

Used equipment

For sale by Intercem

1 pre-owned Vertical Roller Mill for Raw Material grinding

I01060

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Intercem Engineering is a leading company for the supply of pre-owned and new equipment and services for the cement industry. Turn-key plants are designed as combination of used and (where necessary) new equipment. A top notch team of engineers also provides comprehensive engineering of the technology and design of complete new production lines. The component described above could be implemented in a comprehensive solution upon demand.

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A Scope of Supply

- A Import part
- B Local manufacturing by workshop drawings
- C Local procurement by specification

		Designation	Local weight approx. kg	Import weight		Remark
1		Vertical roller mill with				
1.1		Rotary lock	13,500	4,800		
	1	Housing and covers				B
	2	housing lining				B
	3	cell wheel				A
	4	bearing				A
	5	drive				A
	6	measuring and control				A
	7	Inlet chute to mill				B
1.2		Vertical roller mill MPS 4500	135,400	281,600		
	1	foundation frame with pull rod suspensions and supports				B
	2	gearbox plate				B
	3	skids				B
	4	anchor boxes				B
	5	support for mill main motor				B
	6	mill housing				B
	7	lining of mill housing				B
	8	mill main gearbox				A
	9	coupling				A
	10	maintenance drive motor				A
	11	grinding table, cast part				A
	12	scrapers				B
	13	steel parts for grinding table				B
	14	liners for grinding table				A
	15	nozzle ring				B
	16	nozzle ring lining				B
	17	air guide cone				B
	18	air guide cone cover				B
	19	grinding rollers incl. liners				A
	20	pressure yokes				A
	21	pressure frame				A
	22	pressure frame shock absorbers				A
	23	stop plates				A
	24	pull rods				A
	25	hydraulic tension system				A
	26	seal air ring mains				B
	27	seal air pipe outside the mill				B
	28	seal air fan				A

	29	measuring pipe outside the mill			B	
	30	lift and swing system			A	
	31	water injection, pump and			A	
	32	frequency converter for water			A	
	33	water tank control			A	
	34	water tank			B	
	35	mill motor			C	excluded
1.3		Classifier SLS 4000 B	54.200	10.900		
	1	classifier bottom part			B	
	2	housing of classifier top part			B	
	3	lining of classifier housing			B	
	4	static louver			B	
	5	grit cone			B	
	6	motor support			B	
	7	separator shaft			A	
	8	bearing assembly			A	
	9	separator rotor			B	
	10	gear with coupling			A	
	12	classifier motor			C	excluded
	13	frequency converter			C	excluded
		Miscellaneous	7.000	--		
	1	platforms and ladders			B	
	2	screws, sealings and washers for			B	
	3	electrodes for welding of			B	
2		External material	--	--	C	excluded
3		Cyclone collector				
	1	Double cyclone AZZ 560	83.700	--	B	
	2	Rotary locks of cyclone	--	--	C	excluded
4		Mill fan	15.500	13.600		
	1	housing complete			B	
	2	supporting structure			B	
	3	motor / bearing bracket			B	
	4	suction box			B	
	5	protection hoods			B	
	6	anchorings			B	
	7	rotor with shaft			A	
	8	expansion joints			A	
	9	louver flap with actuator			A	
	10	bearing system			A	
	11	measuring and control			A	
	12	fan motor			C	Excluded
5		Ductings	--	--	C	Excluded
6		Shut-off and control dampers	--	2.000	A	

7		Expansion joints				
	1	cloth parts	-	200	A	
	2	steel parts	3.000	-	B	
8		Material chutes	--	--	C	Excluded
9		Measuring and control	--	100	A	
10		Special tools			A	included in
		Total:	312.300	313.200		



B Technical Description

1 Gebr. Pfeiffer Vertical Roller Mill with Classifier

1.1 1x Rotary lock DSZ 200

- cell wheel diameter: 2,000 mm
- drive: gear and motor
- installed power: 9,2 kW
- with chute to mill heated with process gases with expansion joint between rotary lock and mill

