

Plastic Material Handling Solutions

re-engineers bottom line



Drying Solutions

Conveying Systems

Blending Units

Temperature Control Units

Granulators

Chillers

Bulk Material Handling

Gravimetric Blenders

TOSHIBA MACHINE (CHENNAI) PVT.LTD.

ONE COMPANY MANY SOLUTIONS

Toshiba Machine (Chennai) Pvt. Ltd one of the pioneers in manufacture of Injection Moulding Machines & Auxiliary Systems for over two decades are serving the Industry with expertise and proven solutions in enhancing the bottom line of Plastic Processing Industry be it Injection Moulding, Blow Moulding, Extrusion, Roto, Thermoforming, Rubber, Die Casting and Compression Molding by providing the state-of-the-art technology to its Esteemed Clients across the Globe.

We are presenting the latest Auxiliary Units & Systems to suit the needs of any molding shop floor which can be adapted to have the latest Automation techniques in order to enhance productivity and to ensure consistent product quality and repeatability. The various product lines are

- Central Conveying System with the latest Touch Screen and SCADA type systems tailor made to suit the customer / production needs
- Dehumidified Air Dryers (50 to 2400 cum / hr air generators which can be coupled with single or multiple bin combinations from 15 to 2400 Liters) with energy saving features
- Hot Air Dryers – Machine / Floor Mounted versions ranging from 30 to 4000 Liters
- Vacuum Loaders with conveying capacity from 50 – 1200 Kg/hr
- Industrial Chillers - Air Cooled & Water Cooled from 3.5 to 20 TR
- Blending Units - Gravimetric 100 – 600 Kg/hr and Volumetric Units 100 – 1200 Kg/hr
- Granulators – Sprue Granulator. Slow Speed Units, Part Granulators (on request)
- Mould Temperature Controllers – Direct Cooling with Water up to 120 Deg C and Open tank systems for use with either Water at 95 Deg C or Oil up to 225 Deg C
- Silo's, Debagging Station, Day Bin, Special storage solutions



LMD 250 / 400

SSL 06



LSG 1

Technical Specifications mentioned are subject to changes due to continuous improvements

HOT AIR DRYER



Models

LHD30, LHD60, LHD100
LHD150, LHD200, LHD300, LHD450
LDL600, LDL900, LDL1200, LDL2000
LDL3000, LDL 4000

Hopper Capacity in Liters - 30 to 4000

Options available

LHD Series - Machine mounted / Floor mounted

LDL Series - Only Floor mounted

HD Series - Casted bins on request

- Energy efficient
- Compact and light weight
- Fully insulated aluminium bin with SS cladding
- PID control of temperature
- Large cleaning window for quick material change over from 60 Liter onwards
- Magnetic Grill BM - 60 for LHD 30
- Magnetic Grill BM - 300 for LHD 60 - 100
- Loader are must for conveying material from 150 liter onwards

Optional

- Pneumatic Suction box for line purging
- Special DOL for various IU's in IMM's
- Special DOL for Extruders

Machine Mounted Version

	LHD 30	LHD 60	LHD 100	LHD 150	LHD 200
Hot Air Capacity m ³ /hr	25	50	70	100	120
Bin capacity Its.	30	60	100	150	200
Connected load (kW)	1.30	1.84	2.84	4.48	4.98
Power supply	230 V, Single Phase 50 Hz			415V, 3 Phase 50Hz	
Temp Range °C	60 - 130			60 - 130	
Weight approx kg	39	50	75	90	105
(HxW1xW2) in mm	950	1086	1250	1450	1684
Height					
Width W1	540	625	685	661	740
Width W2	430	550	560	741	661

Floor Mounted Version

	LHD300	LHD450	LDL 600	LDL 900	LDL 1200	LDL 2000	LDL 3000	LDL 4000
Hot Air Capacity m ³ /hr	200	200	400	400	800	850	1800	2500
Bin capacity Its.	300	450	600	900	1200	2000	3000	4000
Connected load (kW)	6.85	6.85	6.65	6.65	13.00	13.00	14.2	21.6
Power supply	3 Ph, 415V / 50 Hz / N+PE							
Temp Range °C	60 - 130							
Weight approx kg	110	125	175	210	250	350	600	800
(HxW1xW2) in mm	1790	2700*	2510*	3030	3040*	4430*	3985*	4170*
Height								
Width W1	1025	1150*	1100*	1100	1450*	1700*	1700*	1870*
Width W2	750	800*	1300*	1300	1270*	1620*	1725*	2020*

* Dimension of Floor Mounted Version

Models

HLB-E, HLB-ET, HBE 3/4, HLS, SSL06

Conveying capacity - upto 1200 kgs/hr

Options available:

