impact location of bin
OTHER LINER	25mm HB360 Steel Bolted Plates

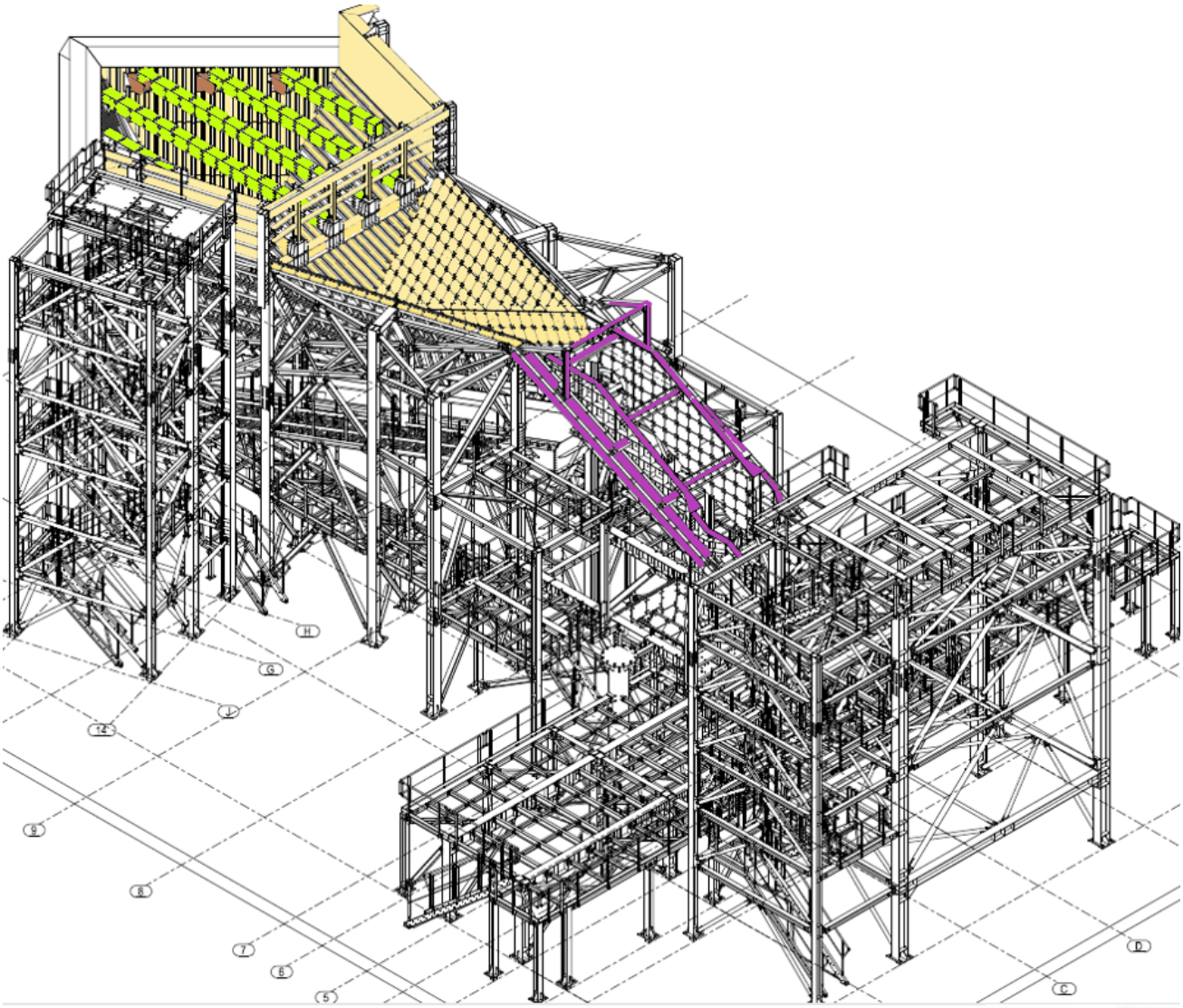
MAIN COMPONENTS INCLUDE:

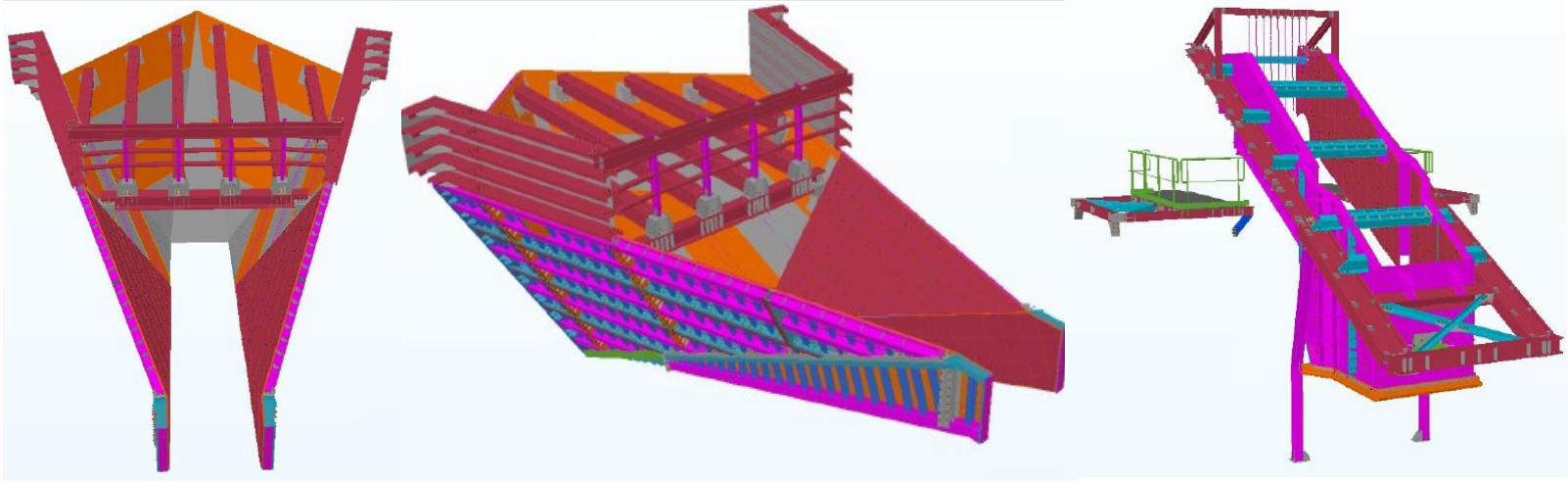
- *Precut steel pieces ready for on-site assembly of the bin, feed chute and discharge chute.*
- *Precut Vertical Skirt Plates*
- *Static Grizzly I-Beam Bars*
- *Impact Rails*
- *Wear Steel Plating*
- *Support Structure*



MMD ROCK CRUSHING PLANT

PRIMARY FEEDER BIN AND CHUTES OVERVIEW





MMD ROCK CRUSHING PLANT

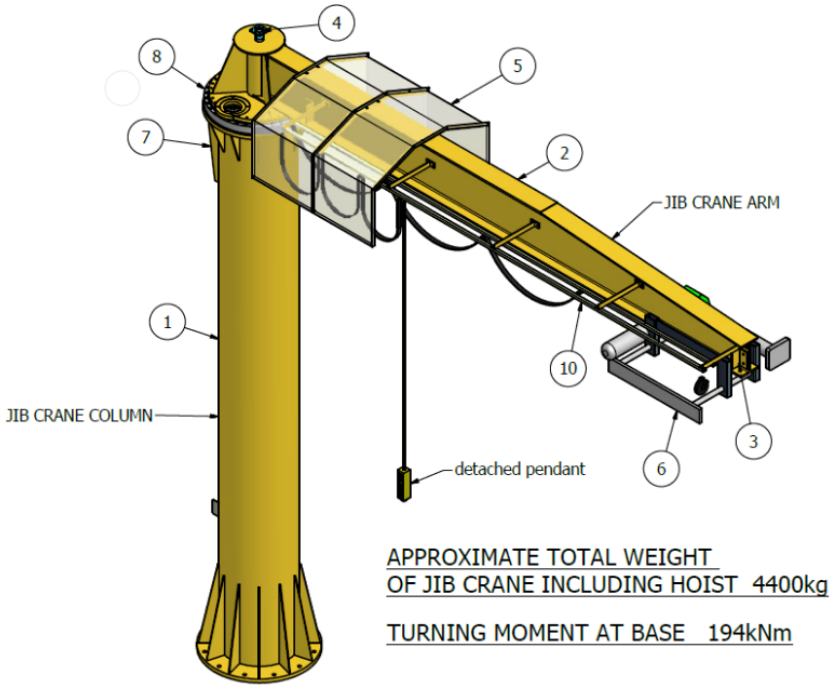
2 DAVIT CRANES

DESCRIPTION

The MMD Plant Package includes (2) 3-Ton, SWL Davit Cranes with a 6-meter diameter. The cranes were designed to be mounted on each of end of the MMD 6-Ring Sizer platform.

The two primary purposes for the cranes:

- *Perform lifting tasks during maintenance of the MMD 6-Ring Sizer*
- *Clearing the feeder shoot of oversized ore blocking the path of the feeder chute*



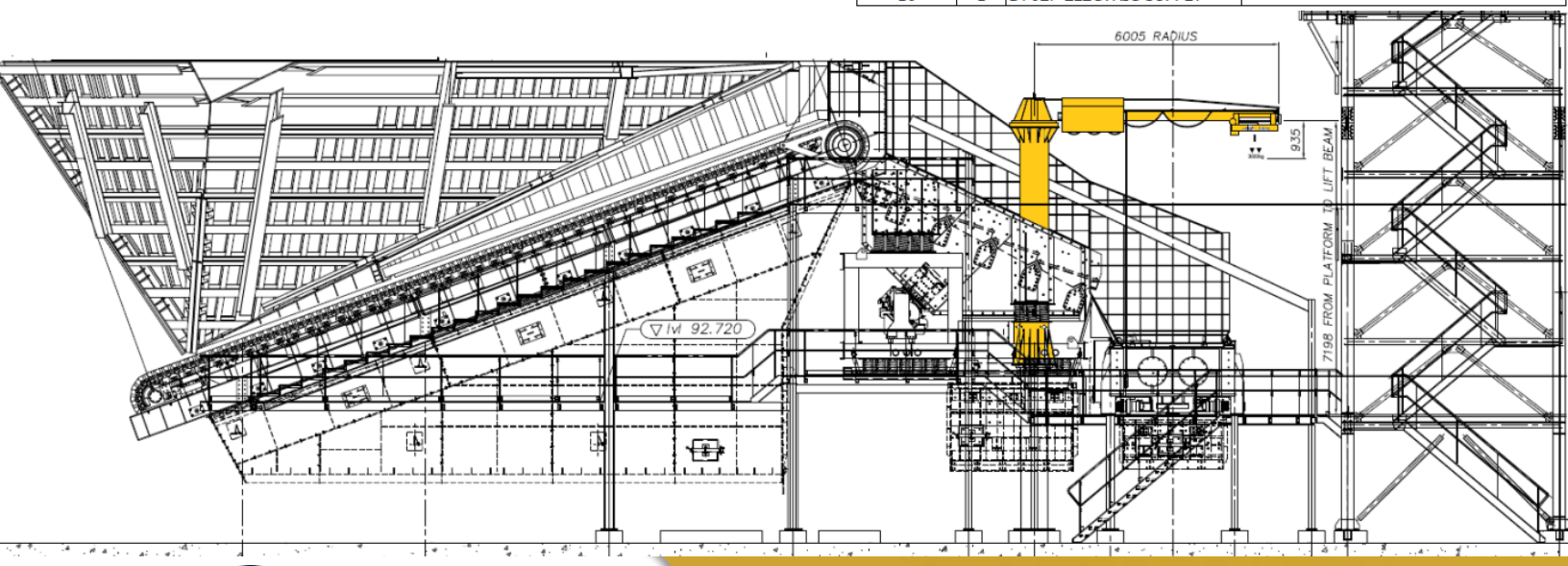
APPROXIMATE TOTAL WEIGHT OF JIB CRANE INCLUDING HOIST 4400kg

TURNING MOMENT AT BASE 194kNm

DAVIT CRANES	SPECIFICATIONS
OEM	Street Crane (UK) Ltd.
NUMBER OF CRANES	2
CAPACITY	3 t / SWL
BRIDGE SPAN / RUNWAY LENGTH	6000 mm radius / 270° motorized slewing
RUNWAY ELEVATION	5000mm above platform
DESIGN CODE	DIN 15018 for Jib
DESIGN CLASS	M4 for Hoist
HOISTING SPEED (high / low)	4 / 1 m / min
HOOK TYPE	Trapezoidal with safety catch
INSTALLED POWER	3 kW
CONTROL EQUIPMENT	Pendant Controller

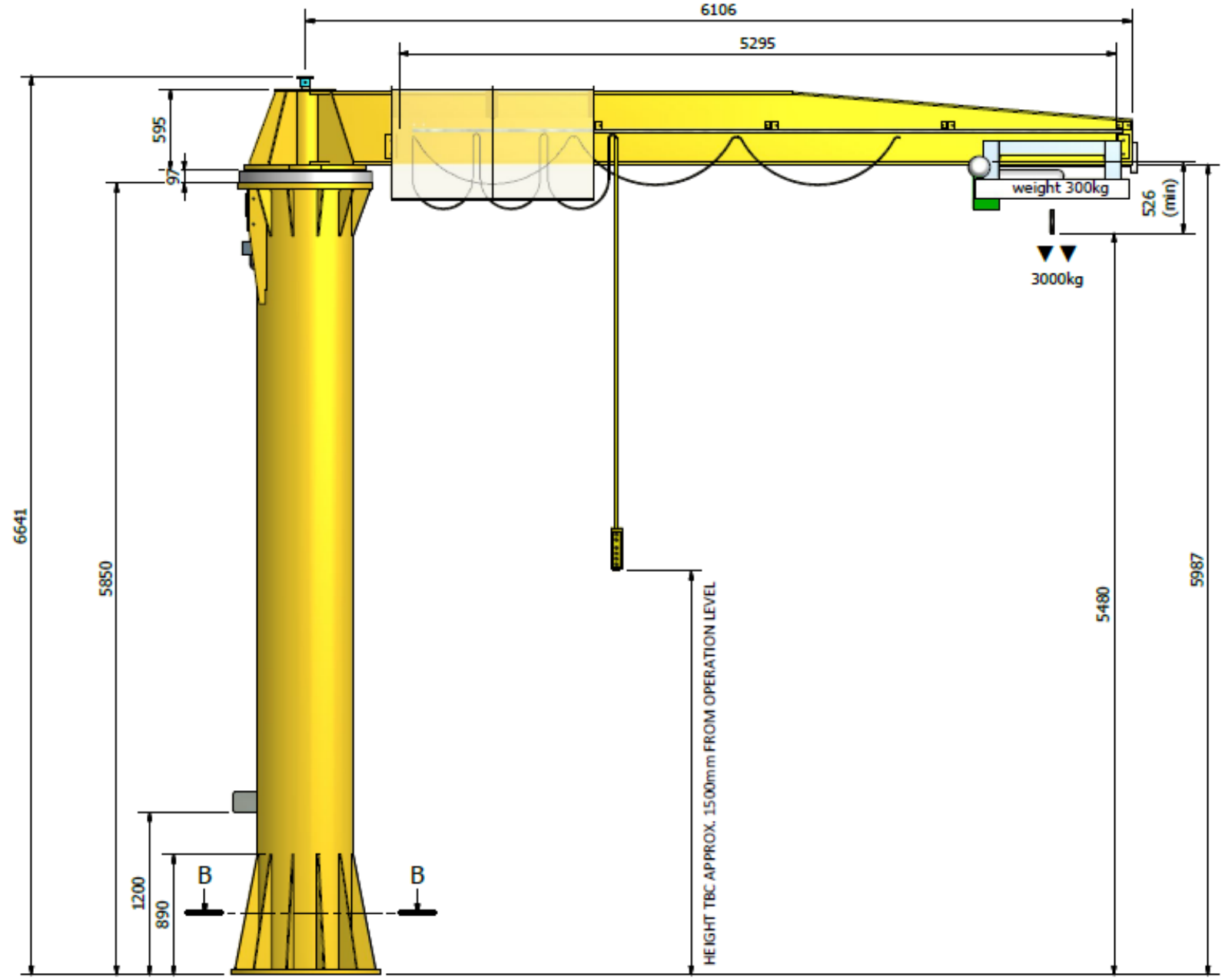
PARTS LIST

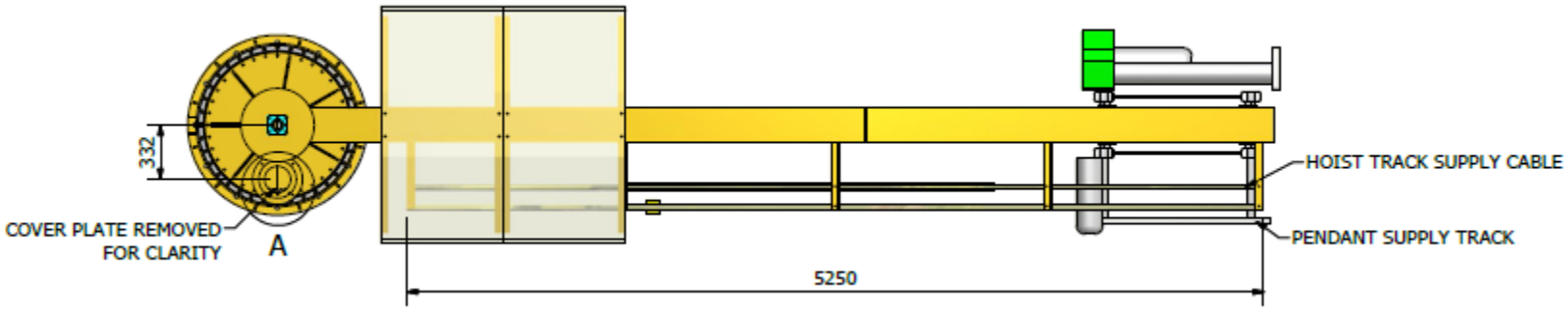
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	D7027 COLUMN ASSEMBLY	
2	1	D7027 ARM ASSEMBLY	
3	4	D7027 ENDSTOP	
4	1	D7027 SLIP RING ASSEMBLY	
5	2	D7027 CANOPY COVER	
6	1	D7027 SH3005 HOIST	
7	1	SLEW DRIVE MOTOR	
8	1	SLEW RING	NBC:- SIG 976 2 20 01 AA LM
9	1	DRIVE PINION	REF:- FRD 52 53 BORE 50mm (M8Z17)
10	1	D7027 ELECTRIC SUPPLY	



