

A PRELIMINARY CONDITIONS AND DATA

A.1 Introduction:

- The present offer has been worked out on the basis of your request and of the agreed features.
- The technical specifications foresee the use of first-quality raw materials and components, in order to guarantee the highest reliability and functionality according to the performances required.
- Le Officine Riunite - Udine S.p.A. (hereinafter referred as **ORU**) besides being provided with a Quality System Certificate according to EN ISO 9001:2015.

A.2 Environmental conditions:

- Altitude: The plant can work at any altitude, please specify in the order if it needs to work at more than 1000 m above sea level.
- Operative temperature: 0 / + 50°C; Please consider thermal insulation in cold or hot weather.
- Operative temperature for automation equipment without air conditioned cabin: + 5 / + 35°C.
- Min./max. temperature when plant is not operating: -15 / +60°C.
- Max. wind speed: 28 m/s.
- Max. humidity: please advise if the plant works in an environment with more than 80% humidity or in tropical places.
- Seismicity: S9
- The specific weights used for the calculation in the present documents are as follows:
 - Aggregates: 1.600 kg/m³
 - Cement: 1.400 kg/m³

A.3 Electrical supply data:

- Supply voltage and frequency: 480V 60Hz

A.4 Safety rules:

- The batching plant will be projected, manufactured and commissioned in compliance with the current E.E.C. safety rules:
 - Directive 2006/42/CE of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC
 - Directive 2014/35/CE of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits. Text of interest for the EEA (where required).
 - Directive 2014/29/CE of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of Member States relating to the simple tanks in pression designed for use within certain limits. Text of interest for the EEA (where required).
 - Directive 2014/30/CE of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of Member States relating to the electromagnetic compatibility.

A.5 Documentation:

- Technical documentation, instruction manuals, plates, etc. will be in the customer's language within the E.E.C. and in English outside E.E.C.



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A.6 Production:

- 150 m³/h – 200 cubic yard/h of compacted concrete (according to EN206)

B TECHNICAL SPECIFICATIONS**B.2 Plant specifications****Pos.1 Aggregate storage group mod. ORU LOGIK WB 4/102**Aggregates storage bins

- Pedestal with compartments (nr.): 4
- Loading side width (mm): 3.550
- Pneumatic discharge gates (nr.): 8
- Pneumatic cylinders (nr.): 8
- Max. aggregates size (mm): 60
- Total heaped capacity (m³): 100
- Thickness of discharge cones (mm): 4
- Additional wear resistant plates on discharge cones
- Thickness of discharge gates (mm): 8
- Bins have self-supporting structure with side walls and partitions in ribbed sheet steel.
- Discharge gates operated by damped pneumatic cylinders with high closing speed and mechanically-adjustable gate section opening.
- The heaped storage capacity is indicative as it is the result of calculations under optimum conditions that, therefore, can be conditioned by factors such as loading system, quality and moisture degree of the aggregate, etc.
- All the structures are hot-galvanized.

Vibrating system TS 126 x 2 compartments

- Vibrating system model TS126 composed by the support and independent vibrating plates
- Vibrators with adjustable masses 260 W (n): 2

Aggregates weighing system

- CE certificated load cells (nr.): 4
- Maximum capacity from 2.500 to 10.000 kg depending from the mixer used
- Aggregate hopper with suitable volume to ensure the weighing of a minimum of 2 aggregates with the same proportions.
- Additional wear resistant plates
- N.1 Vibrator with adjustable masses IP 55-cl.F (W): IP 55-cl.F n° 1 - 180 W
- Extractor belt width (mm): 1000
- Extractor belt lenght (m): 12,7
- Capacity (m³/h): 350
- Side gearbox and motor (kW): 15
- Smooth rubber coated drum with diameter (mm): 400

