



Precast Concrete Production Plant in Liquidation

# **TECHNICAL SPECIFICATIONS**

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Pol. Ind. la Serna, Ciudad Agroalimentaria de Tudela Centro de Negocios C/ C 31500, **TUDELA** Navarra (SPAIN) T +34 948 415 757 F +34 948 415 758 | <u>info@machines4world.com</u> | <u>www.machines4world.com</u> Technical and commercial specifications for:

Concrete production plant with storage for aggregates in silo-tower type HS 190/6 with mixer type AM 2250, 2 suspended bucket conveyors and 2 concrete distributors, and automation system Skakomat 600.

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# **GROUP 1 – AGGREGATES RECEPTION AND DISTRIBUTION PLANT**

#### Galvanized reception hopper for the 1 concrete pit

The hopper is designed to be installed in a concrete pit and can be filled by a loader and/or truck.

Dimensions of the hopper: 2,650x 3,650 x 1,710 mm (Width x Length x Height)

Capacity of the Hopper: 7.8 m<sup>3</sup>

Surface treatment: hot galvanizing

The hopper is equipped with:

#### 1 Inclined safety grate

Width of the net: 90 mm

Construction: sand blast, priming coat, and enamel finish

#### 6mm abrasion resistant rubber, 1 quality SH60

#### Galvanized vibrator feeder 1

With motor vibrator, material sensor, and automatic retention gate for the subsequent dosing of aggregates in the belts.

Capacity

Pass1=  $186m^3/h$  at  $50Hz \mid no 60Hz$ Pass2= 172m<sup>3</sup>/h at 50Hz | 189m<sup>3</sup>/h at 60Hz Pass3= 143m<sup>3</sup>/h at 50Hz | 157m<sup>3</sup>/h at 60Hz Pass4=  $87m^{3}/h$  at 50Hz | 95m<sup>3</sup>/h at 60Hz

Surface treatment: galvanizing

For outdoor protection of the control box for the reception plant and aggregate transport.

Surface treatment: galvanizing.

1 Inclined conveyor belt type SB 650



The conveyor belt is equipped with a drive unit with 1 electromotor which, transmitting through a V-belt, powers a lubricant bath gear, which is directly mounted in the axis of the rubberized drive roll. The drive roll is mounted in the side rails of the conveyor belt. These side rails provide the possibility of mounting a stairway or catwalk by the belt and they guarantee a stable construction with a span of up to 14-17 m.



The conveyor belt is equipped with extra support rollers under the loading chute.

#### 1 Vertical galvanized stand for the control box

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#### Technical specifications Inclination:

Inclination:	30 degrees
Length c-c:	51 m
Bandwidth:	650 mm
Motor power:	30kW
Belt speed:	1,5 m/sec
Capacity:	30º 59kg/sec
Surface treatment:	Hot galvanizing
Nº of support doors:	5

Additionally, the conveyor belt is equipped with:

- Rubberized loading chute.
- Rubberized delivery plate.
- Automatic counterweight tensioning system
- Chevron belt for inclination above 18<sup>o</sup>
- Galvanized top and lower covers for the conveyor belt SB650
- Collecting funnel with downpipe for the collection of materials from the lower cover.
- Revolution controller for revolution number change recording, which ensures that the belt speed does not decrease.
- 3 emergency switches with dual role. It stops the belt by pushing the emergency switch by traction of the emergency wire, and if such wire breaks down.

# 1 Rotary distribution belt for the aggregates silo tower, type 650

The distribution belt consists of 1 electromotor which, transmitting through a V-belt, powers a lubricant bath gear, which is mounted in the axis of the rubberized drive roll. The drive roll is built in the side rails of the conveyor belt.

The conveyor is equipped with a troughed flat belt, with manual tensioning system. The belt is equipped with supporting rollers under the loading chute.

The rotary function is incorporated in the distributing belt and consists of an electric driven set of rollers which move in a circular rail.