1.2 1x Vertical Roller Mill Type MPS 4500 B

- with maintenance drive with torque support system of pressure frame with partial lining of hot gas channel
- with lining of nozzle ring blades
- with lining of air guide cone with partial lining of mill housing
- with partial lining of pressure yokes without floors for maintenance and inspection
- with reject chute for external material recirculation

Grinding table

- diameter: 4.500 mm
- weight of wear parts: approx. 9.500 kg
- design of wear parts: segmented
- number of segments: 39
- material of wear parts: Ni-hard IV

Grinding rollers

- diameter: 2.500 mm
- number of rollers: 3
- weight per roller: approx. 32.300 kg
- weight of wear parts per roller: approx. 8.800 kg
- design of wear parts: segmented
- number of segments per roller: 12
- material of wear parts: Ni-hard IV

Seal air system of grinding rollers

- fan type: radial fan
- air volume: approx. 2,400 nm³/h
- installed power: 15 kW
- pressure monitoring: contact manometer

Hydraulic tension system

- drive unit: compact hydraulic unit
- installed power: 5.5 kW
- hydraulic medium: oil
- tension: hydropneumatic
- 3-point tension system with hydraulic lifting device for grinding rollers with position sensors for measurement of grinding bed thickness

Mill gear

- design: planetary gear
- drive power: 2.600 kW
- input speed: 990 rpm
- output speed: 24.3 rpm
- input shaft: horizontal
- output shaft: vertical, with integrated segmented thrust bearing
- lubrication system: circulating oil lubrication
- AGMA factor: > 2.5
- cooling medium: water
- temperature: max 30°C
- pressure: 3 - 6 bar
- contamination: max 50 mg/l
- pH value: neutral
- coupling gear/motor: flexible coupling

Motor (excluded from our supply)

recommended rating data

- version: slip ring motor with starter
- power/speed: 2,600 kW / 990 rpm
- design: B3
- starting torque: 1.2 times the nominal torque
- start-up frequency: 3 times per hour (with lifted rollers)

Maintenance drive

- design: gearmotor
- drive power: 5.5 kW
- input speed: 1,480 rpm
- output speed: 6.2 rpm
- design: B3
- connection between maintenance drive and input shaft of main gearbox in case of maintenance: chain wheel with link chain

Water injection - grinding zone

- number of nozzles: 3
- water quantity: 600 l/h – 6,000 l/h
- water pressure: min 6 bar
- capacity of water tank: 10 m³
- drive of metering pump: electric motor
- installed power: 3 kW
- speed control: frequency converter
- without tank

Device for removal of grinding rollers

- type: MPS Lift-and-Swing System
- lifting mechanism: hydraulic
- hydraulic medium: oil
- drive: hydraulic unit
- installed power: 3
- swinging mechanism: hydraulic

Classifier - SLS 4000 B**Separating rotor**

- design: lamella wheel
- diameter: 4.000 mm
- with lining of gas exit duct
- without floors for maintenance and inspection

Electric drive of separating rotor

- drive unit: gear with electric motor
- installed power: 160 kW
- speed: up to an approx. 93 rpm
- speed control: frequency converter

**Motor for drive (excluded from our supply)
recommended rating data**

- version: squirrel cage motor
- power: 160 kW
- speed: 1,480 rpm
- design: B3
- with frequency converter
-

Pfeiffer vertical roller mill

- The Pfeiffer MPS mill is a vertical roller mill consisting of several modules. Depending on the mill size and transportation requirements, the modules are delivered premounted for being assembled on the site. The housings are also disassembled to comply with transportation requirements.

Rotary lock

- consisting of:
- housing with inlet and outlet flanges, with inspection door, with exchangeable wear protection, with connection ducts for intake and exit of hot gases for heating the lock;
- cell wheel with shaft, with lateral discs and readjustable sealing ledges;
- external bearings for support of shaft;
- bracket for support of drive;
- drive;
- chute to mill housing of welded steel plate, with flanges, sealing material, and screws;
- compensator.