MMD ROCK CRUSHING PLANT

2 DAVIT CRANES - DRAWINGS





MMD ROCK CRUSHING PLANT

CONTROL ROOM

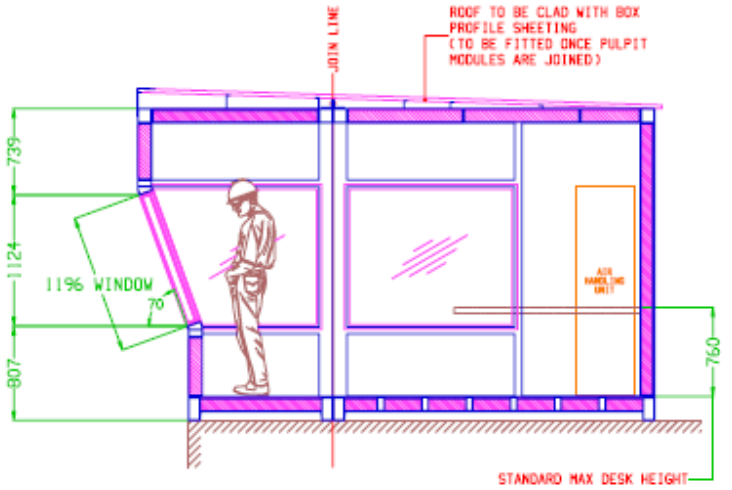
CONTROL ROOM	SPECIFICATIONS
OEM	Acoustic Applications Ltd.
W x H x L	6m x 4.4m x 2.9m
WEIGHT	9,120 Kgs
AIR CONDITIONING	INCLUDED
INSULATION	100mm Thick LR80 Mineral Wool
ELECTRICAL PANEL	Schneider Acti 9

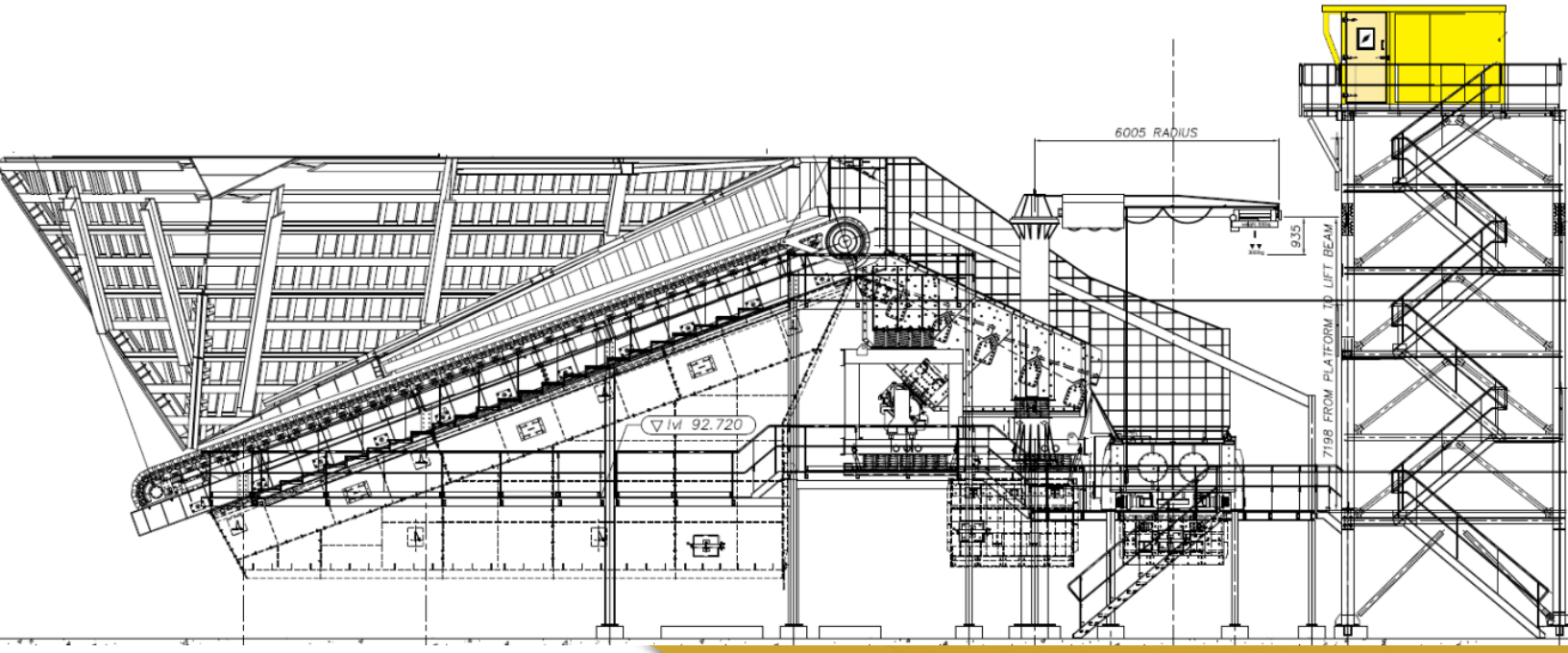
DESCRIPTION

This Control Room is the Master Control Station (MSC) that overlooks the MMD Plant through accessible sloped window. The Control Room ships in two (2) sections to be assembled on site.

MAIN COMPONENTS INCLUDE:

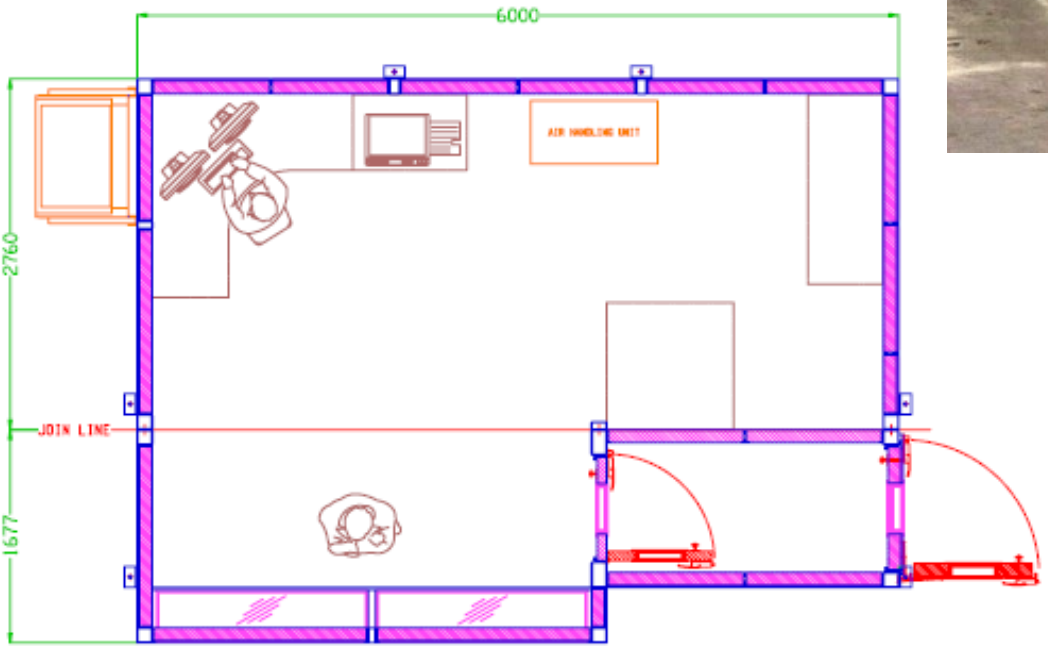
- *2 modular sections with room and floor in place*
- *Electrical wiring, outlets, panels and switches*
- *Lighting*
- *Air Conditioning Unit and Ventilation System including:*
  - *1 x Internal FCU/Compressor/Control Panel Package*
  - *1 x Outdoor Air-Cooled condenser*
- *Windows clear laminated safety glass toughened to BSEN 12150*
- *Windows are set in aluminum frames and lined with acoustically absorptive foam*
- *External access door is heavy duty, self closing, and classed as a double sealing.*
- *Assembly and illustration and operation manuals included.*