# Technical specificationsC-C length:2,930 mmBandwidth:650 mmMotor power:5.5kWSpindle Motor:0.37kWRotation:350°Belt speed:2 m/secCapacity:0° 137kg/sec = 330m³/hSurface treatment:Hot galvanizing

The conveyor belt is additionally equipped with:

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- Revolution controller for the registry of changes in the number of revolutions, which ensures that the belt speed does not decrease.
- 2 emergency switches with dual role. By pushing the emergency switch it stops the belt by traction of the emergency wire, and if such wire breaks down.
- Rubberized input chute.
- Belt cleaner which removes around 95% of the material stuck to the belt.





#### GROUP AGGREGATES 2 STORAGE AND DOSING PLANT

#### Silo tower for aggregates, type HS 1 190/6

The tower is designed with a modular construction and is intended to store aggregates with grain size 0-64 mm. and a max density  $1,800 \text{ kg/m}^3$ .

The silo is cylindrical and has cones in both upper and lower ends, which provides an effective usage of the total volume capacity.



The lower cone end has a flat bottom sized Ø 4.2 m; the dosing system is built under it.

The central pillar of the silo to which the divisor walls are attached stands on the flat bottom. Each wall has a staircase to access the compartments in the silo.

The platform with the mixers is incorporated in the supporting structure of the silo. It is made of chequer plate and has grids for draining cleaning water.

# **Technical Specifications**

Volume: 188 m<sup>3</sup> with 4 dividing walls Diameter: 6,000 mm Compartments: 4 compartments of 90° - 47,1 m³ Safety grid with access door on the top of each compartment Mixers Platform: round shaped, 23m<sup>2</sup> Service deck: for the motor of the inclined conveyor belt, weigh hopper, and suspended buckets.

Access ways: access to the top of the silo, through a stairway attached to the conveyor belt.

- Access to the mixers platform through 800 mm wide staircase.
- Access to weigh hoppers area in the service deck, through a safety staircase.
- Access to the service deck, under the mixer though a safety staircase.

Enclosure: Silo and mixing room coated with corrugated sheet of steel. 4 modules of corrugated transparent metal to let daylight in.

# Other equipment:

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- Access door to the inside of the silo on top.
- Access door to mixing room.

Vibration feeders type SKAKO FCE 056/0071-M3NL

# Technical Specifications

Vibrator:	20D		
Capacity:	0 degrees = 33 kg/sec		
	6 degrees = 41 kg/sec		
	8 degrees = 44 kg/sec		
Others: includes joint for a moisture			
sensor			
Surface treatment: galvanizing			

The design of the vibration feeder combined with the electromagnetic vibrator ensures an efficient and precise dosing. The vibrating tray prevents jamming of materials in the silo.

The electronic control provides a high capacity for broad dosing as well as accurate capacity for small and precise dosing. The

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design of the vibration feeder results in a minimal abrasion of the vibrating tray.

# 1 Weigh hopper type TW 22500 for aggregates.

The weigh hopper is cylindrical with a symmetrical bottom cone or square with rounded edges, coated with 6mm rubber.

In the inside, the hopper has flat sides without reinforcements to ensure a full discharge.

The hopper is equipped with suspension hangers for calibration weights.

The hopper is provided with mounting brackets and is suspension ready.

Technical Specifications

Volume: 2,250 l./ 3,375 kg Weight range: 5 – 100% of the capacity of the hopper Output opening: Ø 700 mm

The weigh hopper is equipped with:

# 1 Gate; 1 output aperture, 2,250 l.

Ø 700, rubberized, 1 output funnel

# 1 Vibrator for the aggregate scale

Type: motor vibrator



# **GROUP 3 – CEMENT STORAGE AND DOSING PLANT**

# 1 Cement silo for 60 tons

## **Technical Specifications**

Volume: 60 Tons/48 m<sup>3</sup> Diameter of the silo: 3,000 mm. Height of the supporting structure: 8,000 mm. approx. Shell sheet thickness: 4 and 5 mm. Nº discharge opening: 1

The silo is a cylindrical structure with conic bottom and self-supporting, it does not need interior reinforcement.