- Idle roller diameter (mm): 320
 - The flow of aggregates, out of the aggregates hopper, can be adjusted by an appropriate gate and a cut-off valve.
 - Weighing hopper conveyor belt frame is hot-galvanized.
- Pos.1.1 Air compressor mod. B7000
- Tank capacity (l): 500
 - Intaken air volume (NI/min): 1542
 - Differential pressure switch (nr.): 1
 - Operating pressure (bar): 9
 - Safety valve (nr.) 1
 - Electrocompressor, IP 55-cl. F(kW): nr. 2 x 5,5
- Pos.2 **Microwave moisture probe mod. Ludwig Dynamic Range.**
- Microwave probe with working principle based on the variation of the microwave magnetic field related to the aggregates moisture
- Pos.3 **Conveyor belt mod. NFT 36 x 1,00 36 m - 55 kW**
- Smooth belt (m): 36
 - Rollers with distance (mm): 400 x 1000
 - Side gearbox and motor, IP 55, class F (kW): 55
 - Smooth rubber coated drum (mm): 710 x 1100 x 8
 - Idle roller (mm): 323 x 1100
 - Speed and loading capacity (m/s - m³/h): 2 m/s; 518 m³/h
 - Frame in steel section, rollers with self-lubricated bearings, reception hopper, support braces, guards and accessories
- Pos.3.1 Electrical controls for 55 kW
- Pos.4 **Mixing group ORULK MD5000/3350D**
Twin shaft mixer mod. ORU MD 5000/3350
- Loading capacity (l): 5.000
 - Fresh concrete per batch (l): 4.160
 - Compacted concrete per batch (l): 3.350
 - Gearmotors, IP 55, class F (kW): 2 x 65
 - Hydraulic unit, IP 55, class F (kW): 2,2
 - Mixing blades (nr.): 20
 - Shaft cleaning rings
 - Bolted mixing arms
 - Wall linings: HB 500 - 12 mm
 - Mixing blades: HB 500 - 20 mm
 - Aggregates size: 0-150 mm
 - 32÷100 mm. 35% max
 - 100÷120 mm. 13% max

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- N.1 Vibrator with adjustable masses IP 55-cl.F (W): IP 55-cl.F n° 1 - 180 W
- Extractor belt width (mm): 1000
- Extractor belt lenght (m): 12,7
- Capacity (m³/h): 350
- Side gearbox and motor (kW): 15
- Smooth rubber coated drum with diameter (mm): 400

- 120÷150 mm. 12% max
- Weight (kg): 9.500
- Water distributor.
- Manual emergency pump for discharge gate.
- Hydraulically operated discharge gate .
- Wide and dustproof pan cover to facilitate internal cleaning and maintenance.
- Electrical connection to the terminal box.
- Safety guards included.

- Automatic centralized greasing system with 4 independent greasing pumps

N.2 special funnels to discharge into 2 parallel truck mixers under the mixer mod. ORU MD 5000/3350

- Twin shaft mixer discharge funnel for truck mixer loading or other uses, complete with rubber sleeve and Imerwear HB300 bolted antiwear linings

By-pass for twin shaft mixer discharging mod. ORU MD into 2 separated funnels

- Concrete diverter to discharge in 2 separated funnels with hydraulic operation, complete of supporting frame, interchangeable antiwear linings, hydraulic piping and accessories.
- Interchangeable antiwear linings: HB 400 - 5 mm
- Hydraulic cylinder (nr.): 1

Gantry supporting trestle with H up to 6,30 m, fitted with service walkway and ladder for mixer mod. ORU MD 5000/3350

- Gantry structure with mixer support surface at a height of 6,30 m made in structural steel of suitable sections, complete with stairs, service walkway, manhole for gate and funnel maintenance.
- Enlarged gantry structure to position frontally 2 parallel truck mixers under 2 separated discharge funnels.

Aggregate waiting hopper for ORU MD 5000/3350

- Hopper with self-supporting structure, aggregates discharge directly into the mixer by a hydraulic gate, electrical equipment, pipes, fittings and complementary accessories.

Cement weighing hopper mod. B 1900

- Weighing hopper with CE approved load cells (nr): 4
- Maximum capacity (kg): 1900
- Cement hopper, geometric volume (l): 1900
- Electropneumatic butterfly valve (nr): 1
- Pneumatic vibrator (nr.): 180 W
- Cement downflow with direct discharge into the mixer by butterfly valve.

Water scale type BA 1000 discharged by pump and gravity into the mixer

- Weighing by EC approved load cells (nr.): 1
- Maximum capacity (kg): 1000
- Galvanized tank with capacity (l): 1000
- Water supply connection pipe (ø mm): 2 x 2 1/2"
- Feeding by pneumatic valve (ø mm) 2 x 2 1/2"
- Discharge by pneumatic valve (ø mm) 250

- Discharge by gravity 7,5
- Supporting trestle and complementary accessories.

Airbag 4000 I

- Expansion chamber for collecting the air present in the mixing pan when the aggregates and cement flow in. Complete with galvanized steel sheet protection and supporting pole

On board plant engineering

- Conductors type N05-VK and N07-VK; power cables type H07-RNF; earth conductors type N07-VK and/or copper plait; sheaths and/or hot-galvanized steel cable duct and accessories are supplied.

Pos.4.1 Power panel for ORULK 150D predisposed to be used with the ORU Managing Unit

- Control panel, IP 32 protection degree, weight display for cement and aggregates weighing systems.
- Predisposed to be connected to the ORU automation system (with relevant PLC and PC).