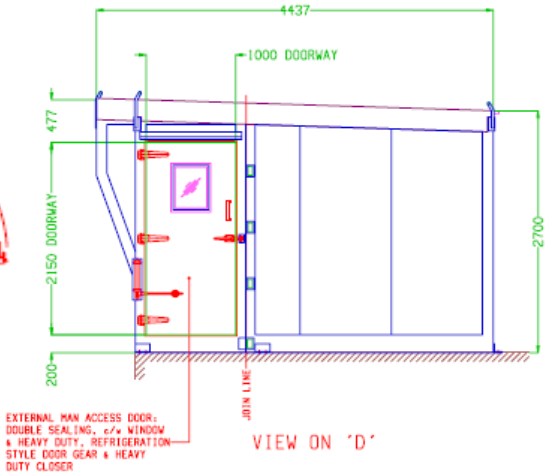


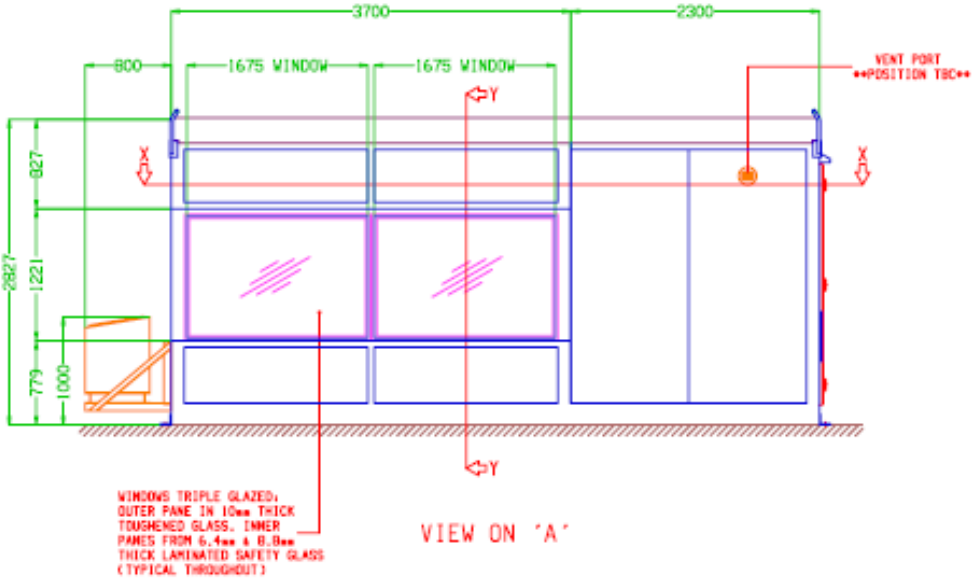


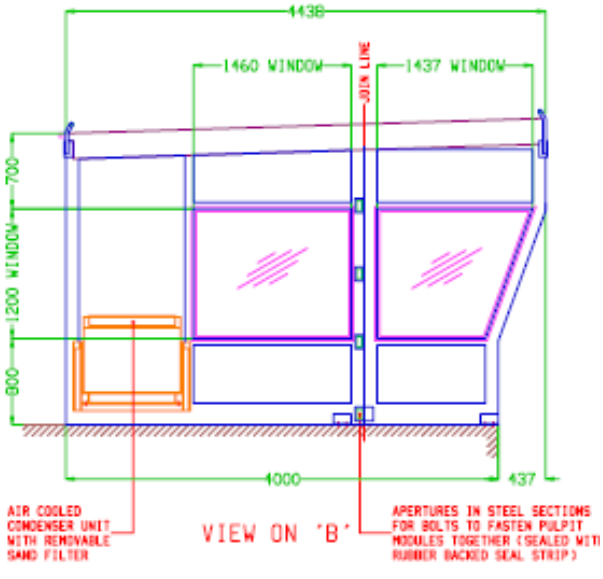
MMD ROCK CRUSHING PLANT

CONTROL ROOM – DRAWINGS



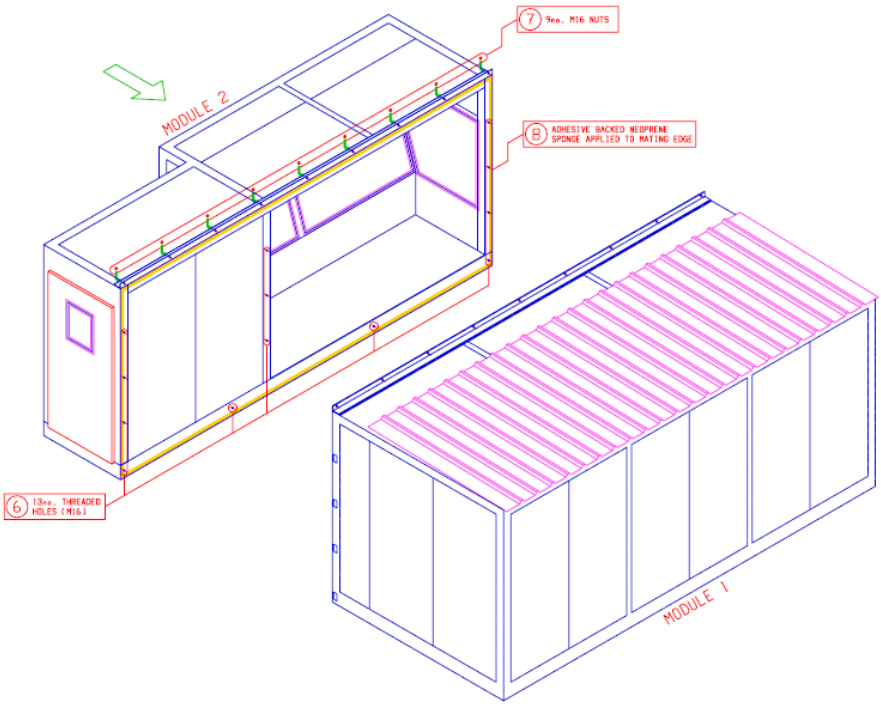


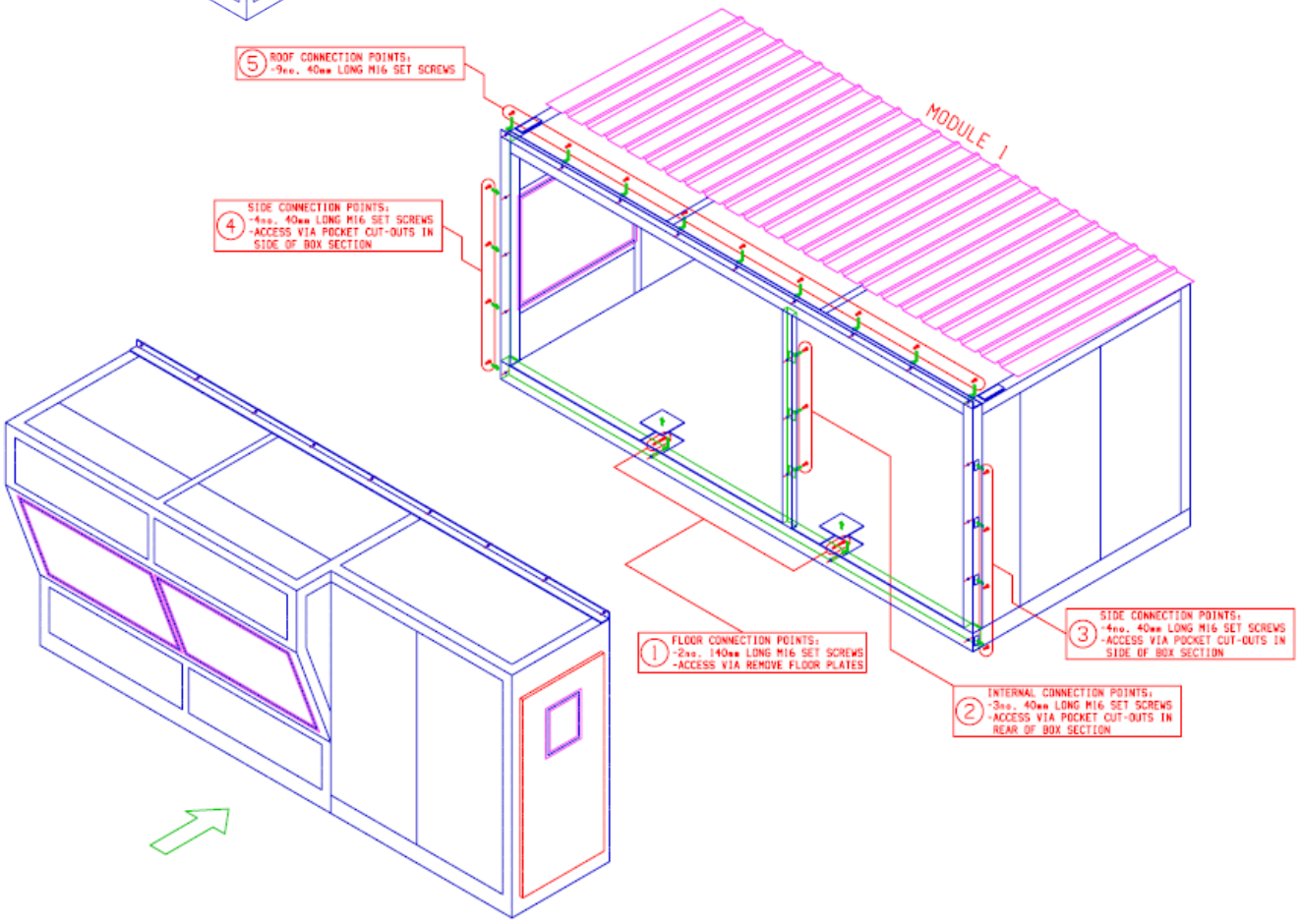




MMD ROCK CRUSHING PLANT

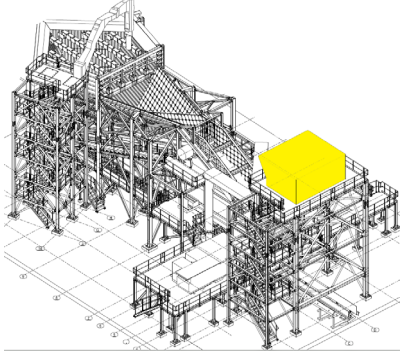
CONTROL ROOM- DRAWINGS





MMD ROCK CRUSHING PLANT

CONTROL ROOM- ELECTRICAL PANEL



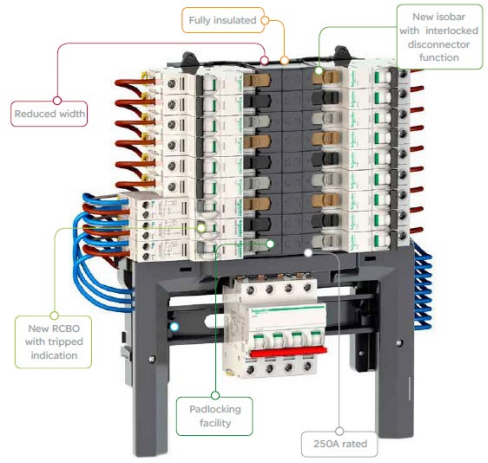
DESCRIPTION

All pre-installed electrical infrastructure for the Control Room is manufactured by Schneider – Acti 9 system.

Acti 9 | The safest, simplest and most efficient system for power distribution solutions

Protection devices
- > Miniature circuit breaker
- > Residual current circuit breaker
- > Vigi™ residual current devices
- > Surge arrester

Protection monitoring and supervision
- > Indication and tripping auxiliaries
- > Remote control auxiliaries
- > Automatic recloser auxiliaries



MMD ROCK CRUSHING PLANT

CONTROL PANEL / PLC

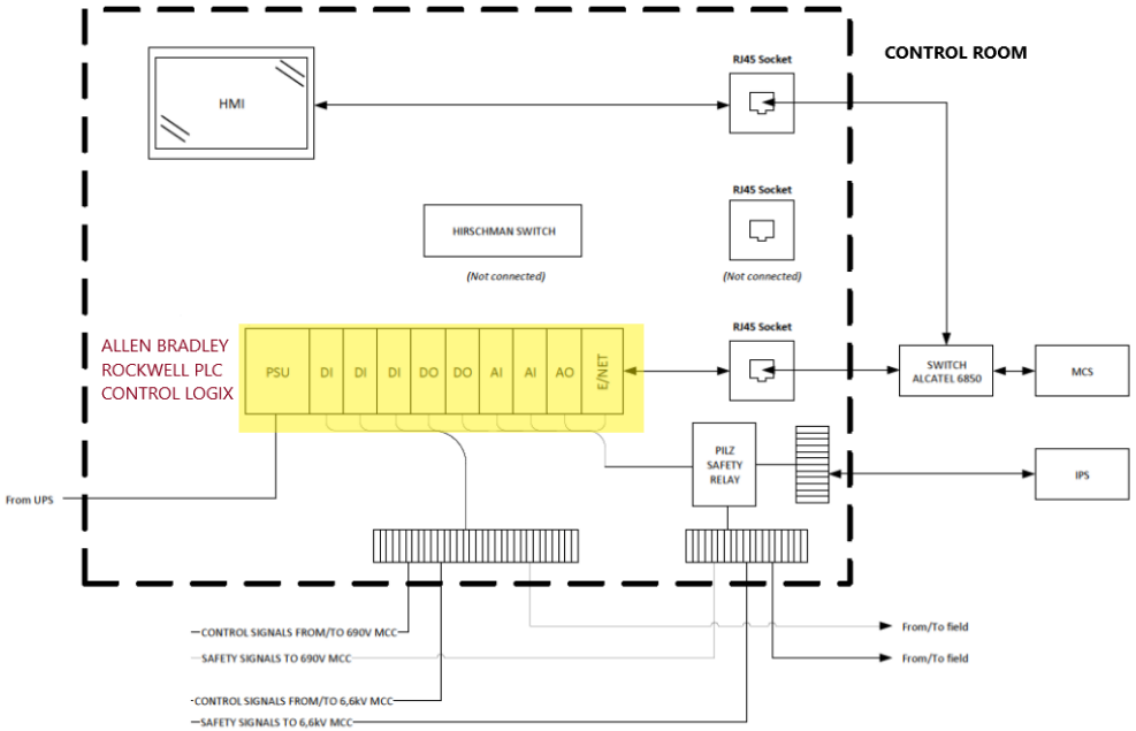
This MMD Sizer and Plant includes and is controlled by the PCC-3000 Control Panel and PLC (located within Control Panel PCC-3000) The PLC (Programmable Logic Controller) & HMI (Human Machine Interface) package is designed to operate as a fully automated control system for the Primary Sizer Package.

The PLC Control Panel (PCC-3000) has a door mounted isolator, Allen Bradley Panelview plus HMI, Emergency Stop, and Reset Pushbutton mounted on the doors. The panel is also ventilated via a door mounted Fan and Filter controlled by an internally mounted thermostat.

Mounted on the backplate in the PLC Control Panel there is a PLC rack (Allen Bradley Control Logix), 240V/24Vdc power supply unit and a 240VAC socket outlet for programming purposes, Ethernet switch, control relays and terminals.

The PLC Control Panel comprises of a 1756-L61 CPU (2MB memory), a 1756-ENET/B Ethernet communications module, various 1756-IF6I 4-20mA Isolated Analogue Input modules, various 1756OF6CI 4-20mA Isolated Analogue Output modules, 1756-IB16 24Vdc Digital Input modules and 1756-OB16E 24Vdc Digital Output modules. The scan time of the PLC ladder logic is estimated to be no more than 5msec. When required, the PLC will communicate with the HMI via a rack mounted EtherNet module.

PLC	DETAILS
OEM	ALLEN BRADLEY
YOM	2013
SOFTWARE	RSLogix 5000
Location	Indoor Warehouse Dunkirk, France
Condition	NEVER USED
Packaging	Original Packaging



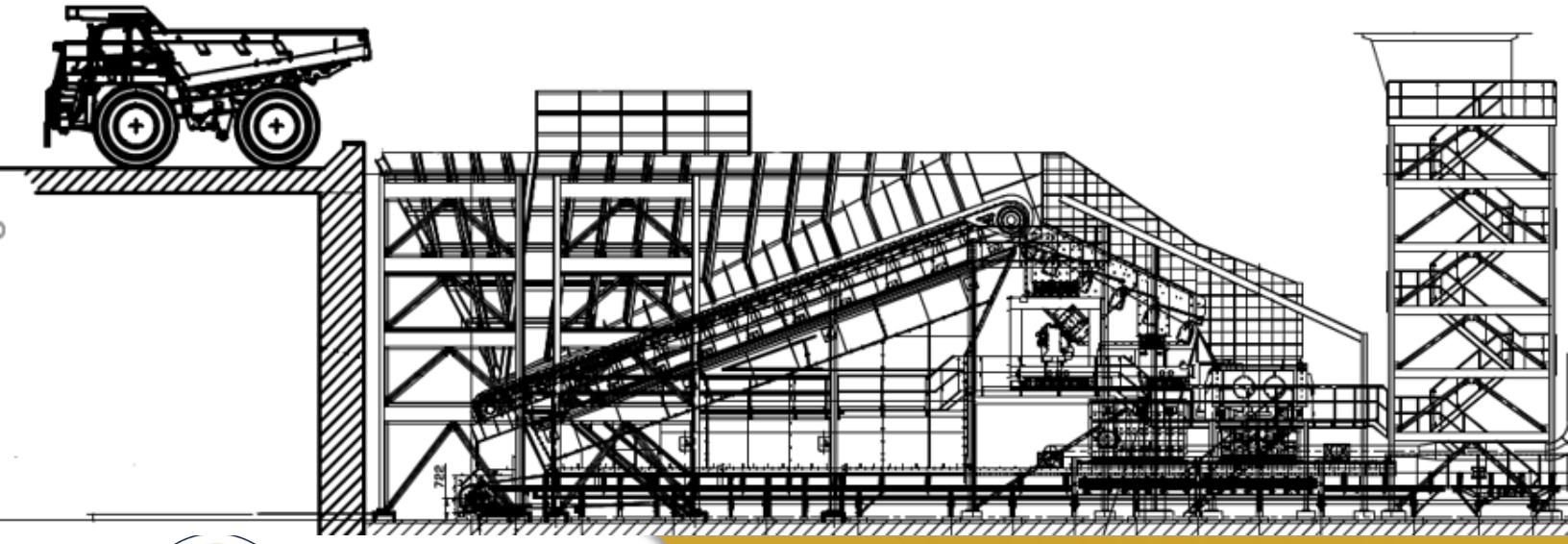
MMD ROCK CRUSHING PLANT

STEEL SUPPORT STRUCTURE

STEEL STRUCTURE	DETAILS
OEM	MMD
YOM	2013
Location	Indoor Warehouse Dunkirk, France
Condition	NEVER USED
Packaging	Original Packaging

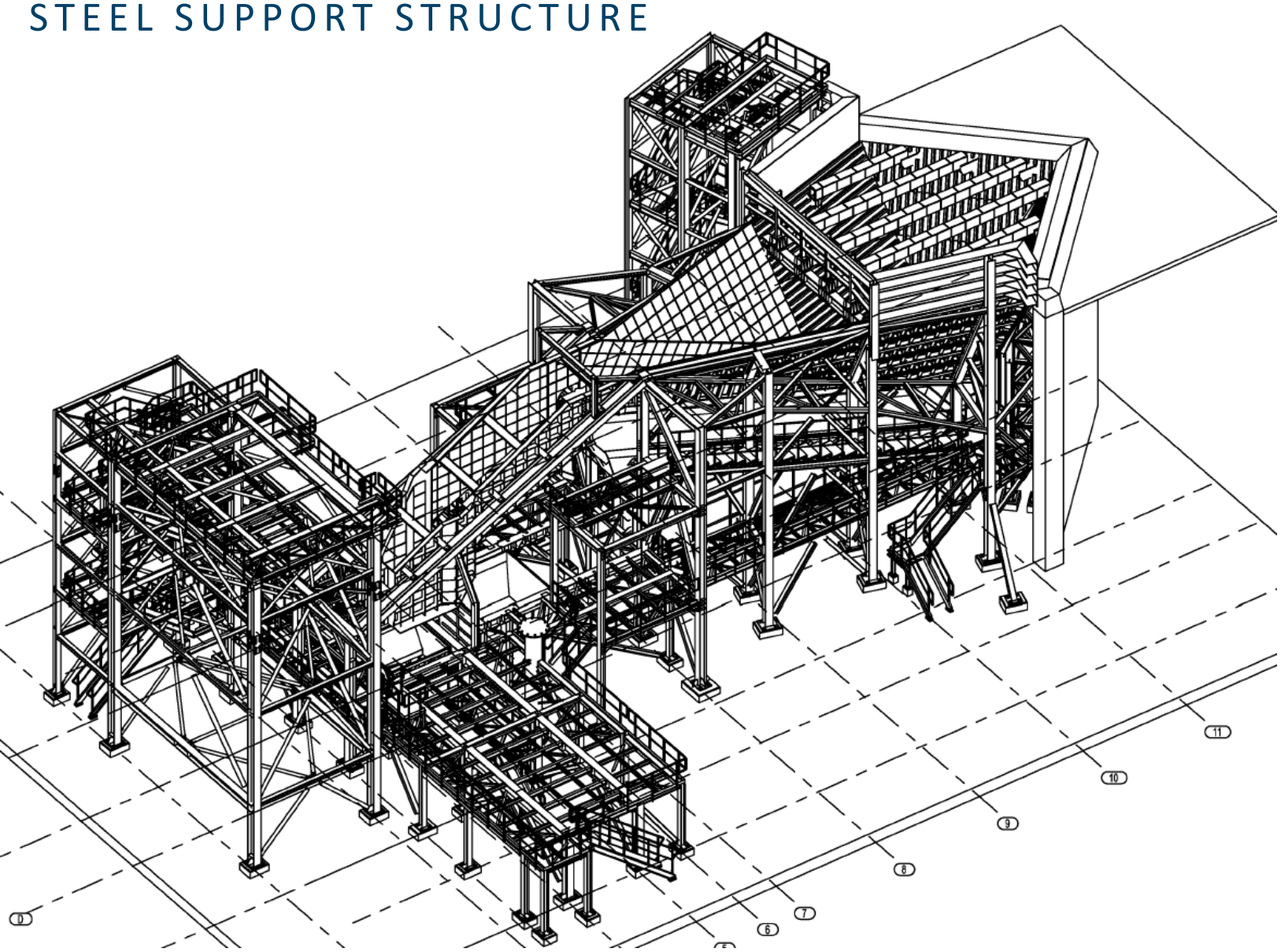
NEVER USED, NEVER ASSEMBLED – MMD Rock Crushing Plant steel structures include

- *Structure for Primary Bin and Chute*
- *Tower and Platform for the Control Room*
- *Tower and Platform for a Rock Breaker (rock breaker not included in this package)*
- *Platform form and structures around the Sizer*
- *Rail Structures for Sizer Carriages*
- *Mobile Maintenance Towers and Platforms*
- *Walkway grating*
- *Stairs and Railing*