MPS mill

consisting of:

- foundation frame of welded sectional steel, with integrated pull rod anchors for fastening of hydraulic tension cylinders;
- gearbox plate of welded sectional steel, with machined surface for support of mill main gearbox;
- skids of sectional steel, for fitting and removing the gearbox;
- motor base plate, welded;
- anchor bolts of standard steel including the respective recess boxes;
- mill housing of welded steel plate, with gas intake channel and grinding zone, with material outlet duct, with inspection and maintenance doors, with connection flange for classifier housing;
- ring mains for differential pressure measurement;
- nozzle ring arranged between grinding table and mill housing, with obliquely directed blades for guiding the gas flow, with integrated air guide cone;
- grinding table of cast design, with scrapers for removal of material and foreign bodies through material outlet ducts in mill housing;
- steel plate hood to cover inside of grinding table;
- wear part(s) of grinding table with clamping pieces and screws;
- grinding rollers with grinding roller axle, roller bearings, bearing bushing and bearing lid, with clamping connection for exchange of wear parts, with seal air sealing of grinding roller bearing system;
- wear part(s) of grinding rollers;

- pressure yokes of cast design, with bore to receive grinding roller axle, with seal air ducting and connection duct;
- pressure frame with supports receiving the roller sockets and connection elements for grinding rollers, with openings for fitting the fastening elements for the pull rods, with inner grinding roller stops;
- hydraulic tension system with pull rods, hydraulic cylinders, and pressure accumulators, with elements for connection to foundation frame and pressure frame;
- hydraulic unit of compact design, with pump and motor, with oil receptacle, oil level monitor, and oil filter, with solenoid valves, pressure valves, shut-off valves, and directional control valves, with manometer and measuring transducer for remote indication of tension pressure;
- connection ductings and high pressure hoses to hydraulic cylinders;
- seal air fan in the form of a radial fan with expansion joint and dust filter, with motor;
- ducting between seal air fan and pressure yokes, made of steel, with flanges and fastening elements;
- connecting elements for articulated connection of seal air ducting to pressure yokes as well as unions with wear bushing and articulation.

Mill main drive

consisting of:

- mill gear in the form of a multi-stage speed-reducing gear with a horizontal input shaft and vertical output shaft, gearbox with integrated segmented thrust bearing, with output flange for support of grinding table, with coupling between gear and motor;
- oil supply by means of a pump sucking oil from the gear oil sump through a suction ducting; oil circuit fitted with a filter and cooler for filtration and cooling, respectively, of circulating oil; the filtered and cooled oil is returned to the gear through a pressure ducting;
- coupling protection, welded, with fastening screws;

Maintenance drive

for moving the grinding rollers to the maintenance door; maintenance drive consisting of:

- gearmotor with chain wheel and link chain to connect the maintenance drive to the input shaft of the main gearbox in case of maintenance;

- gearmotor support, welded, with sole plate and anchor bolts or as an alternative;
- bracket directly connected to the main gearbox for supporting the gearmotor;
- chain wheel to be fitted onto the input shaft of the main gearbox; chain protection, welded, with fastening screws.

Water injection into grinding zone

consisting of:

- water nozzles with ring mains on mill housing;
- connection ducting between ring mains and metering pump, with integrated flowmeter;
- metering pump for control of injected water quantity; control of pump speed via frequency converter;
- local indication;
- water supply excluded from our supply.

Device for removal of grinding rollers (MPS Lift-and-Swing System)

consisting of:

- equipment for locking the grinding rollers with pressure yokes comprising central column, supporting arms, and brackets with bolts; central column to be sunk into the grinding bowl;
- spreader for fitting the supporting arms and pulling out the central column (only with mills from a specific size onwards);
- additional equipment for removing the grinding table segments (only with mills having a segmented grinding table);
- lifting and swinging mechanism to be fitted onto mill housing, with lift-and-swing column with supporting foot and bracket, suspension eyes and bolts;
- hydraulic lifting cylinder for lifting the grinding roller with pressure yoke;
- hydraulic motor (rotary actuator) for swinging the grinding rollers out of the mill housing;
- compact hydraulic unit with ductings and high pressure hoses, with pressure monitors and indicators, and local controls.