Pos.4.2 Managing unit HPS 2100-V for ORULK 150D with PLC, PC and UPS

- The HPS-2100V management system is the personalised and automated software solution for the most sophisticated concrete batching processes.
- It is the result of the synergy experience, technology and flexibility at the customer's service.
- The basic hardware configuration includes a personal computer complete with LCD monitor and the peripheral devices required for data entry and storage. It is based on the Microsoft Windows 10 operating system and is available in various languages.
- The real-time operation is guaranteed by PLC.
- The distinctive features which ensure its user-friendliness are as follows:
- Dynamic mimic diagrams to represent the various active functions and for real-time production control.
- Structured and intuitive organisation of the analytical data management menus for entering/searching/copying/printing of mix-recipes, orders, jobs, customers, construction sites, truck mixers, drivers, extra charges, transport documents.
- The recorded data, the quantity of which is not limited beforehand, is analysed by means of the print functions of the various statistical reports, with various configurable filters,
- made available by the program, as well as the exporting of the recorded data in DBF format.
- The system is able to print transport documents, either in a standard or personalised format, and to make the data available, when requested,
- in real time for a network billing management program, which can also automatically send e-mails.
- The operational management of the concrete production includes:
- Dosing algorithms to achieve the specified precisions, by spilling and flight correction, tolerance control, weighted self-correction at subsequent cycle, detection of lack of dosing material,
- automatic/manual hygrometric controls of the humidity of the aggregate.
- Production planning and production cycle optimisation.

- 120÷150 mm. 12% max
- Weight (kg): 9.500
- Water distributor.
- Manual emergency pump for discharge gate.
- Hydraulically operated discharge gate .
- Wide and dustproof pan cover to facilitate internal cleaning and maintenance.
- Electrical connection to the terminal box.
- Safety guards included.
- Automatic centralized greasing system with 4 independent greasing pumps

N.2 special funnels to discharge into 2 parallel truck mixers under the mixer mod. ORU MD 5000/3350

- Twin shaft mixer discharge funnel for truck mixer loading or other uses, complete with rubber sleeve and Imerwear HB300 bolted antiwear linings

By-pass for twin shaft mixer discharging mod. ORU MD into 2 separated funnels

- Concrete diverter to discharge in 2 separated funnels with hydraulic operation, complete of supporting frame, interchangeable antiwear linings, hydraulic piping and accessories.
- Interchangeable antiwear linings: HB 400 - 5 mm
- Hydraulic cylinder (nr.): 1

Gantry supporting trestle with H up to 6,30 m, fitted with service walkway and ladder for mixer mod. ORU MD 5000/3350

- Gantry structure with mixer support surface at a height of 6,30 m made in structural steel of suitable sections, complete with stairs, service walkway, manhole for gate and funnel maintenance.
- Enlarged gantry structure to position frontally 2 parallel truck mixers under 2 separated discharge funnels.

Aggregate waiting hopper for ORU MD 5000/3350

- Hopper with self-supporting structure, aggregates discharge directly into the mixer by a hydraulic gate, electrical equipment, pipes, fittings and complementary accessories.

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- Maximum capacity (kg): 1000
- Galvanized tank with capacity (l): 1000
- Water supply connection pipe (ø mm): 2 x 2 1/2"
- Feeding by pneumatic valve (ø mm) 2 x 2 1/2"
- Discharge by pneumatic valve (ø mm) 250

- Production planning and production cycle optimisation.
 - Signalling of malfunctions and faults with the display, recording and printing of alarms with frequency histogram.
 - Total/partial metering of the working time of the basic components of the system to support maintenance management.
 - Data security and protection is achieved by using password levels and back-up operations, including the use of USB devices.
 - Technical data:
 - Computer Desk Lenovo/HP
 - CPU Intel Dual Core or better
 - RAM 2GB min.
 - HD 500GB min.
 - DVD drive
 - Monitor 19" 16:9 WIDE
 - Office keyboard and mouse
 - Windows 10 Pro
 - PLC
 - UPS
- Pos.4.3 On board washing system for MD twin shaft mixer completed of nozzles
- Plant composed of metal nozzles for high pressure washing.
- Pos.4.4 Piston pump group for high pressure washing unit - 18,5 kW
- Flow rate (l/min): 150
 - Power (kW-rpm): 18,5 - 2900
- Pos.4.5 1000 l water tank hot galvanized for washing system
- Pos.4.6 60 Bar manual wash-down hose
- Pos.4.7 Electric controls for washing unit with working by time
- Pos.5 Electrical controls for admixture customer dosing system.**
- Pos.6 Cement screw feeder 12 x 323 - 2BS-22 kW**
- Length (m): 12
 - Diameter (mm): 323
 - Gearmotor, IP 55, class F (kW): 22
 - Nominal capacity (t/h): 110
 - Screw feeder with inclined loading and discharge mouths, inspection doors and complementary accessories.
- Pos.6.1 Electrical controls for 11 kW
- Pos.7 Accessories cement aeration system for silo Ø 2920 - 3600 mm**
- Compressed-air-operated aeration system fitted with: one distribution ring with fixing hanger, Rilsan pipe Ø 10 mm., pressure reducing valve, solenoid valve 24 V, pneumatic joints, blowing nozzles, cable and complementary accessories.