# The silo is also equipped with:

- Service catwalk under the discharge opening
- Access to upper part through a safety staircase
- Safety handrail in the upper part
- Socket muff for level display
- Overload safety valve
- Manual butterfly valve and assembly joint to an endless

screw connected to the discharge opening.

 Air injection next to the discharge opening for a smooth discharge of cement.

## 1 Cement silo for 90 tons

The silo is a cylindrical structure with conic bottom and self-supporting, it does not need interior reinforcement.

Equipped with 3" loading pipe and 3" fitting at the bottom.

## The silo is also equipped with:

- Service catwalk
- Access to upper part through a safety staircase
  - Safety handrail in the upper part Socket muff for level display
  - Overload safety valve
- Manual butterfly valve and assembly joint to an endless screw connected to the discharge opening.
- Air injection next to the discharge opening for a smooth discharge of cement.

# 2 Cement filter equipment

Ready to install on top of the silo.

Filter quality:	Polyester
Filter surface:	24.5 m2
Airflow capacity:	42m <sup>3</sup> /min
Particle size:	5μ

#### Endless screws for cement with two speeds

The endless screw is equipped with a gearbox and a 2 speeds motor.

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The precision dosing is made dividing by 2 the speed, capacity divides correspondingly.

Endless screws bigger than 4.5 m long include intermediate bearings.

Listing of endless screws:

2 2-speeds endless screw for the dosing of cement, type ST 219

# **Technical Specifications**

Length: approx. 10 m. Engine: approx. 15.0/10.0 kW Capacity: high speed 16kg/sec with an inclination of 30<sup>o</sup> low speed 6 kg/sec with an inclination of 30<sup>o</sup>

# 1 Cement scale, type CW 900 for cement

Cylindrical weigh hopper with cone at the bottom, suspension holder for calibration and chain suspension for 1 loading cell. Includes pneumatic drill for full discharge and flexible transition to the mixer.

# **Technical Specifications**

-					
	Capacity:	900kg			
	Dimensions:	Ø 1,200			
		Height 2	1,600		
	Weight range:	5-100%	of max.	conte	ent
	Accessories:	outlet	valve	of	Ø
	400mm, unmounts easily.				



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# GROUP 4 – WATER AND ADDITIVES DOSING PLANT

AQUAMAT 600, incorporated water dosing with electronic moisture meter in the mixer.

AQUAMAT 600 automatically measures the moisture in concrete trough 4 electrodes placed at the bottom of the mixer and it automatically adds water, supplying a steady water flow, whatever the aggregates moisture.

The measuring principle used by the AQUAMAT 600 is based on the measurement of concrete conductance.

Includes a set of valves for the mixer AM 3000.

**Technical Specifications** 

4 electrodes with mounting brackets
Dimensions: Ø 1,200 Height 1,600
1 broad dosing valve
1 accurate dosing valve
2 manually operated closing valves

Flowmeter for water dosing in the mixer TYPE AM 2250

# Technical Specifications

Magnetic meas. principle, accuracy.: 0.5% Repetition accuracy: 0.2% Requires a min. back pressure: 0.5 bar Min. flow: 0.022 l/sec Max. flow: 22.0 l/sec Room temperature: -20°C to +130° C Maximum pressure: 40 bar Antacid stainless steel (AISI 316).

# Digital Microwave Moisture sensor Hydroprobe II

Conceived to measuring moisture in aggregate storage silos.

The measuring is made with microwaves which penetrate approx. 75 mm into the flow. Here, the microwaves are absorbed by water but not by sand and gravel, which return them to the measuring probe, enabling the estimation of the specific moisture of the surface.

Thanks to the steady measuring, the average moisture value is estimated for the whole batch.

#### Aggregate dosing

Equipment not included





# GROUP 5 – COUNTER CURRENT TYPE AM 2250 MIXER WITH ACCESSORIES

1 Counter current mixer SKAKO APOLLO, type AM 2250



The SKAKO Apollo mixer has been developed to obtain a maximum stability with reduced operating costs.