Classifier

consisting of:

- classifier housing with top and bottom parts of welded steel plate, with inspection and maintenance doors, with gas exit duct and connection flange, with drive bracket for

- support of separating rotor drive and separating rotor bearing;
- pre-spin louver with obliquely directed plates made of wear resistant steel;
- grit cone of welded steel plate;
- bearing with lined truss for support of bearing within the classifier housing, with bearing bushing, roller bearings, and sealing rings, with classifier shaft;
- separating rotor designed as a lamella wheel, with welded lamellas made of wear resistant steel, with hub and cover cone, separating rotor fastened on classifier shaft by means of shrink disc, with locking washer.

Electric drive of separating rotor

consisting of:

- gear with motor: bevel gear screwed onto the classifier and connected to the classifier shaft via flexible coupling; motor supported horizontally on a lateral drive bracket, which is fitted onto the classifier housing, and connected to the gear via flexible coupling.

Field appliances and electrical components pertaining to the scope of supply of the rotary lock

- inductive initiator and magnet wheel for rotation monitoring (evaluating device to be built into switch cabinet);
- gear and motor to drive the rotary lock.

Field appliances and electrical components pertaining to the scope of supply of the hydraulic tension system

- pressure switch for monitoring of filter choking;
- electronic pressure switch with 4 adjustable limit values (min 2, min 1, max 1, max 2) for monitoring of tension pressure; this compact appliance includes a measuring transducer for transmitting a standard signal;
- float switch with 2 switch contacts (min 1, min 2) for oil level monitoring;
- inductive position sensors for stroke measurement of hydraulic
- cylinders with linearized analogue output (standard signal);
- limit value determination to be effected by PLC;
- electronic pressure switch with 4 adjustable limit values (min 2, min 1, max 1, max 2) for monitoring of lifting pressure; this compact appliance includes a measuring transducer for transmitting a standard signal;

- any measuring signals wired on terminal strip;
- pump drive motor and solenoid valve for pressure relief wired on terminal strip;
- terminal strips built into a terminal box;
- solenoid valve controlled by PLC.

Field appliances and electrical components pertaining to the scope of supply of the seal air system of grinding rollers

- pressure pick-up with measuring transducer for seal air pressure monitoring;
- squirrel cage motor to drive the fan.
- Field appliances and electrical components pertaining to the scope of supply of the torque support for pressure frame resistance thermometer for monitoring the oil temperature in the hydraulic buffer.

Field appliances and electrical components pertaining to the scope of supply of the mill gear

- pressure switch for monitoring of filter choking;
- resistance thermometer (2 limit values in PLC) for monitoring of oil temperature after cooler;
- 2 pressure switches for monitoring of oil pressure;
- flowmeter (2 limit values) for flow measurement;
- inductive initiator for monitoring of ball valve position "open" for cooling water (for transmission to PLC);
- resistance thermometer for monitoring of segmented thrust bearing temperature;
- resistance thermometer for monitoring of segmented thrust bearing oil temperature;
- vibration monitor for monitoring of mill vibration (this compact appliance includes 1 measuring transducer and 2 limit switches for transmitting a standard signal);
- one or more pressure switches, as required, for oil pressure monitoring on segmented thrust bearings;
- pressure switch for oil pressure monitoring before high pressure pump;
- resistance thermometer (4 limit values) for oil temperature monitoring before pump in PLC;
- safety thermostat for oil temperature monitoring after heating circuit pump;
- any measuring signals wired on terminal strip;
- pump drive motor wired on terminal strip;
- terminals built into a terminal box type IP 54;
- signals from resistance thermometers transmitted to measuring transducers or to PLC;

Field appliances and electrical components pertaining to the scope of supply of the maintenance drive

- gearmotor to maintenance drive;
- inductive proximity switch for chain monitoring.

Field appliances and electrical components pertaining to the scope of supply of the water injection

- flowmeter for measuring the amount of flow, with analogue output; squirrel cage motor to drive the pump, with 3 PTC resistors; frequency converter with evaluating device for PTC resistors.

Field appliances and electrical components pertaining to the scope of supply of the device for removal of grinding rollers (MPS Lift-and-Swing System)

- squirrel cage motor to drive the hydraulic pump;
- motor protected by protective switch;
- compact hydraulic unit connected with existing low-voltage three- phase power supply by 5-pole CEE plug.

Field appliances and electrical components pertaining to the scope of supply of the SLS classifier

- actual speed to be supplied by frequency converter.