MMD ROCK CRUSHING PLANT

STEEL SUPPORT STRUCTURE



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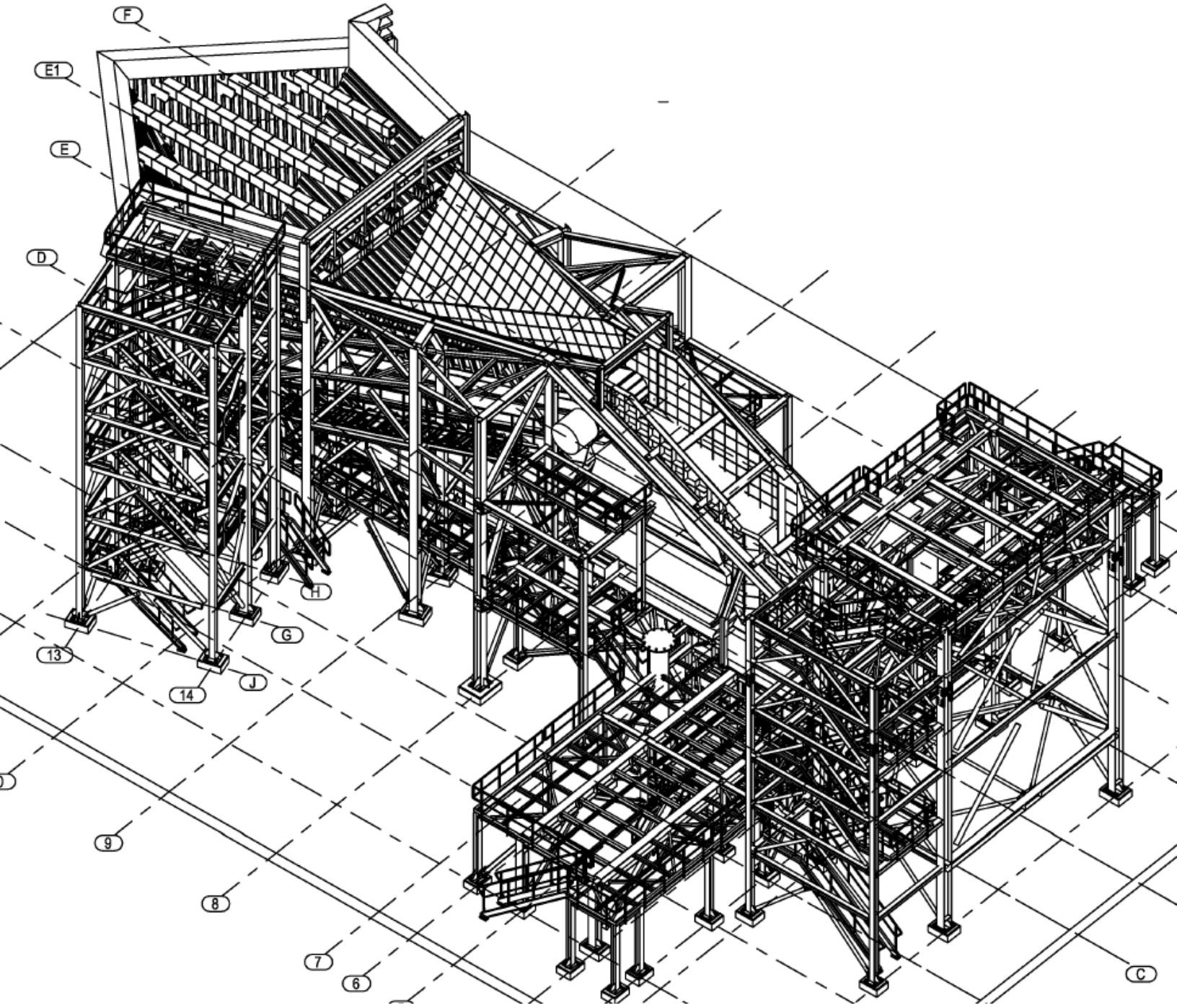
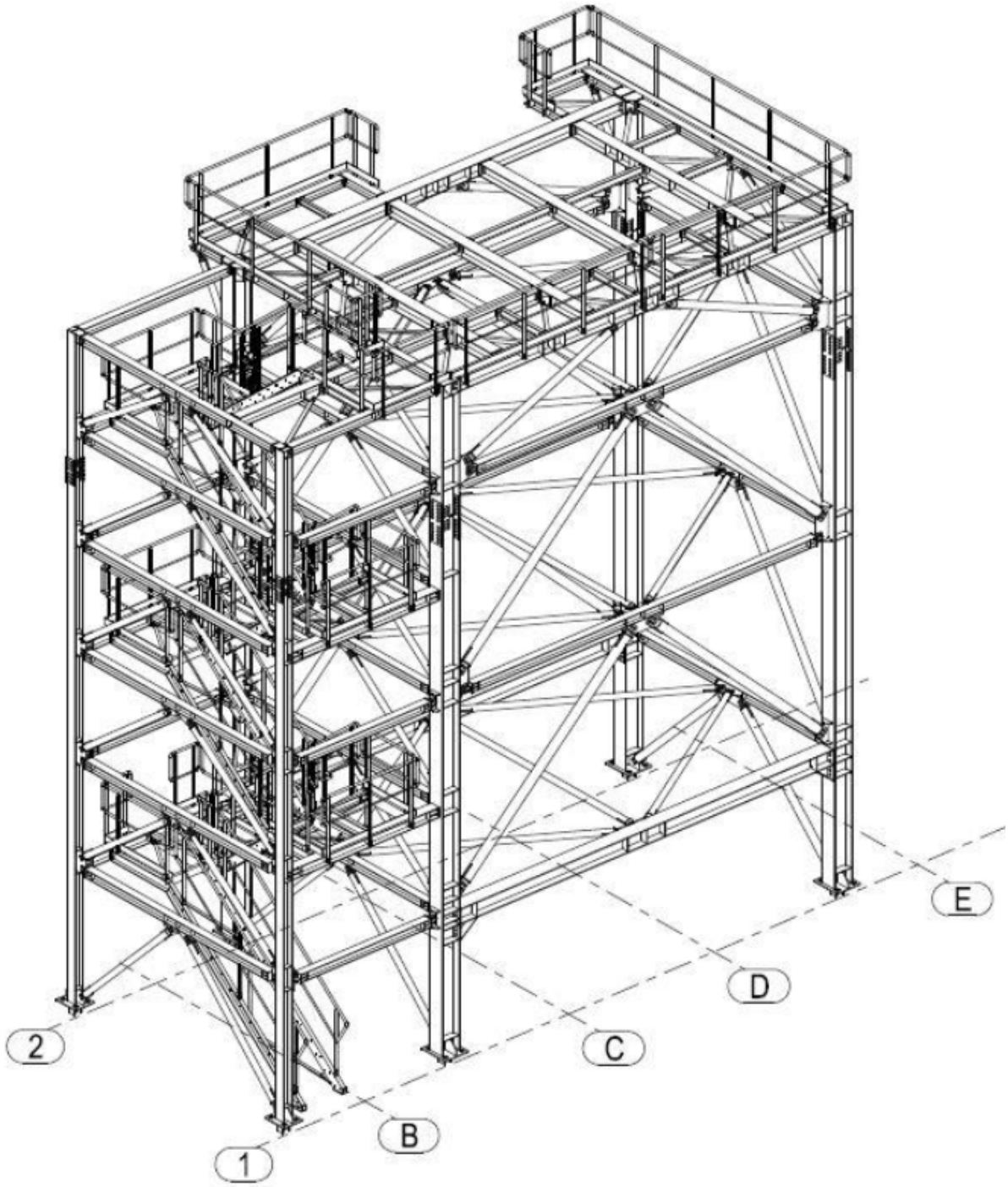
MMD ROCK CRUSHING PLANT

STEEL SUPPORT STRUCTURE



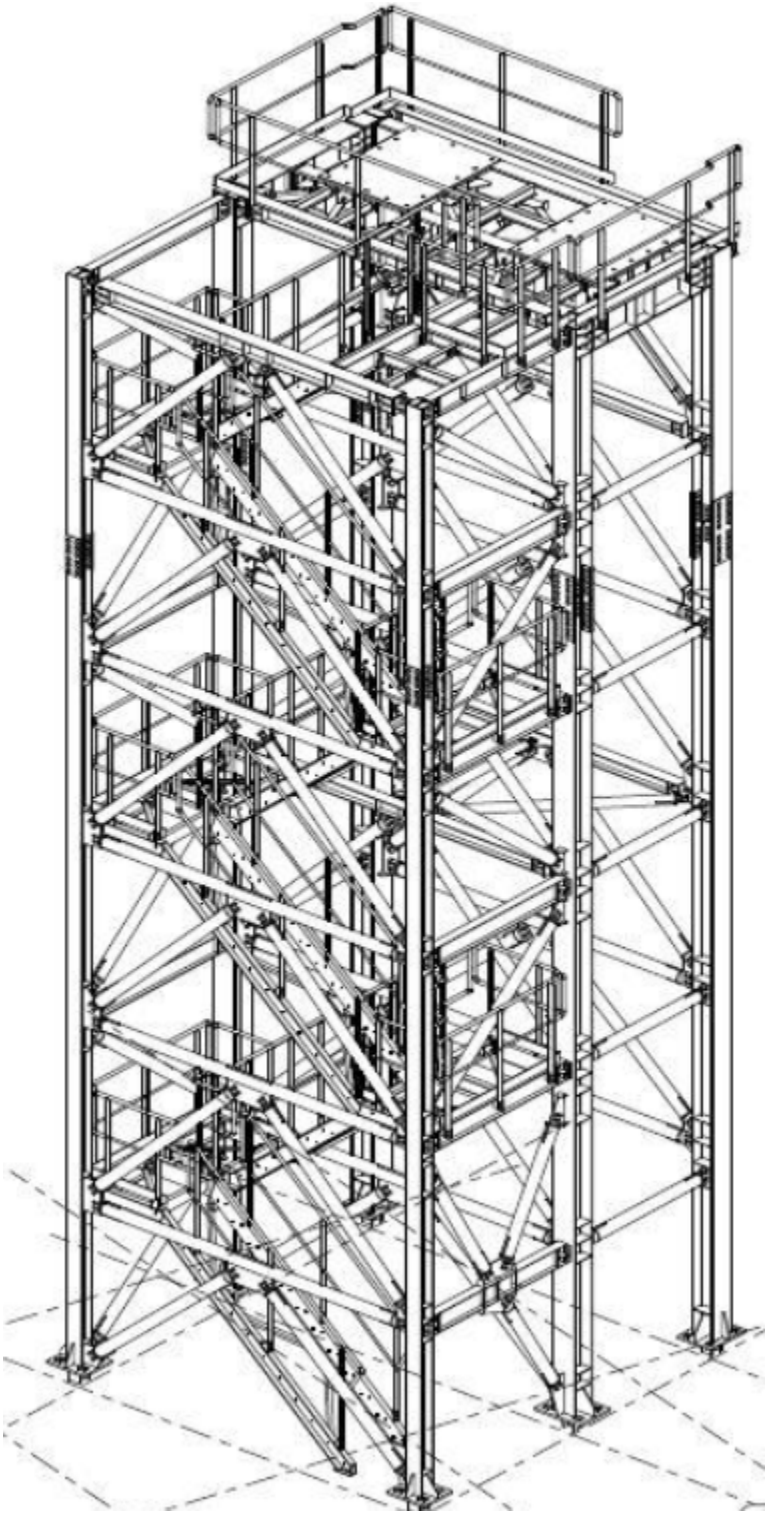
MMD ROCK CRUSHING PLANT

CONTROL ROOM
TOWER STRUCTURE



MMD ROCK CRUSHING PLANT

ROCK BREAKER STRUCTURE



APPENDIXES ATTACHED

- APPENDIX A
  Pictures
- APPENDIX B
  Equipment Data Sheets
- APPENDIX C
  Motor Data Sheets

APPENDIX A

MMD EQUIPMENT

PICTURES

MMD ROCK CRUSHING PLANT

PICTURES

MMD ROCK CRUSHING PLANT

PICTURES

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MMD ROCK CRUSHING PLANT

PICTURES

APPENDIX B

MMD EQUIPMENT

DATA SHEETS

PROCESS DATA PACKAGE

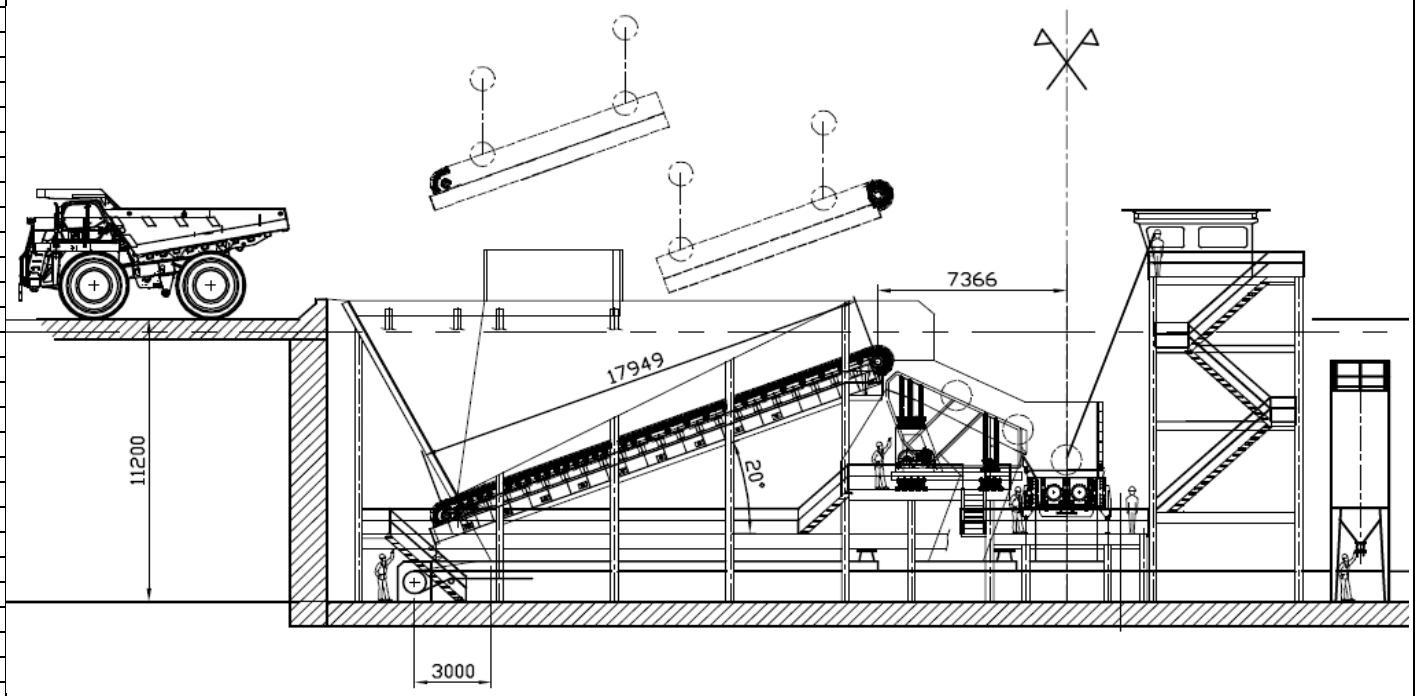
							Rev
1							
2	**ENVIRONMENTAL CONDITIONS**						
3	Installation	-		Outdoor			
4	Climate	-		Desert and dusty environment			
5	Temperature Average	°C	35				
6	Min	°C	5				
7	Max	°C	47	80°C in direct sunshine exposure			
8							
9	**PROCESS DATA**						
10	Process type	-		Dry Crushing process			
11	Installation	-		Outdoor - desert and dusty environment			
12							
13	Working time per year	days / year	365				
14	Working time per day	hours / day	24				
15	Availability (for equipment)	%	98	Excluding scheduled maintenance			
16	Availability (for package)	%	95	Guaranteed - Excluding scheduled maintenance			
17	Maintenance time per year	hours / year		TBC			
18							
19	**ORE PROPERTIES**						
20	Ore Type			IMFOUT	IMCA25	Uranium ore sandstone - classified sandy ore	
21	Bond Impact Work index (1)	kWh/t	-->	6.65 - 7.72	8,84		
22	Bond abrasion index	g	-->	0.048 - 0.179	0,214	Medium abrasiveness - 0.179 for lifetime	
23							
24	Absolute specific gravity	(-)	2,1 - 2,40				
25	Bulk density	t/m³	1.4 - 1.6	1.4 for equipment design, 1,6 for power design			
26	Moisture	%W	3	ROM moisture			
27	Fusing risk	-	No				
28	Building-up and sticking risk	-	No				
29	Angle of repose (to horizontal)	°	36 - 40				
30							
31							
32	**CRUSHING PROCESS**						
33	Nominal Flow rate	t/h	1780	Guaranteed - Including 3% wt ROM moisture			
34	Design Flow rate	t/h	2050				
35	Peak Flow rate	t/h	2300	Occasional surge on apron feeder			
36							
37	**FEED MATERIAL (ROM) - SIZE DISTRIBUTION (2)**			ROM ORE FEED SIZE RANGE ESTIMATE - SQUARE HOLE MESH			
38				MAXIMUM (mm)		MINIMUM (mm)	
39				F100	1200 (1000x1000x1200)*	F100	1200 (1000x1000x1200)*
40				F98	1000	F97	900
41				F80	650	F80	350
42				F50	400	F50	75
43				F30	250	F30	30
44				F20	100	F20	20
45				F10	10	F10	8
46				F4	<1	F6	<1
47					*Maximum block size		
48							
49	**DISCHARGE MATERIAL SIZE DISTRIBUTION (4)**			ORE DISCHARGE RANGE ESTIMATE - SQUARE HOLE MESH			
50				MAXIMUM (mm)		MINIMUM (mm)	
51				P100	350	P100	350
52				P99	300 (200x300x450)*	P99	300 (200x300x450)*
53				P80	170	P80	110
54				P50	100	P50	41
55				P30	50	P30	24
56				P20	29	P20	17
57				P10	3	P10	5
58					*P99=300 Guaranteed		
59							
60	Valley angle for chute design	°	60	Minimum from horizontal			
61							
62							
63							
64	**Particular notes**						
65	**Note 1 : Based on Hazen Research studies report- 22 Aug 2007**						
66	**Note 2 : The crusher must be capable of processing the largest blocks.**						
67	**Note 3 : Deleted**						
68	**Note 4 : Discharge refers to the discharge of the package, i.e. the combined flow from the grizzly undersize and the sizer.**						