Inside, the mixer is designed without sharp edges, so it can be cleaned with an automatic cleaning system.

Externally, the mixer counts with a cast iron hatch with oil-resistant rubber joints. This hatch is located on the side wall of the mixing tank, preventing the door from twisting and, consequently, avoiding leaks. Also maintenance service, adjustments, and wear parts replacing become safer and faster thanks to the side hatch.

The load of materials is made through mounting plates fixed with bolts.

The equipment for the mixer is concealed behind the legs' covers, remaining protected and making it easier and faster to clean the exterior of the machine. The counter current mixer is powered by a satellite gearbox which activates a set of shovels which rotate fast in a cyclic counter current movement. This way, materials are lifted and multidimensionally moved. This results in an effective and fast mixing of concrete.

To prevent concrete from sticking to the mixing tank, the mixer is built over the robust sized tank with a satellite gearbox installed over a built-in supporting structure. It ensures an optima access to the gearbox and to the motor for service and maintenance, and prevents water or impurities from leaking into the mixing tank.

The construction of the gearbox is solid and simple. Every wheel in it runs over a selflubricated gear and includes a temperature and oil level regulator. It can be directly connected to the SKAKOMAT 600.

The large side hatch provides easy access for service and cleaning of the mixer. Each door has a safety lock which does not releases the key until the working switch is off.



The discharge of concrete is made through two hydraulic swinging gates built at the bottom of the mixer and separately feed by a pump station (provided). The hydraulic cylinder of the discharge gates includes two inductive limit switches. The pump station is equipped with a manually operated





emergency pump to empty the tank in case of an electricity supply failure.

The mixer is supplied with a standard output guide cone and a working switch in a box for wall-mounting.

Technical Specifications	
Load volume:	2,250 l / 1m <sup>3</sup>
Compressed concrete:	1,500 l/3,600 kg
Driving motor:	2 x 30Kw
Net weight of the mixe	r: 7,050
kg approx.	
Mixing stars (nº):	2
Rubber shovels (nº):	4
Upper shovels (nº):	2
Lateral scrapers (nº):	1
Angular scrapers (nº):	2
Side doors (nº):	2
Discharge gates (nº):	1

Includes: pneumatic valve for broad/accurate dosing

# 1 Air-bag pressure compensation system

Compensates air pressure generated in the mixer during the load of material, reducing the inconvenient dust.

1 High-pressure water cleaning unit for the mixer AM 2250

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Additionally, the mixer is equipped with:

- 1 Steel side wearing plates 52.3.
- 1 Ni-hard steel bottom wearing plates
- 1 Aggregates inlet
- 1 <u>Additional</u> discharge hydraulic gate for AM 2250 (complete with cylinder, valve and inductive sensors)
- 2 Discharge <u>type 2</u> guide cones for AM 2250

# 1 Water distribution pipe with 4 fixed nozzles for the mixer TYPE AM 2250

The distribution pipe is built in the mixer and is used for water dosing. Water is added to the batch through the nozzles and water is spread over most of the concrete surface.

AQUAMAT: required water pressure: 4 bar.g.



# GROUP 6 – CONFLEX CONCRETE DISTRIBUTION SYSTEM



# 2 Suspended buckets type SKAKO Conflex CF 2250

The buckets are designed to transport bulk material from up to 8 loading stations to up to 30 discharge stations, out of which 8 can be mobile.

The suspended bucket is built with a closed chassis, providing a solid construction. Reduced installation height. The driving device and control system are built in the chassis, which offers a compact and well protected solution.

The Conflex is designed to simplify service as much as possible, with large operating hatches granting easy access to all important parts.



The suspended bucket is equipped with 4 large rubber wheels ensuring low noise and excellent rail holding, making more speed and bigger climbs possible. For this reason, CONFLEX can be used to transport materials to stations distant from the supply station. The rubber in the wheels is of good quality and oil-resistant. It allows a waste of 10mm before replacing the wearing course, ensuring a long service life. Rail abrasion is also prevented. CONFLEX includes guide rollers which roll along the frame.