Field appliances and electrical components pertaining to the scope of supply of the electric drive of separating rotor

- monitoring of winding temperature by means of 3 PTC resistors for transmission to frequency converter;
- driven by squirrel cage motor and gear; motor to be fed by frequency converter;
- speed control by means of frequency converter.

2 External Material recirculation (excluded from our supply)

Recommended rating data:

2.1 1x Vibration through conveyor

- conveying capacity: 190 t/h
- length: approx. 5,500 mm
- width: 800 mm
- drive: unbalance motor
- drive power: 2x4 kW

2.2 1x Chain bucket elevator

- conveying capacity: 190 t/h
- centre distance: approx. 28 m
- bucket width: 450 mm
- drive power: 45 kW
- drive: gear and motor
- with mechanical backstop
- with single-strand chain

2.3 1x Two-way chute

- with change-over flap
- flap actuation: pneumatic
- (compressed air excluded)

2.4 1x Bin for rejected material

- useful volume: approx. 50 m³
- nominal width of outlet: 600 mm x 600 mm
- with bin closing slide with dust collection duct with fill level measurement with floors, ladder, and banister
- with supporting structure

2.5 1x Proportioning belt conveyor

- conveying capacity: 0 - 100 t/h
- belt width: 800 mm
- centre distance: 6,000 mm
- proportioning: volumetric
- setting range: 1:10
- drive: gearmotor with frequency converter
- drive power: 4.0 kW

2.6 1x Metal detector

- function: detection of metal parts and signal transmission for safety shutdown and/or removal of metal parts

2.7 1x Two-way chute

- with change-over flap
- flap actuation: pneumatic

- (compressed air excluded from our supply)

2.8 1x Dust collection of external material recirculation

- filter type: compressed-air cloth-type filter
- gas volume flow: 10.000 m³/h
- gas temperature: 40°C
- pressure at gas inlet: -20 mbar
- airtight seal: rotary lock(s)
- compressed air requirement: 15 Nm³/h
- with filter supporting structure
- with filter access
- with compressed air generation
- with filter fan
- with drive to filter fan 18,5 kW

3 Cyclone collector (detail engineering)

3.1 1x Cyclone separator type AZZ 560

- design: double-cyclone
- diameter: 5,600 mm each
- gas inlet: tangential
- volume flow: approx. 630,000 m³/h
- with partial lining
- without supporting structure

Cyclone separator

consisting of:

- housing top part of cylindrical design, with tangential gas inlet duct and inlet spiral, with immersion pipe, with suction spiral and gas outlet duct, with connection flanges, with connecting and fastening screws, bolts and washers;
- housing bottom part of conical design, end part with double cone for steadying the outgoing dust, with connection flange for dust discharge lock;
- supporting feet, welded onto housing.

3.2 2x Rotary lock (excluded from our supply)

recommended rating data:

- cell wheel diameter: 800 mm
- drive: gearmotor
- drive power: 3,0 kW

Rotary lock

to discharge the dust from the cyclone collector, consisting of:

- housing with inlet flange and outlet flange, with external bearings, with bracket to receive the drive;
- cell wheel with shaft, with lateral discs and readjustable sealing ledges; drive.

4 Mill fan

- design: radial fan
- speed: 990 rpm
- volume flow: 600,000 m³/h (actual)
- volume flow: 710,000 m³/h (design)
- temperature: 95°C
- pressure at suction side: -82 mbar (actual)
- -91 mbar (design)
- volume flow control: louver flap
- coupling: flexible coupling
- with two intake ducts born on both sides

4.1 1x Motor (excluded from our supply)

recommended rating data

- power / speed: 2,600 kW / 990 rpm
- design: B3
- starts per hour: 3 (with closed flap)

4.2 1x Mill fan

consisting of:

- fan housing of welded construction, with side walls and spiral casing, with gas intake duct and gas outlet duct including connection flanges, with maintenance door, with condensate duct, with sealing for the rotor shaft; with connecting and fastening screws, bolts and washers;
- rotor of welded construction, borne on both sides, with hub, cover disk and blades, with rotor shaft, rotor and shaft are dynamically balanced;
- bearing system with two plummer-block bearings, including roller bearings and sealing rings.