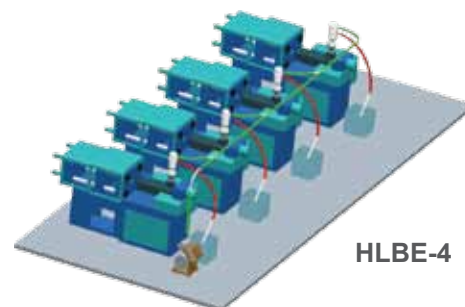
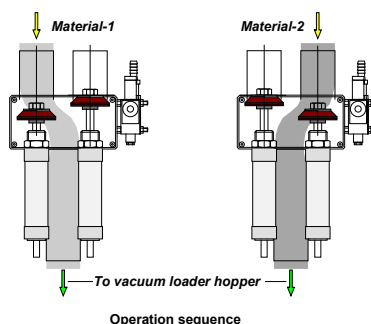
- System Loader with central Blower
- Unit with 3 phase, stand alone Blower
- PLC control, Mimic Display of Conveying sequence
- Automatic cleaning of filter after every cycle
- 2 / 5 / 15 Liter adaptor for M/c mounting
- Alarm when material is not being conveyed
- System loader HLS 02 - HLS 75 liters
- Option with Glass Tube Assembly for Low Throughput
- Magnetic Grill for undried material



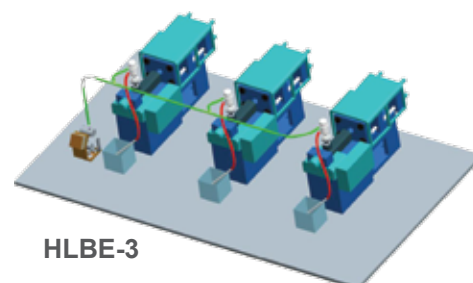
Proportioning Valve

Models - PV dia 38/45/60

- Stainless steel construction
- Can be integrated with Toshiba Machine Vacuum Loader
- Online recycling of regrind material



HLBE-4



HLBE-3

Technical Data

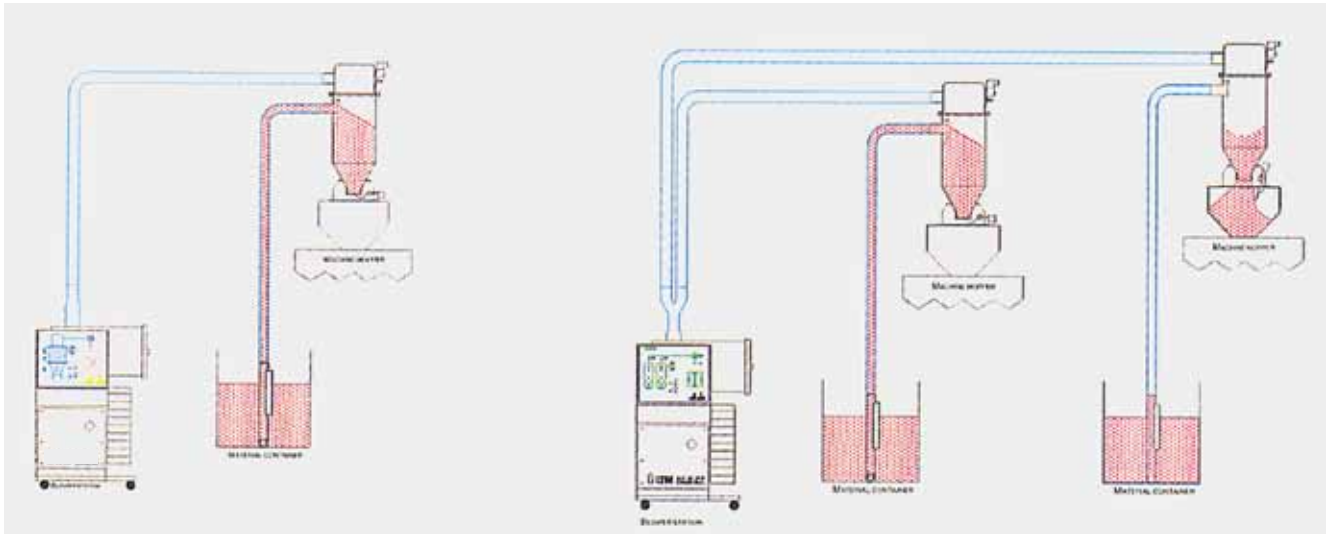
Model	Conveying Volume (litres)	Conveying Capacity* (kg / hr / loader)	Approx. dimension (mm)		Blower Rating (kW)	Weight (kg)	Compressed air connection	Power Supply
			Blower station W x D x H (mm)	Loader Dia x H				
SSL06	6	80	600x540x715	242x512	1.3	40	Male connector 1/8" - M8	415 V, 3 phase 50 Hz
HLB-E 08	8	250	590x540x830	335X560	1.3 / 2.2	50		
HLB-ET 08	8	130	590x540x830	335X560	1.3 / 2.2	60		
HLB-E3 08	8	80	590x590x830	335X560	1.3 / 2.2	70		
HLB-E4 08	8	60	590x590x830	335X560	1.3 / 2.2	80		
HLB-E 15	15	500	590x590x830	520X665	1.3 / 2.2	70		
HLB-ET 15	15	250	590x590x830	520X665	1.3 / 2.2	80		
HLB-E3 15	15	160	590x590x830	520x665	2.2	70		
HLB-E4 15	15	125	590x590x830	520x665	2.2	80		
HLB-E 30	30	800	590x590x830	520X805	2.2 / 4.0	70		
HLB-ET 30	30	400	590x590x830	520X805	2.2 / 4.0	80		
HLB-E3 30	30	260	590x590x830	520X805	2.2 / 4.0	80		
HLB-E4 30	30	180	590x590x830	520X805	2.2 / 4.0	110		
HLB-E 75 & CDF	75	1200	1400x700x1350	520X1330	4.0 / 7.5	120		

