

DUPLEX REFINER/ CONCHE

CHOCOLATE REFINER/CONCHE

3000Kg, 5000Kg & 6000Kg Batch Capacity

INTELLENT PROCESSING

MACINTYRE 3000-Di, 5000-Di & 6000-Di



NEXT GENERATION - 4.0 Compatible!



MACINTYRE
CHOCOLATE SYSTEMS

PROBAT GROUP



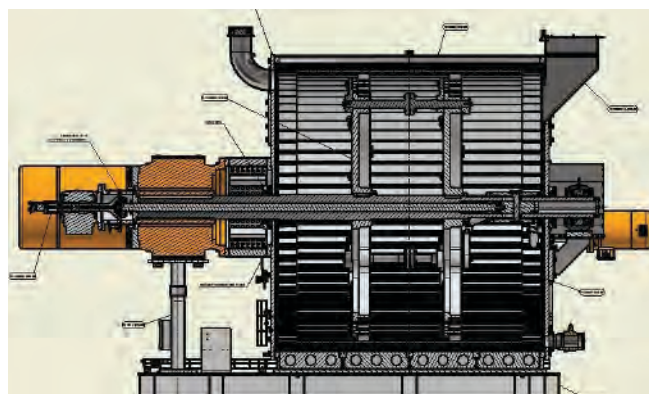
- **Reduced Cycle Times & Energy Consumption**
- **No Glands - Shaft Sealing Via Air Pressure Seal**
- **New Pressure Sleeve**
- **New Siemens PLC Control & Software**

Benefits

- Cost effective system for the production of fat based masses including: pure chocolate, compound, couverture, praline, truffle, cremes, cocoa nib grinding, nut grinding, low sugar, sugar free, dairy free and also processing of rework. Recipe development assistance available incorporating laboratory trials.
- Requires the minimum of floor space as this universal system performs the function of a sugar mill, cocoa mill, pre-mixer, refiner and conche, all in the one machine (the non-requirement of milled sugar reduces the need for additional fats/cocoa butter).
- Low energy consumption.
- Easy to operate, minimal labor requirements.
- Moisture content achievable as low as 0.3%.
- Low metal count (approximately 15 added parts per million (iron), 2 added parts per million (manganese)).
- Fat contents of 24% to 60% can be handled.
- No initial lecithin dose required for most standard recipes.

The Next Generation MacIntyre Refiner/Conche incorporates:

- Double spider wheel arrangement.
- Energy efficient geared motor assembly - for rotating of the refining assembly.
- Refining pressure geared motor assembly - for varying refining pressure.
- Electric immersion heaters, controlled by PT100 probe, 4-20 mA, within the jacket water system.
- Electric extract fan, providing cross refiner air flow through hopper vent, for reduction of volatiles, acidity & moisture.
- Product temperature control using PT100 probe, 4-20 mA.
- Chilled water inlet solenoid valve, 1" BSP, 24V DC, controlled by product temperature probe.
- Loading of powders through machine hopper.
- Two infeed pipes for liquid materials at gearbox end of machine, DN50 flanges.



- Low maintenance mechanical food grade product seal for rotating shaft at gearbox end and delivery end using constant 0.9 bar air pressure.
- Safety protected access covers for maintenance purposes.
- EWON remote access module - diagnostics/software update.
- Customer connection available via : LAN. WIFI, 3G/4G Network connectivity available on request.
- Shear attachment now fitted as standard.

Control System - Siemens

- Operator interface by 10" color touchscreen for set up, process control and machine diagnostics.
- NOTE - as standard, the PLC package is for control of Refiner/Conche functionality alone.
- Siemens Profinet Protocol - communication module with single ethernet to connect to an external network.
- If there is a requirement to integrate to customer plant, additional information and specifications would be required for bespoke software to be created at extra cost.
- Standard 10M Cable from control to machine supplied from each device to connect to control panel.
- Due to the different position of the various devices on the machine, cable length available for routing in customer's factory will be less - depending on the position and orientation of the machine.

NOTE: Lwa = 100 dB - Anti vibration strip - reduces vibration and therefore transmitted noise.

Options

- Anti Vibration Strip - reduces vibration and therefore transmitted noise.
- Integration to SCADA systems and interlinking with existing equipment on site (available through Refiner PLUS range).

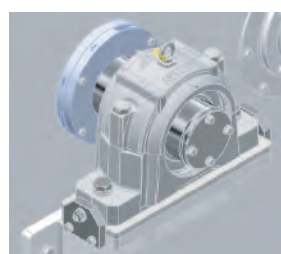
| Machine Capacity (kg) | Main Drive Motor (kw) | Power Assisted Motor (kw) | Shear Attachment (kw) | Electric Immersion (kw) | Length (mm) | Width (mm) | Height (mm) | Net Weight (kg) |
|-----------------------|-----------------------|---------------------------|-----------------------|-------------------------|-------------|------------|-------------|-----------------|
| RC3000Di | 55 | 0.55 | 4 | 2-3 | 4157 | 1703 | 2139 | 9200 |
| RC5000Di | 75 | 0.55 | 4 | 4-3 | 4218 | 2033 | 2464 | 13500 |
| RC6000Di | 75 | 0.55 | 4 | 4-3 | 4218 | 2218 | 2649 | 14000 |

Subject to technical alterations!