PRIMARY CRUSHING SIZER
PACKAGE

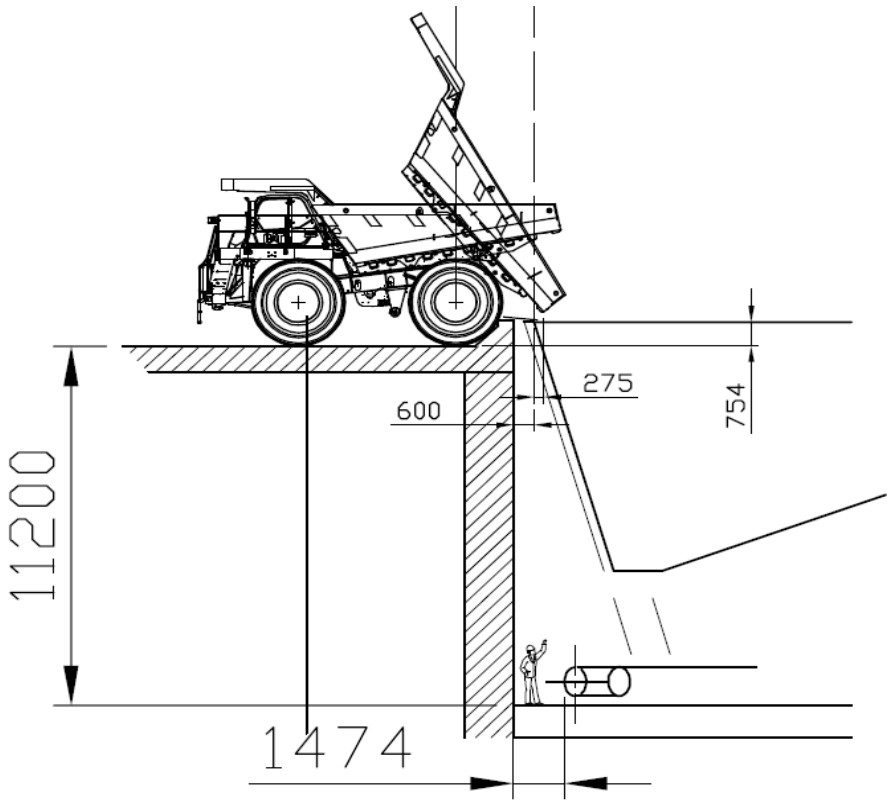
PACKAGE LAYOUT (Page 1)

Rev

Elevation (TBC by VENDOR) — Rev 1



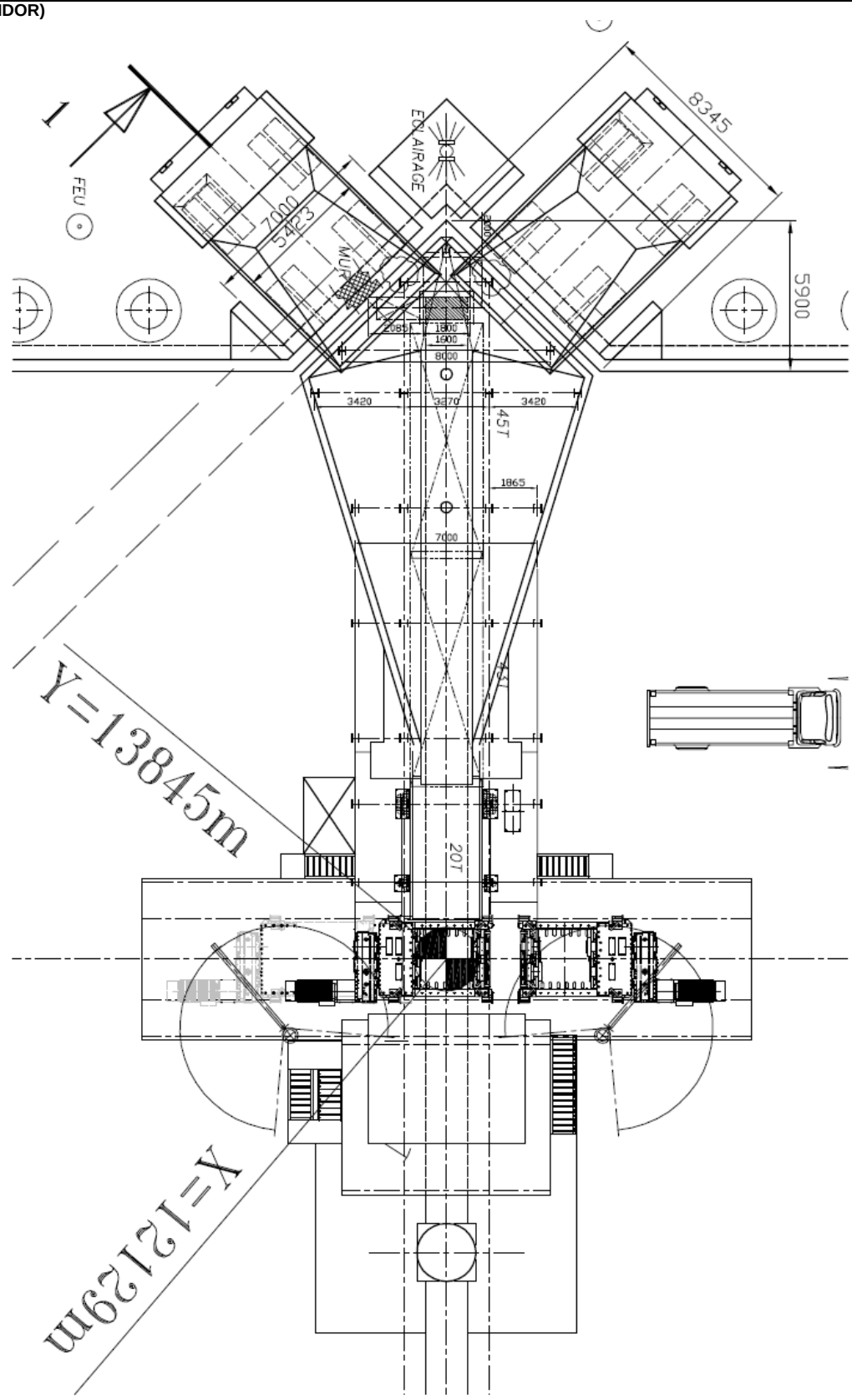
Section (TBC by VENDOR) — Rev 1



PRIMARY CRUSHING SIZER
PACKAGE

PACKAGE LAYOUT (Page 2)

		Rev
1	**Plan (TBC by VENDOR)**	1



PRIMARY CRUSHING SIZER

PACKAGE

TECHNICAL DATA PRIMARY FEED BIN

				Rev
1	**Primary Feed Bin**	**Item**	**0210-BN-3300**	
2	**General**			
3	Form	-	Diamond shaped, inclined intergrated apron feeder extractor.	
4	Dumper configuration	-	Two dumping ramps at 90°	
5	Static grizzly	-	Included - grizzly bars 1.2m spacing	
6	Supporting structure	-	Included - static grizzly overload taken into account	
7	Construction	-	Welded / bolted on-site	
8	General assembly drawing	-	Q3649	
9				
10	**Dimensions**			
11	Length / height / width	mm	19000 / 7500 / 10600 - to be confirmed	1
12	Valley angles	°	60° to horizontal minimum	
13	Wall thickness / material	-	15mm / mild steel.	
14				
15	**Wear Liners**			
16	Liner type	-	Railway tracks welded to the hopper where material impact is expected	
17		-	Liner plates bolted to the hopper elsewhere	
18	Liner material	-	HB360 steel	
19	Railway track liner spacing	mm	TBC	
20	Liner thickness	mm	Standard rail or 25mm for plates.	
21				
22	**Weights**			
23	Heaviest for installation	t	10t TBC	
24	Heaviest for maintenance	t	10t TBC	
25	Total Weight	t	TBC	
26				
27				
28				
29				
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PRIMARY CRUSHING SIZER

PACKAGE

TECHNICAL DATA PRIMARY SIZER

				Rev
1	**Primary Sizers A**	**Item**	**0210-CR-3000-A**	
2				
3	**General**			
4	Manufacturer and origin country	-	MMD / England	
5	Type / Equipment model	-	Double roller sizer / MMD 1000	
6	Tramp release	-	Reverse rotation of rolls	
7	General assembly drawing	-	S100-0030	
8				
9	**Dimensions**			
10	Internal crushing chamber dimensions (length / width / height)	mm	2030 x 2350 x 1185	1
11	External dimensions (length / width / height)	mm	7921 x 3798 x 1615	1
12				
13	**Main Shafts**			
14	Speed	rpm	25rpm	
15	Roll tip speed	m/s	1,5 approx	
16	Length / Diameter	mm	2030 x 1200	
17	Bearing type / designation	-	SKF self alligning double row spherical roller bearings	
18	Bearing seals	-	Labyrinth type	
19	Nominal center distance	mm	1000	
20	**Main Shaft Teeth**			
21	Arrangement on shaft	-	Rings	
22	Number per ring / number of rings / total number	-	3 / 6 / 18	
23	Attachment configuration	-	Each tip is welded on a cap (bolted onto the ring)	
24	Replacable	-	Yes	
25	**Breaker Bar**			
26	Arrangement	-	Below the crushing rolls, middle of the casing, full width	
27	Liner	-	Breaking caps bolted onto a beam	
28	Replacable	-	Yes	
29				
30	**Drive System**			
31	Type	-	Electrical via fluid couplings	
32	Power / Voltage	-	400kw / 6.6kV (reverse running, with flexible power cables and plugs)	1
33	**Reducer**			
34	Type - Manufacturer	-	Spur, parallel shaft - R400 / MMD	
35	Number of stages	-	3	
36	Input / Output Speed / Ratio	rpm	60 / 1	
37	Nominal Torque Rating	Nm	156kN	
38	Service factor	-	6	
39	Life Time Calculation	-	100,000 for gearbox	
40	Lubrication	-	Splash lubrication	
41	Thermal capacity	kW	550	1
42	**Coupling**	-		
43	Type / Manufacturer	-	Fluid / Voith 650 TVSC	
44	Maximum admissible Power	kW	450	1
45	Service Factor	-	3	
46				
47	**Lubrication System**			
48	Duty	-	Grease supply for crusher bearings	
49	External / automatic system	-	Automatic	
50	Pump Power	kW	0,37kW	
51	Lubrication flow	L/s	2.8169 x 10-5	1
52	System Capacity	L	30	1
53				
54	**Translation System**			
55	Electrical / manual		Electrical (2 x 1.1 kW)	1
56	Rails	-	Yes	
57				
58	**Materials**			
59	Frame	-	Steel	
60	Main shafts	-	High strength alloy steel - heat treated	
61	Teeth	-	Hardened tempered steel	
62	Internal wear liners	-	Steel HB>360	
63				
64	**Weights**			
65	Heaviest for installation (specify)	t	50t TBC (for casing with shafts)	1
66	Heaviest for maintenance (specify)	t	11t Shaft assemblies	1
67	Total Weight	t	76t	1
68				

PRIMARY CRUSHING SIZER

PACKAGE

TECHNICAL DATA PRIMARY CRUSHING LIFTING EQUIPMENT

				Rev
1	**Primary Crushing Davit Crane 1 and 2**	**Item**	**0210-CN-1030 and 0210-CN-1040**	1
2				
3	**General**			
4	Manufacturer and origin Country	-	Street Crane / UK	
5	Type / Model	-	2x 3t SWL Davit cranes	1
6				
7	**Crane**			
8	Number of cranes	-	2	1
9	Crane capacity:	t	3t SWL - Suitable for lifting caps onto the Sizer maintenance spot	1
10			Suitable for lifting blocks (1000x1000x1200mm) out of the sizer feed chu	1
11	Bridge Span / Runway Length:	mm	6000mm radius / 270° motorized slewing	1
12	Runway elevation / Max lifting height:	mm	5000mm above platform/10000 above ground level (to be confirmed)	1
13	Hook lift	mm	From ground to 5000mm above operating platform (to be confirmed)	1
14	Operating floor elevation:	mm	+5000mm (to be confirmed)	1
15	Design code :	-	DIN 15018 for jib	
16	Design class:	-	M4 for hoist	
17				
18	**Hoist**			
19	Hoisting speed (high / low speed)	m/min	4 / 1 TBC	1
20	Installed power	kW	3	1
21	Hook type (single / double / w/safety latch)	-	Trapezoidal with safety catch	1
22	Drum type (grooved / V-grooved)	-	TBC	
23	Rope drum diameter	mm	TBC	
24				
25	**Rope**			
26	Rope type	-	TBC	
27	Rope length / diameter	mm	TBC	
28	Rope breaking load	kN	TBC	
29	Rope safety factor	-	TBC	
30				
31	**Translation trolley**			
32	Translation speed (high / low speed)	m/min	14 / 7 TBC	1
33	Power	kW	0,5	1
34				
35	**Motorized slewing**			1
36	Slewing speed	m/min	TBC	1
37	Power	kW	0,5	1
38				
39	**Control Equipment**			
40	Remote control	-	Pendant Control	1
41	Max/min lifting height limit switch	-	TBC	
42				
43				
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APPENDIX C

MMD ENGINES

MOTOR DATA SHEETS

Rev		DATA SHEET HIGH VOLTAGE INDUCTION MOTOR							
	1	ITEM: Sizer Drive Motors	QUANTITY:	1	MR				
	2	General specification:	Standards, codes:	**IEC**					
	3	Supplier: MMD	Manufacturer:	ABB					
	4								
	5	**ENVIRONMENTAL CONDITIONS**							
	6	Installation (indoor/outdoor) / Ambient Type: **Dusty and Corrosive**							
	7	Ambient Design Temperature	Max:	**47**	°C	Min:	**5**	°C	
	8	Altitude (if > 1000m)/Relative Humidity	a.s.l.:	**<1000**	m		**70**	%	
	9	Area Classification	**Tropic-Proofed**						
	10	Hazardous area (Zone)/ Gas Group/Temperature	**According to package requirements**						
	11								
	12	**DRIVEN MACHINE DATA**							
	13	Manufacturer/Machine Type (fan, pump, compressor,...)	Sizer						
	14	Maxi shaft power / Shaft power at operating point	400 kW			400kW = 2554Nm			
	15	Coupling type / To be designed for restarting	Fluid Coupling	Yes ■	No □				
	16	Thrust (vertical) Up/Down	Up	kg	Down	kg			
	17	Driven Machine Inertia (WR2)	13,500 kg.m2						
	18	Brake torque curve / Required starting brake torque	2554Nm		3320	N.m			
	19	Open valve starting	Yes □	No ■					
	20								
	21	**MOTOR GENERAL CHARACTERISTICS**							
	22	Rated Output/ Poles number	400 kW	N°:	4				
	23	Voltage/Frequency/Phases	**6600**	V	**50**	Hz	N°:	**3**	
	24	Service condition (S1,S2,...)	**S1**						
	25	Power supply Neutral Status / PE conductor	Impedance Earthed Neutral (IT)		IL (I Limited) to 10A				
	26	Mounting (IM1001,3001,3011,1011,....)	IM 2001						
	27	Protection degree: Enclosure / terminal box	IP:	**55**	IP:	**55**			
	28	Protection Ex(n), Ex(d), Ex(e), Ex(p): Motor / terminal box							
	29	Gas group (IIB,...) / Temperature class (T3,...)							
	30	Enclosure cooling (fan cooled, air to air, air to water ,...)	Fan Cooled						
	31	Starting Method (loaded, unloaded / DOL, soft start,...)	**Loaded**	**DOL** ■	**Soft start** □	**VSD** □			
	32	Starting voltage (full, reduced x%) / Max. voltage drop at starting	± 10% is tolerance limit on voltage		**10**	%			
	33	Nb of consecutive starts within 1 hour	Cold	**3**	Hot	**2**			
	34	Min.Insulation Class (B,F,...)/Max Temperature Rise	**F**		**B**				
	35	Direction of Rotation (looking at motor coupling)	CW □	CCW □	Bidirectionnal ■				
	36	Position of Main terminal box	**TOP**						
	37	Main terminal Box Short Circuit Withstand Current/Time	**31.5**	kA	**0.25**	s			
	38	Cable Type and Size on main terminal box	Type		Size	mm^2			
	39	Position / Qty of auxiliary terminal boxes	**TOP**		N°:				
	40	Terminal boxes provided with cable glands	Main	Yes ■	**Metallic** No □				
	41		Auxiliary	Yes ■	**Metallic** No □				
	42	Painting (Mfr standard,.../ color)	**Manufacturer Standard**						
	43	Vibration Limit							
	44	Noise Level at 1 m	83 tol +3	dB(A)					
	45								
	46	**ACCESSORY EQUIPMENT**							
	47	Winding temperature detectors							
	48	Type / Quantity	**PT100 - 3wires**	N°:	**6**				
	49	Set for alarm / shut down (see note 1)	130 °C	160 °C					
	50	Bearing temperature detectors							
	51	Type / Quantity	**PT100 - 3wires**	N°:	**2**				
	52	Set for alarm / shut down (see note 1)	85 °C	90 °C					
	53	Vibration detector							
	54	Type / Quantity	SPM	N°:					
	55	Set for alarm / shut down (see note 1)	mm/s	mm/s					
	56	CT for differential protection							
	57	Type / ratio / Qty	N/A						
	58	supplied by / installed by							
	59	Anticondensation heaters (Nb / power / voltage)	400W	**230**	V				
	60	Maximum sheath temperature	N/A	°C					
	61	Drain plug	Yes □	No ■					
	62								
	63								