4.3 1x Field appliances and electrical components pertaining to the scope of supply of the mill fan

- 2 torque switches; 2 limit switches at end of travel;
- electronic position pick-up with standard signal output integrated in
- actuator (designed for automatic control);
- 2 Pt 100 thermometers for bearing temperature monitoring with head
- transmitter with 4-20 mA signal output;
- vibration monitor for monitoring of fan vibration; monitor fitted with 2 switch
- outputs and 1 analog output with standard signal;
- actuator (designed for automatic control) for louver flap.

5 Ductings (excluded from our supply)

Recommended rating data:

Hot gas ducting ahead of mill

- ducting diameter: 3,600 mm
- ducting length: approx. 15 m*
- thickness: 10 mm

Ducting classifier/cyclone

- ducting diameter: 3,500 mm
- ducting length: approx. 25 m*
- thickness: 10 mm

Ducting cyclone/fan

- ducting diameter: 3,500 mm
- ducting length: approx. 50 m*
- thickness: 10 mm

Recirculation air ducting

- ducting diameter: 2,500 mm
- ducting length: approx. 25 m*
- thickness: 8 mm

Fresh air ducting

- ducting diameter: 1,500 mm
- ducting length: approx. 3 m
- thickness: 6 mm

* The precise ducting lengths can only be determined after having prepared the arrangement drawing.

6 Shut-off / control dampers and closing slides

6.1 1x Damper in fresh air ducting

- design: with two blades
- damper opening: 1,500 mm diameter
- drive: actuator (for automatic control)

6.2 1x Damper in recirculating air ducting

- design: with two blades
- damper opening: 2,500 mm diameter
- drive: actuator (for automatic control)

6.3 1x Closing slide in hotgas ducting excluded from our supply

- design: gate valve
- damper opening: 3,600 mm diameter
- drive: electric

6.4 1x Closing slide after mill excluded from our supply

- design: gate valve
- damper opening: 3,500 mm diameter
- drive: electric

Shut-off / control dampers and closing slides consisting of:

- damper / slide housing of steel plate, appropriately stiffened, with flanges for installation into ductings or channels;
- damper / slide blade of rugged steel plate;
- damper / slide bearing system consisting of sufficiently dimensioned shaft, borne on both sides, with the required sealings between the shaft and damper housing;
- damper / slide drive.

Field appliances and electrical components pertaining to the scope of supply of the shut-off / control dampers and closing slides

- 2 limit switches;

- 2 torque switches;
- 1 winding temperature monitoring by means of PTC resistor;
- gearmotor to drive the damper;
- additionally provided for control dampers:
- permanent indication of damper position with standard signal output;
- additionally provided for safety shut-off dampers:
- 2 limit switches on flap shaft; holding magnet with rectifier.

7 Expansion joints

7.1 Expansion joint before mill (hot gas ducting)

- number of expansion joints: 2
- dimensions: 1.800 mm x 1.400 mm
- type: fabric expansion joint

7.2 Expansion joint after classifier

- number of expansion joints: 1
- dimensions: 3.500 mm diameter
- type: fabric expansion joint

Fabric expansion joint

- consisting of:
- inner guide duct with flange, outer guide duct with flange, U-shaped fabric part, counter flanges, screws.

8 Material chutes (excluded from our supply)

- installed: within the cement raw material grinding plant
- dimensions: according to general arrangement

Material chutes

consisting of:

- welded steel plate with flanges, sealing material, and screws; fitting pieces made of welded steel plate, with loose flanges; exchangeable wear inserts.