The control system provided can control the CONFLEX in any rail system. It is a simple system with a straight rail, 1 or 2 intermediate/mixing hoppers and 1 or 2 stations. The control is normally simple and non-electronic within the bucket.

For more complex rail records, the Conflex has a smart control system in which rail records can be set. It includes a distance measuring system that allows positioning the bucket in the rails. This system is used to optimize speed, so the bucket arrives to the station and goes back to the mixing plant within a defined time lapse. It means that the CONFLEX bucket moves at the minimal required speed, taking distance and time lapse into account, helping to reduce abrasion.

The suspended bucket moves over the central line of the construction of the rail, avoiding the torsion of the rail and, therefore, allowing to better exploiting the load-bearing capacity of the rail and obtaining a better span.

# The bucket is composed by:

- hydraulic drive chassis with 4wheel drive
- built-in equipment for exact positioning
- big wear-resistant rubber wheels, which ensure high-friction and silent movement

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- 2,250 I bucket with <u>rotating</u> <u>discharge</u> system
- Modular control system built in box

# Technical Specifications

Max. speed: 4,5 m/s in horizontal rail Max. inclination of the rail: 21% / 12° Drive unit: hydraulic unit of 15kW Bucket volume, levelled measure: 2,442 I (gross) /1,5m<sup>3</sup> of concrete Surface treatment: Sandblast, priming and lacquer finish Colour: Chassis: yellow (RAL 1007)

Chassis: yellow (RAL 1007) Doors: grey Bucket: grey (RAL 7001)

2 Oil coolers for CONFLEX

# **Record system for CONFLEX composed** by:

- 6 checkpoints per stop
- 2 0 points
- 2 sensor system for load
- 4 sensor systems for end of rail

# Rail system for CONFLEX suspended buckets

The rail construction is constituted by double rail IPE profiles with transverse reinforcement between profiles, universal hangers for assembling into the rail construction, hangers for power rail or suspended wire, ironwork to enable cable trays, and ironwork for junctions.



The rail construction is module built with ironwork hangers and special ironwork for junctions ensuring a fast and easy assembly without welding.

<u>Surface treatment:</u> Sand blasting, priming, and paint coat finish

Each rail construction includes 210m of straight CONFLEX rail, type 270

4 **Stopping Barriers** to be mounted in each end of the rail.

These barriers are attached to the rail by a special friction system which guarantees a smoother braking of the bucket in case of collision with the barrier.

# 40 Hangers for CONFLEX rail pillars.

For hanging the construction of the rails in steel pillars.

2 Service decks

Service deck for the CONFLEX bucket washing station.

# 2 CONFLEX power feed system

The power rail equipment is used to supply electricity and to communicate the suspended bucket to the central system.

# **Technical Specifications**

Max. load:	60 Ar	np.
Min. tempera	ture:	-20ºC
Max. tempera	ature:	+60ºC
Protection ra	te:	IP 23





The power rail is equipped with power connection and covers the following circuit:

210 Meters of power rail for straight rails.

**4 Expansion sections for the power rail** (necessary when the length of the rail exceeds 20 m.)

**12m Power rail lip seal.** Conceived to provide water tightness to the washing station, under the mixers, etc.





# GROUP 7 – CONCRETE DISTRIBUTORS

# 2 Concrete distributors in semi-portal

The concrete distributor is constructed as a semi-portal so it can move on the floor and on the pillars with the concrete bucket incorporated to the main beams.



The distributor is equipped with an intermediate, height-adjustable hopper with bottom discharge trough the flap gates of the concrete feeder.

The distributor collects the concrete from the suspended bucket and carries it to the concreting spot, where it is discharged.

Technical Specifications	
Load capacity:	1.5m <sup>3</sup>
Volume:	2,250 l.
Rise/fall function:	1,500 / 2,500 mm
Transportation spe	eed: up to 0.8 m/sec
Span:	13.5 m.
Nº feeders:	1

The distributor is equipped with a hanging semi-automatic push button.