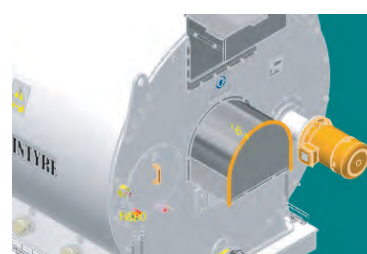
“NEXT GENERATION” DUPLEX REFINER/CONCHES



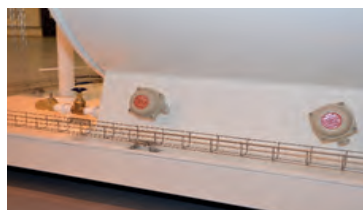
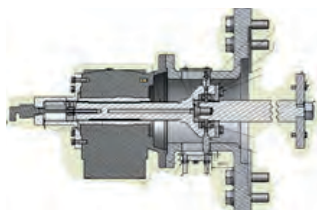
Pressurized Air Chocolate Seal for leak free solution at gearbox end. No gland packing.



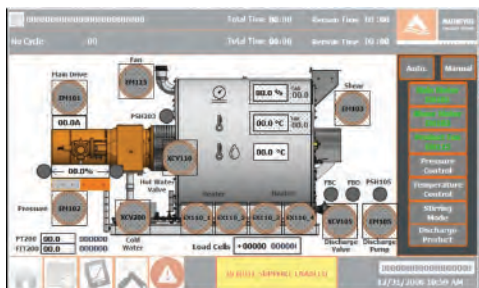
Easy access cover to Air Chocolate Seal on delivery end.
New shaft support arrangement including spherical bearing and removal of glands for more efficient running.



Linear “no contact” transducer to monitor position of pressure system, creating a virtual pressure scale viewable on the HMI.



New hygienically designed cable trays.



New PLC software with improved HMI to enable a user friendly system, incorporating:

- Multi step recipe programming (enabling a product specific set of process parameters to be stored on the PLC)
- A comprehensive suite of control and monitoring functions including maintenance alerts, energy monitoring, storing and download of actual run data for production traceability.



Liquid infeed pipes and 150mm ventilation fan at gearbox end, replaces previously supplied hopper.



Inspection hatch for observation and basic maintenance



Stainless Steel infeed hopper

Service Requirements

- Ideally a minimum 3 meters clearance is required at the delivery end, 1.5 meters at the gearbox end and 1 meter at the sides of the equipment. The area should be adequately ventilated to prevent overheating of the motors and gearboxes.
- The machine is best installed on a flat reinforced concrete foundation floor– minimum thickness 230mm (9") of 30 Newton grade concrete. The machine does not have to be bolted to the floor.
- It is advisable that the machine be mounted on anti-vibration pads.
- Control panel is a standalone unit but should be located so

operators can observe and monitor the equipment in operation.

- Consideration of service provision to and from the machine should also be made and electrical supplies should be carried to the equipment using cable trays or trunking.
- Three phase electrical supply is required.
- Water feed and return lines will need to be connected to the machine to provide cooling.
- 0.9 bar continuous air supply to the pressurized air chocolate seal

| | |
|---------------------------|-----------|
| Ambient Temperature | 25°C |
| Cooling Water Temperature | 12 - 16°C |

| Machine Capacity (kg) | Cylinder Capacity (Liters) | Consumption (Liters per Hour) | Water Cooling Capacity (kW) |
|-----------------------|----------------------------|-------------------------------|-----------------------------|
| RC3000Di | 515 | 2800 - 3000 | 53.1 |
| RC5000Di | 608 | 4050 - 4250 | 65.5 |

Notes

- Values are for guidance only and will vary depending upon the ambient temperature, the cooling water temperature, the product being manufactured and the machine's settings.
- If the ambient temperature in the room where the machine operates is between 35 – 40°C then the above water consumption values should be increased by 40%.
- When cooling water temperature is 25 – 30°C and ambient temperature is 25°C then the above water consumption values should be increased by 60%.
- Maximum pressure permitted in the cylinder water cooling jacket is 1.5 bar (21.5 psi).
- Cooling capacity based upon 6.5 kW/m² transferred to cooling water over effective area of internal cylinder wall giving a 5°C temperature gradient through the wall and 0.2 kW/m² lost to ambient atmosphere through cylinder jacket giving a 1°C temperature gradient through the jacket wall.

- Additional equipment is required to convey raw materials to the Refiner/Conche and to transfer the finished mass from the Refiner/Conche, ready for processing (additional equipment available from MacIntyre for this purpose). Pipe runs for these elements should be planned before equipment installation commences and obtained locally.

Cycle Times

- Cycle times are dependant on recipe, quality of raw materials, fineness required and model of Refiner/Conche being used. Please contact the sales office for a cycle time estimation.