Rev		DATA SHEET HIGH VOLTAGE INDUCTION MOTOR								
	68	**MOTOR MANUFACTURER'S DATA**								
	69	Manufacturer type / Frame Size / -		Squirrel Cage			M3BM 450LA 4			
	70	Winding Connection (star, delta)/Nb terminals brought out		Star			N°:			
	71	Full Load Speed							1496	rpm
	72	Full Load Current/Locked Rotor Current		44	A				9.7	%
	73	No load current							19	A
	74	Starting Time (% of Voltage) at full load	100%:	1.6	s		80%:		3.2	s
	75	Permanent permissible earth fault current							N/A	A
	76	Allowable Locked Rotor withstand Time	Cold:	30	s		Hot:		22	s
	77	Thermal Time Constant	Cooling:	540 min	s		Heating:		100 min	s
	78	Efficiency	4/4	95.90%	3/4		95.40%	2/4		94%
	79	Power Factor	4/4	0.83	3/4		0.78	2/4		0.68
	80	Locked Rotor Power Factor							N/A	
	81	Full load Torque							2554	N.m
	82	Locked/Pull Up/Breakdown Torque	L	130%	PU		210%	BD		130%
	83	Stator resistance at 20°C / reactance		N/A	ohm				N/A	ohm
	84	Full load rotor resistance at 20°C / reactance		N/A	ohm				N/A	ohm
	85	Locked rotor resistance at 20°C / reactance		N/A	ohm				N/A	ohm
	86	Reactance: Sub-transient (X"d) / Transient (X'd)		N/A					N/A	
	87	Reactance: Zero sequence (X0) / Steady state (Xd)		N/A					N/A	
	88	Magnetizing reactance (Xm) / X/R ratio		N/A					N/A	
	89	Open circuit time constant							N/A	s
	90	Rotor Motor Inertia (WR2)							20	kg.m2
	91	Bearing Type(Drive End/Non Drive End)	DE:	Ball			NDE:		Ball	
	92	Lubrication Type/Interval							N/A	hours
	93	Air flow for purging (Ex(n) - ATEX)	Requested		m3/h		Installed system			m3/h
	94	Air flow for pressurisation (Ex(p))	Requested		m3/h		Installed system			m3/h
	95	Material of frame / rotor / internal or external Fan		Cast Iron			Al			Steel
	96	Ground lug size							M12	mm²
	97	Motor Weight (Stator/Rotor/Overall)	S:	3200kg	R:		958 kg	O:		4227 kg
	98	Certifying authority / certificate Nr								
	99									
	100									
	101									
	102									
	103									
	104									
	105									
	106	Notes: Locked Rotor Test Cannot be carried out by ABB on a motor this size								

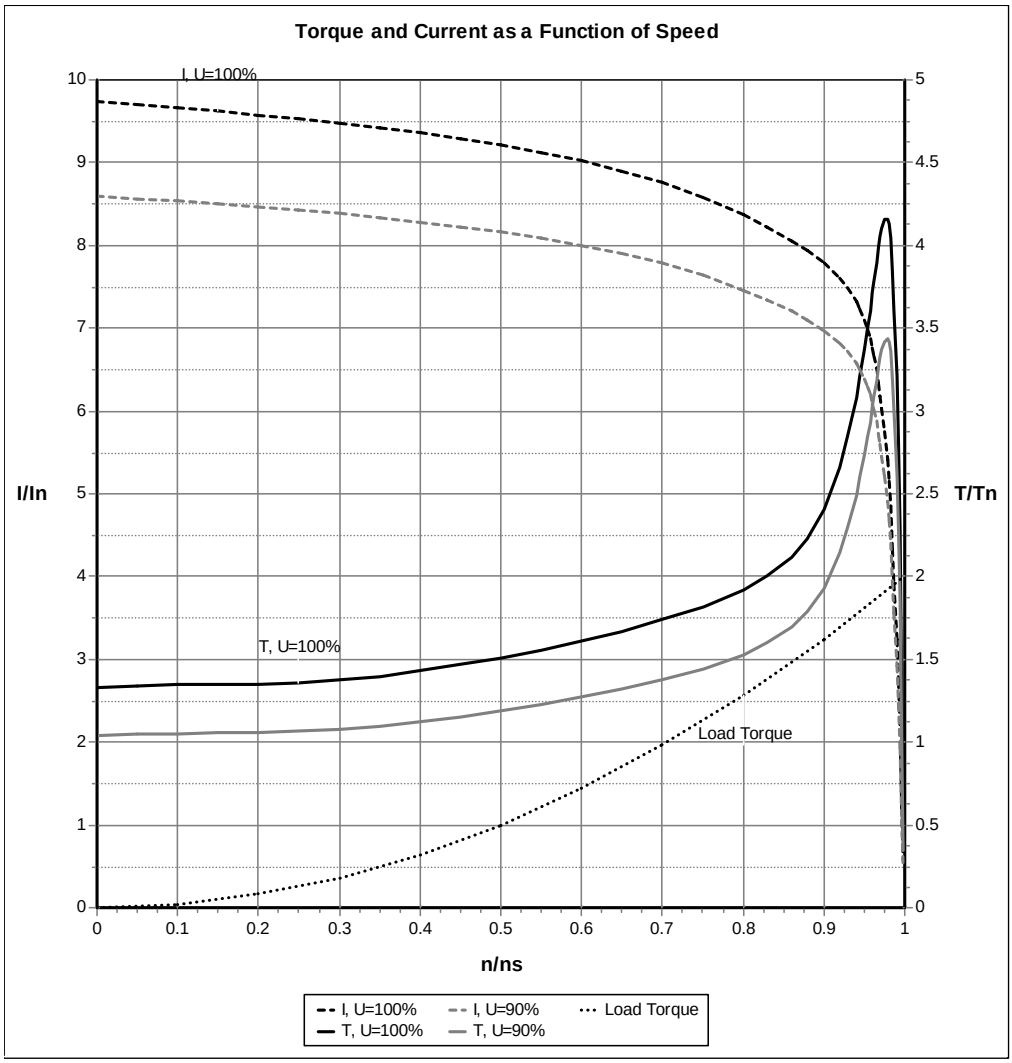
Driven equipment: 053 Crusher

Motor type code		M3BM 450LA 4		
Motor type		Squirrel cage motor		
Mounting designation		IM 2001		
Protected by enclosure		IP 65		
Method of cooling		IC 411		
Insulation		Class F		
Standards		IEC		
Ambient temperature, max.		47 °C		
Altitude, max.		1000 m.a.s.l.		
Duty type		S1		
Temp. rise		Class B		
Connection of stator winding		Star		
Rated output		400 kW		
Voltage		6600 V ±10 %		
Frequency		50 Hz		
Speed		1496 rpm		
Current		44 A		
Relat. starting current		9.7		
Relat. starting torque		1.3		
Relat. maximum torque		4.2		
No load current		19 A		
Rated torque		2554 Nm		
Load characteristics	Load %	Current A	Efficiency %	Power Factor
	100	44	95.9	0.83
	75	35	95.4	0.78
	50	28	94.0	0.68
Direction of rotation		Bi-directional		
Sound pressure level: (sinus supply, no load)		83 dB(A), tol. + 3 dB(A), 1 m		
Weight of rotor		958 kg		
Total weight of motor		4227 kg		
Inertia rotor / load		Approx. 20 kgm² / 10 kgm²		
Bearings		Standard ball bearings		
Maximum stalling time		22.0 s (warm)		
Starting time		1.6 s (U=100%)		
		2.5 s (U=90 %)		
Number of consec. starts		3 / 3 (cold/warm)		
Maximum number of starts		1000 / year		
Warm-up time constant		100 min		
Cool-down time constant		540 min		

All motor data is subject to tolerances in accordance with IEC.
Efficiency based on typical additional load losses acc. measurements.

Motor type code: M3BM 450LA 4

Rated output	400 kW	Power Factor	0.83
Voltage	6600 V ±10 %	Rated torque	2554 Nm
Frequency	50 Hz	Relat. starting current	9.7
Speed	1496 rpm	Relat. starting torque	1.3
Current	44 A	Relat. maximum torque	4.2



DATA SHEET LOW VOLTAGE INDUCTION MOTOR

PROJECT :	**Document No A4102 Rev B**
CLIENT:	**Sec Ref 9806J-0210-Sp-4314-00111**
MECHANICAL SUPPLIER: **MMD Mineral Sizing (Europe) Ltd**	MOTOR ITEM
Contract No 33267	EQUIPMENT TAG NUMBER: **210-AC-3020-A-M & 210-AC-3020-B-M**
Primary Sizer 210-CR-3000-A & 210-CR-3000-B	CONSUMER TYPE: **M**
	SERIAL N°: **1**

REV	DATE	STATUS	WRITTEN	CHECKED	APPROVED
C	22/11/2012	Updated TSU comments	CML		
B	06/09/2012	Updated TSU comments	CML		
D	02/07/2013	Updated TSU comments	CML		

TO BE COMPLETED BY PURCHASER & BY DRIVEN MACHINE SUPPLIER

1	ITEM:	**210-AC-3020-A-M & 210-AC-3020-B-M**	QUANTITY:	2	MR		
2	General specificatior	**9806J-0440-JSS-1691-001**	Standards, codes:	**IEC**			
3	Supplier:	MMD	Manufacturer:	**Leroy Somer**			
4							
5	**ENVIRONMENTAL CONDITIONS**						
6	Installation (indoor/outdoor) / Ambient Type: **Dusty and Corrosive**						
7	Ambient Design Temperature		Max:	**47 °C**	Min:	**5°C**	
8	Altitude (if > 1000m)/Relative Humidity		a.s.l.:	**<1000** m		**70%**	
9	Area Classification		**Tropic-Proofed**				
10	Hazardous area (Zone)/ Gas Group/Temperature		**According to package requirements**				
11	**DRIVEN MACHINE DATA**						
12	Manufacturer/Machine Type (fan, pump, compressor,...)		Cooler Fan				
13	Maxi shaft power / Shaft power at operating point		1.1 kW		1.0 kW		
14	Coupling type / To be designed for restarting				Yes ☐	No ☐	
15	Thrust (vertical) Up/Down		Up	kg	Down	kg	
16	Driven Machine Inertia (WR2)				N/A	kg.m2	
17	Brake torque curve / Required starting brake torque					N.m	
18							
19	**MOTOR GENERAL CHARACTERISTICS**						
20	Rated power/ Poles number		1.1 kW		N°:	4	
21	Voltage/Frequency/Phases		**690** V	**50** Hz	N°:	**3**	
22	Service condition (S1,S2,...)		**S1**				
23	Mounting (IM1001,3001,3011,1011,...)		IMB5 (IM3001)				
24	Protection degree: Enclosure / terminal box		IP: **55**		IP: **55**		
25	Protection Ex(n), Ex(d), Ex(e): Motor / terminal box						
26	Gas group (IIB,...) / Temperature class (T3,...)						
27	Enclosure cooling (fan cooled, air to air, air to water,...)		Fan Cooled				
28	Starting Method (loaded, unloaded / DOL, soft start,VSD,...)		**Loaded**	**DOL** ■	**Soft start** ☐	**VSD** ☐	
29	Starting voltage (full, reduced x%) / Max. voltage drop at starting				**15** %		
30	Nb of consecutive starts within 1 hour		Cold **3**		Hot **2**		
31	Min.Insulation Class (B,F,...)/Max Temperature Rise		**F**		**B**		
32	Direction of Rotation (looking at motor coupling)		CW ☐	CCW ☐	Bidirectionnal ■		
33	Position of Main / Auxiliary terminal box		Main **TOP**		Auxiliary **TOP**		
34	Cable Type, Size and Overall Diameter on Main terminal box		Type : **XLPE Arm**	Size(mm²)	Diam. mm		
35	Cable Type, Size and Overall Diameter on Aux terminal box		Type : **XLPE Arm**	Size(mm²)	Diam. mm		
36	Terminal boxes provided with cable glands		Yes ■ **Metallic**		No ☐		
37	Painting (Mfr standard,... / color)		**Manufacturer Standard**				
38	Noise Level at 1 m				**<85** dB(A)		
39							

TO BE COMPLETED BY MANUFACTURER

40	**MOTOR MANUFACTURER'S DATA**						
41	Manufacturer type / Frame Size / -		Squirrel Cage	FLSC 90 L			
42	Winding Connection (star, delta)/Nb terminals brought out		**STAR**		N°: **6**		
43	Full Load Speed					1455 rpm	
44	Rated Current / No load current / Locked Rotor Current		1.5 A	A		7.0 Ist / In	
45	Starting Time (% of Voltage) at full load		100%:	s	80%:	s	
46	Allowable Locked Rotor withstand Time		Cold:	7 s	Hot:	5 s	
47	Thermal Time Constant		Cooling:	55 min	Heating:	25 min	
48	Efficiency	4/4	85.00%	3/4 82.60%	2/4	81.30%	
49	Power Factor	4/4	0.72	3/4 0.6	2/4	0.56	
50	Locked Rotor Power Factor					0.74	
51	Full load Torque					7.2 N.m	
52	Locked/Pull Up/Breakdown Torque	L	2.70%	PU 1.40%	BD	3.10%	
53	Rotor Motor Inertia (WR2)					0.0032 kg.m2	
54	Bearing Type (Drive End/Non Drive End)		DE:	6205 ZZ C3	NDE:	6204 ZZ C3	
55	Lubrication Type/Interval					N/A hours	
56	Windings Temperature Sensors PT100	Yes ☐	No ■	1 set of 3 ☐	2 sets of 3 ☐		
57			Alarm		Tripping		
58	Temperature setting of winding sensors		N/A °C see Note 1		N/A °C see Note 1		
59							
60	Ground lug size					M5	
61	Motor Weight					21 kg	
62	Certifying authority / certificate Nr						
63							

64 Note 1 - Leroy Somers have confirmed that these are resistant measurement probes which are wired to a an external measuring instrument so there is no tripping temperature

DATA SHEET LOW VOLTAGE INDUCTION MOTOR

PROJECT :	**Document No A4102 Rev B**
CLIENT:	**Sec Ref 9806J-0210-Sp-4314-00111**
MECHANICAL SUPPLIER: **MMD Mineral Sizing (Europe) Ltd**	MOTOR ITEM
Contract No 33267	EQUIPMENT TAG NUMBER: **210-PU-3010-A-M & 210-PU-3010-B-M**
Primary Sizer 210-CR-3000-A & 210-CR-3000-B	CONSUMER TYPE: **M**
	SERIAL N°: **1**

REV	DATE	STATUS	WRITTEN	CHECKED	APPROVED
C	22/11/2012	Updated TSU comments	CML		
B	06/09/2012	Updated TSU comments	CML		
D	02/07/2013	Updated TSU comments	CML		

TO BE COMPLETED BY PURCHASER & BY DRIVEN MACHINE SUPPLIER

1	ITEM:	**210-PU-3010-A-M & 210-PU-3010-B-M**	QUANTITY:	2	MR		
2	General specificatior	**9806J-0440-JSS-1691-001**	Standards, codes:	**IEC**			
3	Supplier:	MMD	Manufacturer:	**Leroy Somer**			
4							
5	**ENVIRONMENTAL CONDITIONS**						
6	Installation (indoor/outdoor) / Ambient Type: **Dusty and Corrosive**						
7	Ambient Design Temperature		Max:	**47 °C**	Min:	**5°C**	
8	Altitude (if > 1000m)/Relative Humidity		a.s.l.:	**<1000** m		**70%**	
9	Area Classification		**Tropic-Proofed**				
10	Hazardous area (Zone)/ Gas Group/Temperature		**According to package requirements**				
11	**DRIVEN MACHINE DATA**						
12	Manufacturer/Machine Type (fan, pump, compressor,...)		Cooler pump				
13	Maxi shaft power / Shaft power at operating point		2.2 kW		2.0 kW		
14	Coupling type / To be designed for restarting				Yes ☐	No ☐	
15	Thrust (vertical) Up/Down		Up	kg	Down	kg	
16	Driven Machine Inertia (WR2)				N/A	kg.m2	
17	Brake torque curve / Required starting brake torque					N.m	
18							
19	**MOTOR GENERAL CHARACTERISTICS**						
20	Rated power/ Poles number		2.2 kW		N°:	6	
21	Voltage/Frequency/Phases		**690** V	**50** Hz	N°:	**3**	
22	Service condition (S1,S2,...)		**S1**				
23	Mounting (IM1001,3001,3011,1011,...)		IMB5 (IM3001)				
24	Protection degree: Enclosure / terminal box		IP: **55**		IP: **55**		
25	Protection Ex(n), Ex(d), Ex(e): Motor / terminal box						
26	Gas group (IIB,...) / Temperature class (T3,...)						
27	Enclosure cooling (fan cooled, air to air, air to water,...)		Fan Cooled				
28	Starting Method (loaded, unloaded / DOL, soft start,VSD,...)		**Loaded**	**DOL** ■	**Soft start** ☐	**VSD** ☐	
29	Starting voltage (full, reduced x%) / Max. voltage drop at starting				**15** %		
30	Nb of consecutive starts within 1 hour		Cold **3**		Hot **2**		
31	Min.Insulation Class (B,F,...)/Max Temperature Rise		**F**		**B**		
32	Direction of Rotation (looking at motor coupling)		CW ☐	CCW ☐	Bidirectionnal ■		
33	Position of Main / Auxiliary terminal box		Main **TOP**		Auxiliary **TOP**		
34	Cable Type, Size and Overall Diameter on Main terminal box		Type : **XLPE Arm**	Size(mm²)	Diam. mm		
35	Cable Type, Size and Overall Diameter on Aux terminal box		Type : **XLPE Arm**	Size(mm²)	Diam. mm		
36	Terminal boxes provided with cable glands		Yes ■ **Metallic**		No ☐		
37	Painting (Mfr standard,... / color)		**Manufacturer Standard**				
38	Noise Level at 1 m				**<85** dB(A)		
39							