- Pos.8 Manual butterfly valve for silo**
- Pos.9 Electro-mechanical level indicator for one silo**
- Electromechanical monitoring system with light indicator, comprising blade probe, pilot lamp, electrical equipment, supports, cables and accessories.
- Pos.10 Safety valve with accessories (VCP) for silo**
- Pos.11 Detachable auxiliary silo $\varnothing$ 3600 85 m³ / 119 t with ladder**
- Nominal capacity (m³): 85
 - Maximum capacity (t): 119
 - Cylinder in sectors ($\varnothing$ mm): 3600
 - Discharge mouth ($\varnothing$ mm): 326
 - Discharge mouth height (mm): 2000
 - Loading and breather pipes ($\varnothing$ mm): 114
 - Weight (kg): 5800
 - Demountable silo with tapered top, discharge cone and cylinder body in sectors, manual butterfly valve, VCP security valve and circular protection guard on top of the silo.
- Pos.12 Detachable auxiliary silo $\varnothing$ 3600 85 m³ / 119 t without ladder**
- Nominal capacity (m³): 85
 - Maximum capacity (t): 119
 - Cylinder in sectors ($\varnothing$ mm): 3600
 - Discharge mouth ($\varnothing$ mm): 326
 - Discharge mouth height (mm): 2000
 - Loading and breather pipes ($\varnothing$ mm): 114
 - Weight (kg): 5800
 - Demountable silo with tapered top, discharge cone and cylinder body in sectors, manual butterfly valve, VCP security valve and circular protection guard on top of silo.
- Pos.13 Connecting walkway to the main silo ($\varnothing$ 2920 3600 mm)**
- Pos.14 Dust filter for cement silo mod. SILOTOP® 24 m² (countercurrent cleaning) positioned on top of silo**
- Filtering surface (m²): 24
 - External diameter (mm): 800
 - Polyester cartridges (nr.): 14
 - Air flow (Nm³/h): 1425
 - Cleaning air tank (l): 5,1
 - Dry residual of filtered air (mg/Nm³): 2,65
 - Dust remover filter positioned on the silo top, filter cartridge cleaning by countercurrent compressed air; coupling flange, electrical equipment, cable and complementary accessories.

- Production planning and production cycle optimisation.
- Signalling of malfunctions and faults with the display, recording and printing of alarms with frequency histogram.
- Total/partial metering of the working time of the basic components of the system to support maintenance management.
- Data security and protection is achieved by using password levels and back-up operations, including the use of USB devices.
- Technical data:
 - Computer Desk Lenovo/HP
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 - HD 500GB min.
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 - Screw feeder with inclined loading and discharge mouths, inspection doors and complementary accessories.
- Pos.6.1 Electrical controls for 11 kW
- Pos.7 Accessories cement aeration system for silo Ø 2920 - 3600 mm**
 - Compressed-air-operated aeration system fitted with: one distribution ring with fixing hanger, Rilsan pipe Ø 10 mm., pressure reducing valve, solenoid valve 24 V, pneumatic joints, blowing nozzles, cable and complementary accessories.



ORU reserves the right to change, even without prior notice, the specifications and the technical data contained in the present Offer/Order confirmation due to technical/design/production requirements; however the hourly output, the plant general performances and the quality of the materials declared in the present Offer/Order confirmation will in any case be guaranteed.

B.2.1 Painting

STANDARD CYCLUS

- Pre-painting treatment of the surfaces effected with phosphates
- Application of PRIMER two-component made of water-soluble acrylic resin. (thickness min 50 micron)
- Application of ENAMEL (TOP COAT), water-soluble, two-component made of acrylic resin (thickness min 40-50 micron)
- Total paint thickness: minimum 90 micron

B.2.2 Weighing system

- **ORU** According to the CE approving certificate of the quality system for the production of machines with automatic operation, assure the respect for the law. Therefore **ORU** has to provide the followings:
 - To supply load cells and weight devices with CE approbation.
 - To carry out the calibration of the weighing hoppers according to **ORU** Quality system and to EN 45501 rule;
- Eventual legalization of such weighing systems for uses needed (i.e. sale of ready-mix concrete), through the affixing of personalized seals and the emission of CE approving certificates, it will be at **Customer's** charge who must contact the local authorities in charge;