The rails for the semi-portals are not provided.

2 Power feeder systems for the concrete distributor

The power rail equipment is used to supply electricity and to communicate the suspended bucket to the central system.

Technical Specifications	
Max. load:	1.5 m <sup>3</sup>
Min. temperature	-20ºC
Max. temperature:	+60ºC
Protection rate:	IP 23

The power rail covers the following circuit: 2\*105 Meters of power rail for straight rails.





# GROUP 8 – PROCESS CONTROL SYSTEM SKAKOMAT 600 V2

# 1 Automation system SKAKOMAT 600 SQL

SKAKOMAT 600 SQL is a computerized system for the concrete production. It runs under Windows 2000 and a user's worksheet for process supervision.

SKAKOMAT 600 SQL has a modular design that makes it adjustable to the needs and operation requirements of each productive plant, optimizing concrete production in quality and productive terms. A *plant file* is created for each plant. It contains specific data, such as size of the mixer, nº of silos, nº and capacity of weighting systems, tolerance, etc.



SKAKOMAT 600 SQL contains a SQL Microsoft database which enables (with additional interface equipment) the data exchange with other software, such as route planning, lab software, or billing software. All data are locally saved in SKAKOMAT 600 SQL and automatically protected by an access code.

SKAKOMAT 600 SQL has been developed to comply with the requirements established by the European standard 206-1 and it is prepared to adapt to additional local requirements. SKAKOMAT 600 SQL is equipped with a control system with a RAID hard drive and CD-ROM reader, making it possible to fully store all data.

# Hardware specifications:

- Industrial computer built in a pressurized cabin with dust filter.
- Pentium III processor, min. 2.6 GHz
- Min. 512 Mb RAM
- 2 hard drives of min. 20 Gb
- CD-ROM reader
- CD-ROM writer
- Digital modem
- Ethernet network card
- PLC CPU slot based in Hardware
- 1 double screen with keyboard and mouse
  - 1 laser printer
  - RAID control type 1 with 2 hard drives (if one of the discs fail, the system could keep working with all data in the other disc)
- 3.5" floppy disc drive
- PC anywhere
- I-FIX graphic automation software
- Communication card for the Hydronix moisture sensor

# Software specifications:

# **1** I-FIX colour graphic flow chart

All operations in the plant can be supervised and adjusted to different modes from the computer. The operator has always a full vision of the whole mixing plant.

All manual operations are controlled through the computer.



All different processes are shown as a series of process related images. Individual processes have different colours, enhancing the process interrelation.

The control system includes the following standard functions:

- Manual operation: all processes, including the dosing to the mixer, are controlled through mouse and keyboard.
- Automated operation: all processes are controlled by the SKAKOMAT 600 SQL.
- Automated start: automated start of the dosing after ordering from the order box and through the registry of pending tasks.
- Allowed dosing: boots and stops the dosing to the mixer. An additional dosing can be made with the dosing process standing.
- Allowed load: allows the possibility of loading material which are not discharged until the process is active.
- Discharge allowed: allows the discharge from the mixer, in e.g., when the truck is ready.
- Interrupt water dosing: stops the water dosing with AQUAMAT.
- Reset alerts: resets alerts. Alerts are displayed clearly in SKAKOMAT 600 SQL with a text.
- Start/stop mixer.
- Discharge mixer: manual discharge of the mixer.
- Manual dosing: manual dosing of all materials.
- Discharge Scale: manual discharge of all weigh hoppers.