TO BE COMPLETED BY MANUFACTURER

40	**MOTOR MANUFACTURER'S DATA**						
41	Manufacturer type / Frame Size / -		Squirrel Cage	FLSC 132 S			
42	Winding Connection (star, delta)/Nb terminals brought out		**STAR**		N°: **6**		
43	Full Load Speed					959 rpm	
44	Rated Current / No load current / Locked Rotor Current		0.6 A	A		5.3 Ist / In	
45	Starting Time (% of Voltage) at full load		100%:	s	80%:	s	
46	Allowable Locked Rotor withstand Time		Cold:	7 s	Hot:	5 s	
47	Thermal Time Constant		Cooling:	85 min	Heating:	40 min	
48	Efficiency	4/4	82.20%	3/4 81.80%	2/4	80.80%	
49	Power Factor	4/4	0.71	3/4 0.62	2/4	0.58	
50	Locked Rotor Power Factor						
51	Full load Torque					21.9 N.m	
52	Locked/Pull Up/Breakdown Torque	L	2.10%	PU 1.80%	BD	2.40%	
53	Rotor Motor Inertia (WR2)					0.0376 kg.m2	
54	Bearing Type (Drive End/Non Drive End)		DE:	6208 ZZ C3	NDE:	6207 ZZ C3	
55	Lubrication Type/Interval					N/A hours	
56	Windings Temperature Sensors PT100	Yes ■	No ☐	1 set of 3 ■	2 sets of 3 ☐		
57			Alarm		Tripping		
58	Temperature setting of winding sensors		N/A °C see Note 1		N/A °C see Note 1		
59							
60	Ground lug size					M6	
61	Motor Weight					71 kg	
62	Certifying authority / certificate Nr						
63							

64 Note 1 - Leroy Somers have confirmed that these are resistant measurement probes which are wired to a an external measuring instrument so there is no tripping temperature

DATA SHEET LOW VOLTAGE INDUCTION MOTOR

PROJECT :	**Document No A4102 Rev B**
CLIENT:	**Sec Ref 9806J-0210-Sp-4314-00111**
MECHANICAL SUPPLIER: **MMD Mineral Sizing (Europe) Ltd**	MOTOR ITEM
Contract No 33267	EQUIPMENT TAG NUMBER: **210-PU-3030-A-M & 210-PU-3030-B-M**
Primary Sizer 210-CR-3000-A & Sizer 210-CR-3000-B	CONSUMER TYPE: **M**
	SERIAL N°: **1**

REV	DATE	STATUS	WRITTEN	CHECKED	APPROVED
C	22/11/2012	Updated TSU comments	CML		
B	06/09/2012	Updated TSU comments	CML		
D	02/07/2013	Updated TSU comments	CML		

TO BE COMPLETED BY PURCHASER & BY DRIVEN MACHINE SUPPLIER

1	ITEM:	**210-PU-3030-A-M & 210-PU-3030-B-M**	QUANTITY:	2	MR		
2	General specificatior	**9806J-0440-JSS-1691-001**	Standards, codes:	**IEC**			
3	Supplier:	MMD	Manufacturer:	**Leroy Somer**			
4							
5	**ENVIRONMENTAL CONDITIONS**						
6	Installation (indoor/outdoor) / Ambient Type: **Dusty and Corrosive**						
7	Ambient Design Temperature		Max:	**47 °C**	Min:	**5°C**	
8	Altitude (if > 1000m)/Relative Humidity		a.s.l.:	**<1000** m		**70%**	
9	Area Classification		**Tropic-Proofed**				
10	Hazardous area (Zone)/ Gas Group/Temperature		**According to package requirements**				
11	**DRIVEN MACHINE DATA**						
12	Manufacturer/Machine Type (fan, pump, compressor,...)		Lubrication Pump				
13	Maxi shaft power / Shaft power at operating point		0.37 kW		0.3 kW		
14	Coupling type / To be designed for restarting				Yes ☐	No ☐	
15	Thrust (vertical) Up/Down		Up	kg	Down	kg	
16	Driven Machine Inertia (WR2)				N/A	kg.m2	
17	Brake torque curve / Required starting brake torque					N.m	
18							
19	**MOTOR GENERAL CHARACTERISTICS**						
20	Rated power/ Poles number		0.37 kW		N°:	4	
21	Voltage/Frequency/Phases		**690** V	**50** Hz	N°:	**3**	
22	Service condition (S1,S2,...)		**S1**				
23	Mounting (IM1001,3001,3011,1011,...)		IMV18				
24	Protection degree: Enclosure / terminal box		IP: **55**		IP: **55**		
25	Protection Ex(n), Ex(d), Ex(e): Motor / terminal box						
26	Gas group (IIB,...) / Temperature class (T3,...)						
27	Enclosure cooling (fan cooled, air to air, air to water,...)		Fan Cooled				
28	Starting Method (loaded, unloaded / DOL, soft start,VSD,...)		**Loaded**	**DOL** ■	**Soft start** ☐	**VSD** ☐	
29	Starting voltage (full, reduced x%) / Max. voltage drop at starting				**15** %		
30	Nb of consecutive starts within 1 hour		Cold **3**		Hot **2**		
31	Min.Insulation Class (B,F,...)/Max Temperature Rise		**F**		**B**		
32	Direction of Rotation (looking at motor coupling)		CW ☐	CCW ☐	Bidirectionnal ■		
33	Position of Main / Auxiliary terminal box		Main **TOP**		Auxiliary **TOP**		
34	Cable Type, Size and Overall Diameter on Main terminal box		Type : **XLPE Arm**	Size(mm²)	Diam. mm		
35	Cable Type, Size and Overall Diameter on Aux terminal box		Type : **XLPE Arm**	Size(mm²)	Diam. mm		
36	Terminal boxes provided with cable glands		Yes ■ **Metallic**		No ☐		
37	Painting (Mfr standard,... / color)		**Manufacturer Standard**				
38	Noise Level at 1 m				**<85** dB(A)		
39							

TO BE COMPLETED BY MANUFACTURER

40	**MOTOR MANUFACTURER'S DATA**						
41	Manufacturer type / Frame Size / -		Squirrel Cage		FLSC 80 L		
42	Winding Connection (star, delta)/Nb terminals brought out		**STAR**		N°: **6**		
43	Full Load Speed					1415 rpm	
44	Rated Current / No load current / Locked Rotor Current		0.6 A		A	4.9 Ist / In	
45	Starting Time (% of Voltage) at full load		100%:	s	80%:	s	
46	Allowable Locked Rotor withstand Time		Cold:	7 s	Hot:	5 s	
47	Thermal Time Constant		Cooling:	45 min	Heating:	20 min	
48	Efficiency	4/4	69.40%	3/4 67.40%	2/4	66.40%	
49	Power Factor	4/4	0.69	3/4 0.58	2/4	0.55	
50	Locked Rotor Power Factor					0.76	
51	Full load Torque					2.5 N.m	
52	Locked/Pull Up/Breakdown Torque	L	2.10%	PU 1.60%	BD	2.30%	
53	Rotor Motor Inertia (WR2)					0.0013 kg.m2	
54	Bearing Type (Drive End/Non Drive End)		DE:	6204 ZZ C3	NDE:	6203 ZZ C3	
55	Lubrication Type/Interval					N/A hours	
56	Windings Temperature Sensors PT100	Yes ☐	No ■	1 set of 3 ☐	2 sets of 3 ☐		
57			Alarm		Tripping		
58	Temperature setting of winding sensors		N/A °C see Note 1		N/A °C see Note 1		
59							
60	Ground lug size					M5	
61	Motor Weight					15 kg	
62	Certifying authority / certificate Nr						
63							

64 Note 1 - Leroy Somers have confirmed that these are resistant measurement probes which are wired to a an external measuring instrument so there is no tripping temperature

DATA SHEET LOW VOLTAGE INDUCTION MOTOR

PROJECT :	**Document No A4102 Rev B**
CLIENT:	**Sec Ref 9806J-0210-Sp-4314-00111**
MECHANICAL SUPPLIER: **MMD Mineral Sizing (Europe) Ltd**	MOTOR ITEM
Contract No 33267	EQUIPMENT TAG NUMBER: **210-ZM-3090 A & 210-ZM-3090 B**
Primary Sizer 210-CR-3000-A & 210-CR-3000-B	CONSUMER TYPE: **M**
	SERIAL N°: **1 & 2**

REV	DATE	STATUS	WRITTEN	CHECKED	APPROVED
C	22/11/2012	Updated TSU comments	CML		
B	06/09/2012	Updated TSU comments	CML		
A	28/10/2011	original issue	JWW		

TO BE COMPLETED BY PURCHASER & BY DRIVEN MACHINE SUPPLIER

1	ITEM: Wheel Carriage Motors	QUANTITY: 4	MR	
2	General specification **9806J-0440-JSS-1691-001**	Standards, codes: **IEC**		
3	Supplier: MMD	Manufacturer: **Leroy Somer**		
4				
5	**ENVIRONMENTAL CONDITIONS**			
6	Installation (indoor/outdoor) / Ambient Type: **Dusty and Corrosive**			
7	Ambient Design Temperature	Max: **47 °C**	Min: **5°C**	
8	Altitude (if > 1000m)/Relative Humidity	a.s.l.: **<1000** m	**70%**	
9	Area Classification	**Tropic-Proofed**		
10	Hazardous area (Zone)/ Gas Group/Temperature	**According to package requirements**		
11	**DRIVEN MACHINE DATA**			
12	Manufacturer/Machine Type (fan, pump, compressor,...)	Wheel Carriage		
13	Maxi shaft power / Shaft power at operating point	1.1 kW	1.0 kW	
14	Coupling type / To be designed for restarting		Yes ☐ No ☐	
15	Thrust (vertical) Up/Down	Up kg	Down kg	
16	Driven Machine Inertia (WR2)		N/A kg.m2	
17	Brake torque curve / Required starting brake torque		N.m	
18				
19	**MOTOR GENERAL CHARACTERISTICS**			
20	Rated power/ Poles number	1.1 kW	N°: 4	
21	Voltage/Frequency/Phases	**690** V **50** Hz	N°: **3**	
22	Service condition (S1,S2,...)	**S1**		
23	Mounting (IM1001,3001,3011,1011,...)	IMB5 (IM3001)		
24	Protection degree: Enclosure / terminal box	IP: **55**	IP: **55**	
25	Protection Ex(n), Ex(d), Ex(e): Motor / terminal box			
26	Gas group (IIB,...) / Temperature class (T3,...)			
27	Enclosure cooling (fan cooled, air to air, air to water,...)	Fan Cooled		
28	Starting Method (loaded, unloaded / DOL, soft start,VSD,...)	**Loaded** **DOL** ■	**Soft start** ☐ **VSD** ☐	
29	Starting voltage (full, reduced x%) / Max. voltage drop at starting		**15** %	
30	Nb of consecutive starts within 1 hour	Cold **3**	Hot **2**	
31	Min.Insulation Class (B,F,...)/Max Temperature Rise	**F**	**B**	
32	Direction of Rotation (looking at motor coupling)	CW ☐ CCW ☐	Bidirectionnal ■	
33	Position of Main / Auxiliary terminal box	Main **TOP**	Auxiliary **TOP**	
34	Cable Type, Size and Overall Diameter on Main terminal box	Type : **XLPE Arm** Size(mm²)	Diam. mm	
35	Cable Type, Size and Overall Diameter on Aux terminal box	Type : **XLPE Arm** Size(mm²)	Diam. mm	
36	Terminal boxes provided with cable glands	Yes ■ **Metallic**	No ☐	
37	Painting (Mfr standard,... / color)	**Manufacturer Standard**		
38	Noise Level at 1 m		**<85** dB(A)	
39				

TO BE COMPLETED BY MANUFACTURER

40	**MOTOR MANUFACTURER'S DATA**			
41	Manufacturer type / Frame Size / -	Squirrel Cage	FLSC 90 L	
42	Winding Connection (star, delta)/Nb terminals brought out	**STAR**	N°: **6**	
43	Full Load Speed		1455 rpm	
44	Rated Current / No load current / Locked Rotor Current	1.5 A	A	7.0 Ist / In
45	Starting Time (% of Voltage) at full load	100%: s	80%: s	
46	Allowable Locked Rotor withstand Time	Cold: 7 s	Hot: 5 s	
47	Thermal Time Constant	Cooling: 55 min	Heating: 25 min	
48	Efficiency	4/4 85.00%	3/4 82.60%	2/4 81.30%
49	Power Factor	4/4 0.72	3/4 0.6	2/4 0.56
50	Locked Rotor Power Factor			0.74
51	Full load Torque			7.2 N.m
52	Locked/Pull Up/Breakdown Torque	L 2.70%	PU 1.40%	BD 3.10%
53	Rotor Motor Inertia (WR2)			0.0032 kg.m2
54	Bearing Type (Drive End/Non Drive End)	DE: 6205 ZZ C3	NDE: 6204 ZZ C3	
55	Lubrication Type/Interval			N/A hours
56	Windings Temperature Sensors PT100	Yes ☐ No ■	1 set of 3 ☐	2 sets of 3 ☐
57		Alarm	Tripping	
58	Temperature setting of winding sensors	N/A °C see Note 1	N/A °C see Note 1	
59				
60	Ground lug size			M5
61	Motor Weight			21 kg
62	Certifying authority / certificate Nr			
63				
64	Note 1 - Leroy Somers have confirmed that these are resistant measurement probes which are wired to a an external measuring instrument so there is no tripping temperature			

DATA SHEET LOW VOLTAGE INDUCTION MOTOR

PROJECT :	**Document No A4102 Rev F**
CLIENT:	**Sec Ref 9806J-0210-Sp-4314-00111**
MECHANICAL SUPPLIER: **MMD Mineral Sizing (Europe) Ltd**	MOTOR ITEM
Contract No 33267	EQUIPMENT TAG NUMBER: **210-CN-1030, 210-CN-1040** / CONSUMER TYPE: **M** / SERIAL N°: **2**
Jib Crane 210-CN-1030 & 210-CN-1040	

REV	DATE	STATUS	WRITTEN	CHECKED	APPROVED
F	01/04/2014	Updated Motor Details & TSU comments	RE		

TO BE COMPLETED BY PURCHASER & BY DRIVEN MACHINE SUPPLIER

1	ITEM:	Jib Crane Hoist Motors	QUANTITY:	2	MR		
2	General specificatio	**9806J-0440-JSS-1691-001**	Standards, codes:	**IEC**			
3	Supplier:	MMD	Manufacturer:	**Misia**			
4							
5	**ENVIRONMENTAL CONDITIONS**						
6	Installation (indoor/outdoor) / Ambient Type: **Dusty and Corrosive**						
7	Ambient Design Temperature		Max:	**47 °C**	Min:	**5°C**	
8	Altitude (if > 1000m)/Relative Humidity		a.s.l.:	**<1000** m		**70%**	
9	Area Classification		**Tropic-Proofed**				
10	Hazardous area (Zone)/ Gas Group/Temperature		**According to package requirements**				
11	**DRIVEN MACHINE DATA**						
12	Manufacturer/Machine Type (fan, pump, compressor,...)		Crane Hoist				
13	Maxi shaft power / Shaft power at operating point		2.5 kW		2.2 kW		
14	Coupling type / To be designed for restarting				Yes ☐	No ☐	
15	Thrust (vertical) Up/Down		Up	3000 kg	Down	3000 kg	
16	Driven Machine Inertia (WR2)				-	kg.m2	
17	Brake torque curve / Required starting brake torque				-	N.m	
18							
19	**MOTOR GENERAL CHARACTERISTICS**						
20	Rated power/ Poles number		2.5kW,	N°:	4		
21	Voltage/Frequency/Phases		**400** V	**50** Hz	N°:	**3**	
22	Service condition (S1,S2,...)		**S4**				
23	Mounting (IM1001,3001,3011,1011,...)		IMB3				
24	Protection degree: Enclosure / terminal box		IP: **55**		IP: **55**		
25	Protection Ex(n), Ex(d), Ex(e): Motor / terminal box						
26	Gas group (IIB,...) / Temperature class (T3,...)						
27	Enclosure cooling (fan cooled, air to air, air to water,...)		Fan Cooled				
28	Starting Method (loaded, unloaded / DOL, soft start,VSD,...)		**Loaded**	**DOL** ■	**Soft start** ☐	**VSD** ☐	
29	Starting voltage (full, reduced x%) / Max. voltage drop at starting				**15** %		
30	Nb of consecutive starts within 1 hour		Cold **3**		Hot **2**		
31	Min.Insulation Class (B,F,...)/Max Temperature Rise		**F**		**B**		
32	Direction of Rotation (looking at motor coupling)		CW ☐	CCW ☐	Bidirectionnal ■		
33	Position of Main / Auxiliary terminal box		Main **TOP**		Auxiliary **TOP**		
34	Cable Type, Size and Overall Diameter on Main terminal box		Type : **XLPE Arm**	Size(mm²)	Diam. mm		
35	Cable Type, Size and Overall Diameter on Aux terminal box		Type : **XLPE Arm**	Size(mm²)	Diam. mm		
36	Terminal boxes provided with cable glands		Yes ■ **Metallic**		No ☐		
37	Painting (Mfr standard,... / color)		**Manufacturer Standard**				
38	Noise Level at 1 m				**<85** dB(A)		
39							