9 Measuring and control equipment

9.1 1x Feed control

as a function of the mill charge, consisting of:

- stop cock, differential pressure transducer;

9.2 1 Temperature control

as a function of the operating air temperature after the mill, consisting of:

- resistance thermometer, transducer;

9.3 1 Air volume control

as a function of the differential pressure of an orifice gauge, consisting of:

- stop cock, differential pressure transducer;

9.4 1 Temperature monitoring

consisting of:

- resistance thermometer, transducer;

9.5 1 Pressure control ahead of mill

consisting of:

- stop cock, differential pressure;

10 Special tools for maintenance

Pfeiffer supply

- charging and testing unit for bladder accumulators
- templates to measure wear and tear on grinding rollers and grinding plate
- wrench with large width across flats
- 3 measuring rods to adjust the grinding rollers
- mounting ring to fit the shaft sealing rings to the grinding rollers
- lifting eye bolts to transport the grinding rollers, grinding plate segments etc.
- tube fitting to connect the pressure piping and tank piping when flushing
- dismantling tools to replace the roller tyres
- (auxiliary equipment to loosen the tension ring)
- Lift-and-Swing System complete with lifting cylinder and hydraulic unit

- supplementary equipment to Lift-and-Swing System to remove the grinding plate segments

Not included

- torque wrench
- 3 hydraulic jacks with hydraulic pump
- pump for hydraulic jack
- hydraulic cylinder and pump
- 2 pumps for hydraulic jacks

11 Engineering

within the limits of raw material inlet (DSZ 200), raw meal outlet (cyclones), mill hot gas inlet and mill fan outlet:

- plant flow sheet
- balances for pressure, temperature and gas volume
- diagram for cooling water and compressed air for GP scope of supply
- dimension drawings of the main machines for GP scope of supply
- first basic project drawing (scale 1:100) with sections, static and dynamic loads and connections for cooling water, compressed air, fuel, etc.
- foundation plans with static and dynamic loads, minimum foundation mass, however, without static calculation of the foundations for GP scope of supply
- specification of all connecting flanges for GP scope of supply
- list of electric consumers for GP scope of supply
- interlocking diagram (switch on/off sequences)
- measuring and control diagram for GP scope of supply
- list of measuring points and measuring instruments for GP scope of supply
- workshop drawings for parts manufactured locally for GP scope of supply
- material lists for parts manufactured locally for GP scope of supply
- operating instructions for GP scope of supply
- maintenance instructions for GP scope of supply with required assembly drawings, lubrication lists, etc.
- list of recommended erection tools and tackles for GP scope of supply
- spare parts lists for GP scope of supply.
- All documents in English language.

C Exclusions

- pre-crushing of feed material
- handling equipment to silos for feed material
- silo(s) for feed material
- reclaim device(s) for feed material, complete with closing slide(s), dust collection, etc.
- metering device(s) for feed material, complete with dust collection conveying of feed material to mill pre-bin(s)
- mill pre-bin(s) complete with dust collection, fill level measurement, etc.
- handling equipment for conveying of feed material to mill infeed device
- ductings, supporting structures for ductings, expansion joints, insulation, etc. unless specified in the technical description as part of our supply
- dampers and slides including the necessary actuators unless specified in the technical description as part of our supply
- filter for plant dust collection, complete with material discharge conveyor, air seal device, insulation, etc.
- sampler including conveying of sample to laboratory
- conveying of finished product to silo(s)
- finished product silo(s), complete with dust collection, fill level measurement, etc.
- high/medium voltage feed, complete with disconnectors, fusing, etc. high/medium voltage distribution, complete with bus-bars, etc.
- high/medium voltage switches for the respective consumers, complete with measuring devices, transducers, etc.
- transformers, complete with monitoring equipment low voltage distribution, complete with bus-bars, etc.
- electric equipment for civil engineering such as lighting, sockets, switches, fuses, etc.
- emergency power supply for inspection and maintenance purposes
- power supply for all electric consumers including fusing, local switches, measuring equipment, etc.
- cables including cable channels with supports, fastening material, etc.
- electric motors unless specified in the technical description as part of our supply
- control of machinery and equipment, complete with switch cabinets, controls, etc.

- measuring and control equipment, complete with pick-ups, transducers, indicators, etc. unless specified in the technical description as part of our supply
- field instruments unless specified in the technical description as part of our supply
- any type of foundation
- buildings, complete with floors, platforms, stairs, etc.
- exhaust gas chimney, complete with silencer, insulation, etc.
- tackles
- noise suppression measures
- insulation of machinery casings
- cooling water
- compressed air
- combustibles such as fuel oil, gas, etc.
- first lubricant fillings