1 Basic software module for SKAKOMAT 600 SQL

# <u>Content</u>

- 1000 recipes
- Basic recipe, including estimation types
- Density/volume estimation
- Activity factor
- Correction factor
- Filler content
- Dry matter content
- Recipe price estimation
- Air content estimation
- Lab listing
- In-recipe search criterion
- Automatic adjustment of inert matter
- Dosing figures
- Concrete figures
- water/cement percentage
- Alert registry
  - Consumption of materials
- Input/output diagram
- Manual dosing record, when stopping the automatic dosing.
- On-line manual
- Buffer storage control
- Silo storage control
- Dosing units record
- Alert limits in dosing units
- Production data record
- Historical database for data railing
- Scale loading sequence record
- Recycled water record
- Microsoft MSDE SQL database





# 1 Software module for SKAKOMAT 600 SQL

# Content

- Station record
- Access code for SKAKILINK
- Project record
- Cycle/mould record

# 1 Contactor cabinet (set for 1 mixer)

The cabinet has a modular construction and contents the following:

- Blade inlet
- Fuses /ma. Switch
- Contactors
- Motor protecting relays
- Control relays
- Transformer
- PLC modules I/O
- Terminal blocks
- Emergency and safety relays



# Power supply:

- Supply voltage tolerance: +/- 10% of nominal voltage
- Voltage interruption: Max.
   3 million Sec. of total interruption
- Voltage drop: Max.
   +/- 20% during max. 20 million Sec.
- Frequency deviation: Max.
   +/- 1% of nominal frequency

# Temperature ranges:

- Contactor cabinet and control: 0 - +40°C
- Control console for outdoor installation: -20°C - +40°C

# Protection Rates:

- Contactor cabinet and control: IP 55
- Control console:

IP 55

Monitor, printer, and keyboard: IP 20

# **Equipment control**

The contactor cabinet includes control elements for the following equipment:

# Weighting system

Weight system for aggregate weighhopper: 1 with 3 load cells Weight system for cement weighhopper: 1 with 1 load cell Weight system for additives 1: Flowmeter

# Aggregate reception control

• 1 cone vibrator in the receiver hopper

o 1 vibration feeder

• 1 incliner conveyor belt (30°), includes:

- Speed controller
- 2 alert honks to warn of dangerous movements
- 1 external console for the reception plant

• 1 rotary discharge belt with 4 discharge positions, includes:

- Reversible rotating base
- Speed controller
- Full indicator
- Precise positioning by encoder control

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• Security gate at the top of the silos.

# - Aggregate dosing control

- o 4 vibration feeders
- o 1 weigh-hopper
- 1 vibrator in weigh-hopper

# - Cement dosing control

- 2 endless screws for cement
   with 2 speeds
- o 2 air injectors
- o 2 Silo filters
- o 1 Weigh hopper

## - Water dosing control

- o1setofdosingbroad/accurate valves for cold water
- o 1 flow meter

o 2 moisture probes in the aggregate silo

# Additive dosing control

- o 1 additives pump
- 2 additive dosing in vessel
- 2 signals for the external additive control
- o 4 valves:
  - Dosing valves
  - Discharge valves
  - Washing valves

# - Mixer control

- Control for 1 mixer type AM 2250 with 2 outlets
- 1 temperature control for the oil reducer and level

 1 high-pressure washing system for the automated cleaning of the mixer

• 1 safety system built in the mixer hatch

# Concrete transport control

o 2 suspended buckets, type
 CONFLEX

- 4 stopping barrier control
- o 2 itineraries to 1 mixer
- 2 itineraries to fixed station
- 2 itineraries to mobile station

o 2 itineraries to standby station

- Distributors
  - o **2** Semi-portal cranes
  - o 2 Distribution hoppers
- Compressed air control system (not included)
  - o 1 compressor
  - 1 After cooler
  - Refrigeration drying

afety air valve to air the machine components when being activated from the emergency switch

Level sensors

• 4 level sensors max./min. for aggregate silos

• 2 level indicators 0-100% for cement silos

External control equipment for the reception of aggregates

# 1 Control console for the reception and transport of aggregates, placed next to the receiving hopper.

Once the aggregates are delivered to the receiving silo, a target silo must be selected to transport the aggregates to. Once the selection is made, the plant activates up to that particular silo, whenever no safety circuit or full indicator are active. It is controlled from the control room or from the operation board next to the receiving hopper.