TO BE COMPLETED BY MANUFACTURER

40	**MOTOR MANUFACTURER'S DATA**						
41	Manufacturer type / Frame Size / -		Squirrel		100		
42	Winding Connection (star, delta)/Nb terminals brought out		DELTA	N°:	**6**		
43	Full Load Speed				1430 rpm		
44	Rated Current / No load current / Locked Rotor Current	6 A	5.9 A	6 Ist / In			
45	Starting Time (% of Voltage) at full load	100%: s	80%: s				
46	Allowable Locked Rotor withstand Time	Cold: s	Hot: s				
47	Thermal Time Constant	Cooling: min	Heating: min				
48	Efficiency	4/4 72.10%	3/4 %	2/4 %			
49	Power Factor	4/4 0.78	3/4	2/4			
50	Locked Rotor Power Factor			-			
51	Full load Torque			16.7 N.m			
52	Locked/Pull Up/Breakdown Torque	L 160.00%	PU 220.00%	BD 220.00%			
53	Rotor Motor Inertia (WR2)			kg.m2			
54	Bearing Type (Drive End/Non Drive End)	DE:	NDE:				
55	Lubrication Type/Interval			N/A hours			
56	Windings Temperature Sensors PT100	Yes ☐ No ■	1 set of 3 ☐	2 sets of 3 ☐			
57		Alarm	Tripping				
58	Temperature setting of winding sensors	°C	°C				
59							
60	Ground lug size						
61	Motor Weight			25kg			
62	Certifying authority / certificate Nr						
63							
64							
65							

DATA SHEET LOW VOLTAGE INDUCTION MOTOR

PROJECT :	**Document No A4102 Rev F**
CLIENT:	**Sec Ref 9806J-0210-Sp-4314-00111**
MECHANICAL SUPPLIER: **MMD Mineral Sizing (Europe) Ltd**	MOTOR ITEM
Contract No 33267	EQUIPMENT TAG NUMBER: **210-CN-1030, 210-CN-1040** / CONSUMER TYPE: **M** / SERIAL N°: **1**
Jib Crane 210-CN-1030 & 210-CN-1040	

REV	DATE	STATUS	WRITTEN	CHECKED	APPROVED
F	01/04/2014	Updated Motor Details & TSU comments	RE		

TO BE COMPLETED BY PURCHASER & BY DRIVEN MACHINE SUPPLIER

1	ITEM:	Jib Crane Travel Motors	QUANTITY:	2	MR	
2	General specificatio	**9806J-0440-JSS-1691-001**	Standards, codes:	**IEC**		
3	Supplier:	MMD	Manufacturer:	**Misia**		
4						
5	**ENVIRONMENTAL CONDITIONS**					
6	Installation (indoor/outdoor) / Ambient Type: **Dusty and Corrosive**					
7	Ambient Design Temperature		Max:	**47 °C**	Min:	**5°C**
8	Altitude (if > 1000m)/Relative Humidity		a.s.l.:	**<1000** m		**70%**
9	Area Classification		**Tropic-Proofed**			
10	Hazardous area (Zone)/ Gas Group/Temperature		**According to package requirements**			
11	**DRIVEN MACHINE DATA**					
12	Manufacturer/Machine Type (fan, pump, compressor,...)		Crane Travel			
13	Maxi shaft power / Shaft power at operating point		0.18 kW			0.18 kW
14	Coupling type / To be designed for restarting				Yes ☐	No ☐
15	Thrust (vertical) Up/Down		Up	kg	Down	kg
16	Driven Machine Inertia (WR2)				N/A	kg.m2
17	Brake torque curve / Required starting brake torque				-	N.m
18						
19	**MOTOR GENERAL CHARACTERISTICS**					
20	Rated power/ Poles number			0.18 kW	N°:	4
21	Voltage/Frequency/Phases		**400** V	**50** Hz	N°:	**3**
22	Service condition (S1,S2,...)		**S4**			
23	Mounting (IM1001,3001,3011,1011,...)		IMB5			
24	Protection degree: Enclosure / terminal box		IP: **55**		IP: **55**	
25	Protection Ex(n), Ex(d), Ex(e): Motor / terminal box					
26	Gas group (IIB,...) / Temperature class (T3,...)					
27	Enclosure cooling (fan cooled, air to air, air to water,...)		Fan Cooled			
28	Starting Method (loaded, unloaded / DOL, soft start,VSD,...)		**Loaded**	**DOL** ■	**Soft start** ☐	**VSD** ☐
29	Starting voltage (full, reduced x%) / Max. voltage drop at starting				**15** %	
30	Nb of consecutive starts within 1 hour		Cold **3**		Hot **2**	
31	Min.Insulation Class (B,F,...)/Max Temperature Rise		**F**		**B**	
32	Direction of Rotation (looking at motor coupling)		CW ☐	CCW ☐	Bidirectionnal ■	
33	Position of Main / Auxiliary terminal box		Main **TOP**		Auxiliary **TOP**	
34	Cable Type, Size and Overall Diameter on Main terminal box		Type : **XLPE Arm**	Size(mm²)	Diam. mm	
35	Cable Type, Size and Overall Diameter on Aux terminal box		Type : **XLPE Arm**	Size(mm²)	Diam. mm	
36	Terminal boxes provided with cable glands		Yes ■ **Metallic**		No ☐	
37	Painting (Mfr standard,... / color)		**Manufacturer Standard**			
38	Noise Level at 1 m				**<85**	dB(A)
39						

TO BE COMPLETED BY MANUFACTURER

40	**MOTOR MANUFACTURER'S DATA**					
41	Manufacturer type / Frame Size / -		Squirrel			71
42	Winding Connection (star, delta)/Nb terminals brought out		**DELTA**		N°: **6**	
43	Full Load Speed					1340 rpm
44	Rated Current / No load current / Locked Rotor Current	0.58 A	0.5 A	4 Ist / In		
45	Starting Time (% of Voltage) at full load	100%:	s	80%:	s	
46	Allowable Locked Rotor withstand Time	Cold:	s	Hot:	s	
47	Thermal Time Constant	Cooling:	min	Heating:	min	
48	Efficiency	4/4 56.00%	3/4 %	2/4 %		
49	Power Factor	4/4 0.66	3/4	2/4		
50	Locked Rotor Power Factor					
51	Full load Torque					1.2 N.m
52	Locked/Pull Up/Breakdown Torque	L 150.00%	PU 160.00%	BD 170.00%		
53	Rotor Motor Inertia (WR2)					kg.m2
54	Bearing Type (Drive End/Non Drive End)	DE:		NDE:		
55	Lubrication Type/Interval					N/A hours
56	Windings Temperature Sensors PT100	Yes ☐ No ■	1 set of 3 ☐	2 sets of 3 ☐		
57		Alarm		Tripping		
58	Temperature setting of winding sensors	°C		°C		
59						
60	Ground lug size					
61	Motor Weight					5.6kg
62	Certifying authority / certificate Nr					
63						
64						
65						

DATA SHEET LOW VOLTAGE INDUCTION MOTOR

PROJECT :	**Document No A4102 Rev F**
CLIENT:	**Sec Ref 9806J-0210-Sp-4314-00111**
MECHANICAL SUPPLIER: **MMD Mineral Sizing (Europe) Ltd**	MOTOR ITEM
Contract No 33267	EQUIPMENT TAG NUMBER: **210-CN-1030, 210-CN-1040** — CONSUMER TYPE: **M** — SERIAL N°: **3**
Jib Crane 210-CN-1030 & 210-CN-1040	

REV	DATE	STATUS	WRITTEN	CHECKED	APPROVED
F	01/04/2014	Updated Motor Details & TSU comments	RE		

TO BE COMPLETED BY PURCHASER & BY DRIVEN MACHINE SUPPLIER

1	ITEM:	Jib Crane Slew Motors	QUANTITY:	2	MR		
2	General specificatio	**9806J-0440-JSS-1691-001**	Standards, codes:	**IEC 60034**			
3	Supplier:	MMD	Manufacturer:	**TEC**			
4							
5	**ENVIRONMENTAL CONDITIONS**						
6	Installation (indoor/outdoor) / Ambient Type: **Dusty and Corrosive**						
7	Ambient Design Temperature		Max:	**47 °C**	Min:	**5°C**	
8	Altitude (if > 1000m)/Relative Humidity		a.s.l.:	**<1000** m		**70%**	
9	Area Classification		**Tropic-Proofed**				
10	Hazardous area (Zone)/ Gas Group/Temperature		**According to package requirements**				
11	**DRIVEN MACHINE DATA**						
12	Manufacturer/Machine Type (fan, pump, compressor,...)		Crane Slew				
13	Maxi shaft power / Shaft power at operating point		0.75 kW		0.7 kW		
14	Coupling type / To be designed for restarting				Yes ☐	No ☐	
15	Thrust (vertical) Up/Down		Up	kg	Down	kg	
16	Driven Machine Inertia (WR2)				N/A	kg.m2	
17	Brake torque curve / Required starting brake torque				-	N.m	
18							
19	**MOTOR GENERAL CHARACTERISTICS**						
20	Rated power/ Poles number		0.75 kW		N°:	4	
21	Voltage/Frequency/Phases		**400** V	**50** Hz	N°:	**3**	
22	Service condition (S1,S2,...)		**S1**				
23	Mounting (IM1001,3001,3011,1011,...)		IMB3				
24	Protection degree: Enclosure / terminal box		IP: **55**		IP: **55**		
25	Protection Ex(n), Ex(d), Ex(e): Motor / terminal box						
26	Gas group (IIB,...) / Temperature class (T3,...)						
27	Enclosure cooling (fan cooled, air to air, air to water,...)		Fan Cooled				
28	Starting Method (loaded, unloaded / DOL, soft start,VSD,...)		**Loaded**	**DOL** ☐	**Soft start** ■	**VSD** ☐	
29	Starting voltage (full, reduced x%) / Max. voltage drop at starting				**15** %		
30	Nb of consecutive starts within 1 hour		Cold **3**		Hot **2**		
31	Min.Insulation Class (B,F,...)/Max Temperature Rise		**F**		**B**		
32	Direction of Rotation (looking at motor coupling)		CW ☐	CCW ☐	Bidirectionnal ■		
33	Position of Main / Auxiliary terminal box		Main **TOP**		Auxiliary **TOP**		
34	Cable Type, Size and Overall Diameter on Main terminal box		Type : **XLPE Arm**	Size(mm²)	Diam. mm		
35	Cable Type, Size and Overall Diameter on Aux terminal box		Type : **XLPE Arm**	Size(mm²)	Diam. mm		
36	Terminal boxes provided with cable glands		Yes ■ **Metallic**		No ☐		
37	Painting (Mfr standard,... / color)		**Manufacturer Standard**				
38	Noise Level at 1 m				**<85**	dB(A)	
39							

TO BE COMPLETED BY MANUFACTURER

40	**MOTOR MANUFACTURER'S DATA**						
41	Manufacturer type / Frame Size / -		Squirrel		80		
42	Winding Connection (star, delta)/Nb terminals brought out		**STAR**		N°: **6**		
43	Full Load Speed					1380 rpm	
44	Rated Current / No load current / Locked Rotor Current	1.93 A	1.5 A	5.5	Ist / In		
45	Starting Time (% of Voltage) at full load	100%:	s	80%:	s		
46	Allowable Locked Rotor withstand Time	Cold:	s	Hot:	s		
47	Thermal Time Constant	Cooling:	min	Heating:	min		
48	Efficiency	4/4 72.10%	3/4 %	2/4	%		
49	Power Factor	4/4 0.78	3/4	2/4			
50	Locked Rotor Power Factor				-		
51	Full load Torque			5.2	N.m		
52	Locked/Pull Up/Breakdown Torque	L 220.00%	PU 160.00%	BD	240.00%		
53	Rotor Motor Inertia (WR2)				kg.m2		
54	Bearing Type (Drive End/Non Drive End)	DE: 6204ZZ		NDE: 6204ZZ			
55	Lubrication Type/Interval				N/A hours		
56	Windings Temperature Sensors PT100	Yes ☐ No ■	1 set of 3 ☐	2 sets of 3 ☐			
57		Alarm		Tripping			
58	Temperature setting of winding sensors	°C		°C			
59							
60	Ground lug size						
61	Motor Weight				11.9kg		
62	Certifying authority / certificate Nr						
63							
64							
65							

DATA SHEET LOW VOLTAGE INDUCTION MOTOR

PROJECT :	**Document No A4102 Rev F**
CLIENT:	**Sec Ref 9806J-0210-Sp-4314-00111**
MECHANICAL SUPPLIER: **MMD Mineral Sizing (Europe) Ltd**	MOTOR ITEM
Contract No 33267	EQUIPMENT TAG NUMBER: **210-CN-1030, 210-CN-1040** / CONSUMER TYPE: **M** / SERIAL N°: **4**
Jib Crane 210-CN-1030 & 210-CN-1040	

REV	DATE	STATUS	WRITTEN	CHECKED	APPROVED
B	01/04/2014	Updated Motor Details & TSU comments	RE		

TO BE COMPLETED BY PURCHASER & BY DRIVEN MACHINE SUPPLIER

1	ITEM:	Jib Crane Travel Motors	QUANTITY:	2	MR	
2	General specificatio	**9806J-0440-JSS-1691-001**	Standards, codes:	**IEC**		
3	Supplier:	MMD	Manufacturer:	**Misia**		
4						
5	**ENVIRONMENTAL CONDITIONS**					
6	Installation (indoor/outdoor) / Ambient Type: **Dusty and Corrosive**					
7	Ambient Design Temperature		Max:	**47 °C**	Min:	**5°C**
8	Altitude (if > 1000m)/Relative Humidity		a.s.l.:	**<1000** m		**70%**
9	Area Classification		**Tropic-Proofed**			
10	Hazardous area (Zone)/ Gas Group/Temperature		**According to package requirements**			
11	**DRIVEN MACHINE DATA**					
12	Manufacturer/Machine Type (fan, pump, compressor,...)		Crane Travel			
13	Maxi shaft power / Shaft power at operating point		0.18kW			0.18 kW
14	Coupling type / To be designed for restarting				Yes ☐	No ☐
15	Thrust (vertical) Up/Down		Up	kg	Down	kg
16	Driven Machine Inertia (WR2)				N/A	kg.m2
17	Brake torque curve / Required starting brake torque				-	N.m
18						
19	**MOTOR GENERAL CHARACTERISTICS**					
20	Rated power/ Poles number			0.18 kW	N°:	4
21	Voltage/Frequency/Phases		**400** V	**50** Hz	N°:	**3**
22	Service condition (S1,S2,...)		**S4**			
23	Mounting (IM1001,3001,3011,1011,...)		IMB5			
24	Protection degree: Enclosure / terminal box		IP: **55**		IP: **55**	
25	Protection Ex(n), Ex(d), Ex(e): Motor / terminal box					
26	Gas group (IIB,...) / Temperature class (T3,...)					
27	Enclosure cooling (fan cooled, air to air, air to water,...)		Fan Cooled			
28	Starting Method (loaded, unloaded / DOL, soft start,VSD,...)		**Loaded**	**DOL** ■	**Soft start** ☐	**VSD** ☐
29	Starting voltage (full, reduced x%) / Max. voltage drop at starting				**15** %	
30	Nb of consecutive starts within 1 hour		Cold **3**		Hot **2**	
31	Min.Insulation Class (B,F,...)/Max Temperature Rise		**F**		**B**	
32	Direction of Rotation (looking at motor coupling)		CW ☐	CCW ☐	Bidirectionnal ■	
33	Position of Main / Auxiliary terminal box		Main **TOP**		Auxiliary **TOP**	
34	Cable Type, Size and Overall Diameter on Main terminal box		Type : **XLPE Arm**	Size(mm²)	Diam. mm	
35	Cable Type, Size and Overall Diameter on Aux terminal box		Type : **XLPE Arm**	Size(mm²)	Diam. mm	
36	Terminal boxes provided with cable glands		Yes ■ **Metallic**		No ☐	
37	Painting (Mfr standard,... / color)		**Manufacturer Standard**			
38	Noise Level at 1 m				**<85**	dB(A)
39						

TO BE COMPLETED BY MANUFACTURER

40	**MOTOR MANUFACTURER'S DATA**					
41	Manufacturer type / Frame Size / -		Squirrel			71
42	Winding Connection (star, delta)/Nb terminals brought out		**DELTA**		N°: **6**	
43	Full Load Speed					1340 rpm
44	Rated Current / No load current / Locked Rotor Current		0.58 A	0.5 A	4	Ist / In
45	Starting Time (% of Voltage) at full load		100%: s		80%:	s
46	Allowable Locked Rotor withstand Time		Cold: s		Hot:	s
47	Thermal Time Constant		Cooling: min		Heating:	min
48	Efficiency		4/4 56.00%	3/4 %	2/4	%
49	Power Factor		4/4 0.66	3/4	2/4	
50	Locked Rotor Power Factor					
51	Full load Torque					1.2 N.m
52	Locked/Pull Up/Breakdown Torque		L 150.00%	PU 160.00%	BD	170.00%
53	Rotor Motor Inertia (WR2)					kg.m2
54	Bearing Type (Drive End/Non Drive End)		DE:		NDE:	
55	Lubrication Type/Interval					N/A hours
56	Windings Temperature Sensors PT100		Yes ☐ No ■	1 set of 3 ☐	2 sets of 3 ☐	
57			Alarm		Tripping	
58	Temperature setting of winding sensors		°C		°C	
59						
60	Ground lug size					
61	Motor Weight					5.6kg
62	Certifying authority / certificate Nr					
63						
64						
65						