# 1 Service box for 1 mixer

# Includes:

- Start / stop / discharge of mixers
- Water dosing in mixers
- Emergency switch

# External level measuring equipment

# 2 Silo sensors for the cement silo, type-1

Measuring principle: measurement by reflection through micro-impulses.

# 4 Silo sensors for the aggregate silo, type-5

Measuring principle: capacitive

External equipment for the CONFLEX suspended bucket

# 1 CONFLEX control type VP 3 for SKAKOMAT 600 for communication with:

- 5 CONFLEX buckets
- 1 door connected to the control system
- 5 additional doors connected to individual controls
- 30 stations, including max. 9 mobile stations
- 30 standby, parking stations
- 30 washing/service stations
- 4 mixers
- 5 rail shifts
- 1 emergency shutdown circuit
- 1 emergency shutdown circuit for service station
- 2 stopping barriers

Note: Max. 10 at the same time (buckets + doors + rail shifts + mobile stations) Max. 60 stop positions

# Modem VP3

The centralized control is complete and built in SKAKOMAT 600. SKAKOMAT 600 informs the CONFLEX control where to direct the buckets.

# 2 Built-in controls in the CONFLEX bucket type VP for hydraulic bucket

# Equipment:

- Speed 3.2 m/sec or 4.5 m/sec
- Mobile station itinerary ready
- Rotating discharge

# Includes:

- Position measurer and reference sensor
- Infrared remote control
- Contactor for hydraulic pump
- Control system

# External equipment for concrete order:

# 2 SKAKOLINK order boxes for SKAKOMAT 600

# Includes:

- Order/reset
- Recipe selection
- Quantity selection
- Project selection
- Water correction
- 4 order registers
- 6 level sensors connection

# Access code for SKAKOLINK

- SKAKOLINK requires a 4 digit code to modify order information
- This access code is individual for each SKAKOLINK connected to SAKAKOMAT 600



 It is possible to set SAKAKOMAT 600 to allow modifications without code request.





# **GROUP 9 – ADDITIONAL EQUIPMENT**

1 High-pressure cleaning unit for mixer type AM 2250

Includes:

- Cleaning unit installed in manifold plate
- Hydraulic cylinder for moving the cleaning unit in and out of mixer
- Sensor for positioning the cleaning unit
- 20m hose to pump unit

# 1 High-pressure wash-down pump for AM mixers and high pressure cleaning station for the CONFLEX system

Includes:

- Pump with 30 kW motor
- Discharge rate 72 l/min
- Pressure bar 170 bars.
- Pressure switch for activation in the event of water proportioning failure
- Thermostat
- Distributor valve for automatic and manual wash-down
- Manually operated wash-down handle
- Automatic water valve



# **GROUP 10 - ELECTRIC EQUIPMENT**

Electric equipment necessary to connect the SKAKO equipment to the electric control provided.

Electric installation is under the responsibility of the client and not included in the price.





# GROUP 11 - APPLICABLE REGULATIONS

This equipment are manufactured, produced and delivered according to the following EU standards:

The machinery for countries of the EU and EØS is manufactured according to the harmonized standard CEN of such countries:

Directive 98/37/EC on machinery from the 22<sup>nd</sup> of June of 1998 (has been replaced) – Directive on machinery

Steel structures are constructed according the harmonized CEN standards of the EU and EØS countries:

Euro code 1 – Actions on building structures Euro code 3 – Design of steel structures Euro code 8 – Seismic design of buildings

Control systems and components for Europe have been manufactured according to the Directive for Machinery and the Low Voltage and EMC directives. EN 60204-1 (electrical equipment in machine) and EN 60439-1 (low voltage switchgear) harmonized standards are used.

# **Electric components**

All supplied electric components are manufactured according to the EN60204-1.

# **Computing equipment**

If the supply includes computing equipment, the manufacturer maintains the intellectual property of the included software. Software can only be used in the provided computing equipment.

# Surface treatment

Except if mentioned otherwise, all external parts of the equipment are supplied with a SA 2.5 sandblast, 2% zinc, 60 micron primed and finished with 60 micron yellow Topcat alkyd (RAL 1007).

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