* SSL06 - for an equivalent length of 8mtr with dia 38mm hose in ML line. * HLBE 08/15 - for an equivalent length of 10/25mtr subject to Kg/Hr & RG usage
Compressed air supply 4 - 5 bar moisture and oil free for loader implosion.

LOADERS

Schematic of HLB-E

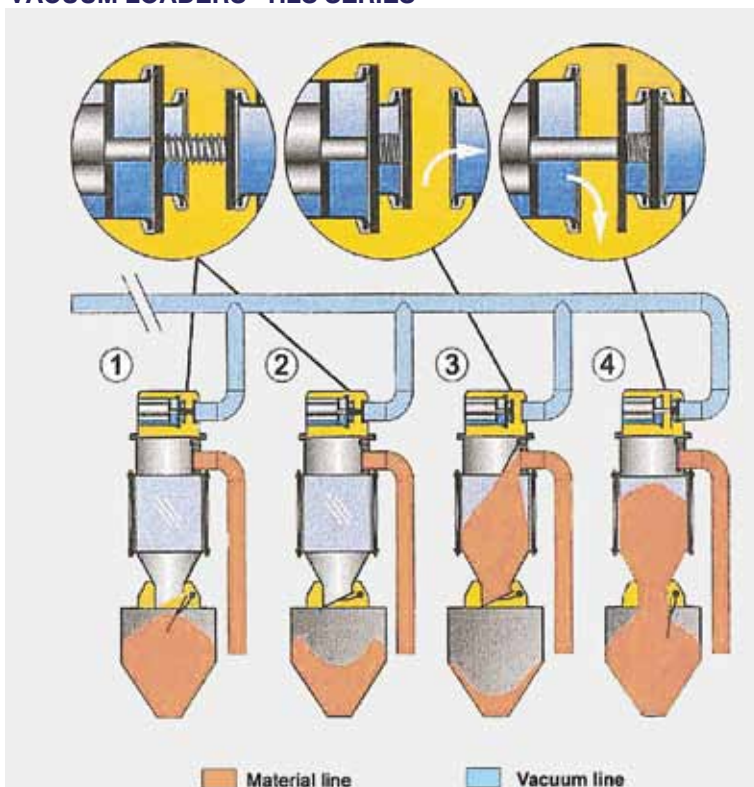
Schematic of HLB-ET



UNIQUE FEATURES

- Filter is cleaned automatically during every conveying cycle.
- Parts of loader coming in contact with plastic materials are manufactured from abrasion resistant stainless steel.
- Metallic material inlet and discharge flaps ensure that material being conveyed does not come into contact with synthetic seals.
- Blowers are highly reliable with zero maintenance.
- Large discharge opening prevents bridging when conveying regrind.
- Automatic alarm when material is not being conveyed.
- Top section is easily removable to facilitate maintenance.
- Robust design ensures reliable performance.
- **Optional: Special Dust Filter for Regrind usage**

VACUUM LOADERS - HLS SERIES



These Loaders are used in a conveying system and are selected to specific requirements. System loaders are integrated with a single central blower station and a central dust filter. The sequence of operation is controlled by a PLC.

1. Vacuum valve closed = No conveying process
2. Vacuum valve closed = Material requirement
3. Vacuum valve open = Conveying
4. Vacuum valve closed/implosion valve open = Conveying/implosion concluded

STANDARD SCOPE - INDEPENDANT UNITS

VACUUM LOADERS

Model: SSL06

PVC hose dia. 45mm -4mts – Vacuum Line , PVC hose dia 38 – 4 mtrs – Material Line
Suction probe dia.38mm – 1 No , Hose Clip dia.45mm – 4 nos.

Model : HLBE-06 and HLBE-08

PVC hose dia. 45mm -8mts (4mtrs – Vacuum Line + 4mtrs Material line)
Suction probe dia.45mm – 1 No , Hose Clip dia.45mm – 4 nos.

Model: HLBET-08 , 1.3 / 2.2 kW Blower Station

PVC hose dia. 45mm -16mts (8mtrs – Vacuum Line + 8mtrs Material line)
Suction probe dia.45mm – 2 Nos
Hose Clip dia.45mm – 8 Nos

Model: HLBE-15 & HLBE-30 - 2.2 / 4.0 kW Blower Station

PVC hose dia. 60mm – 8 mts (4mtrs – Vacuum Line + 4mtrs Material line)
Suction probe dia.60mm – 1 No
Option of having larger return air dust filter
Hose Clip dia.60mm – 4 nos

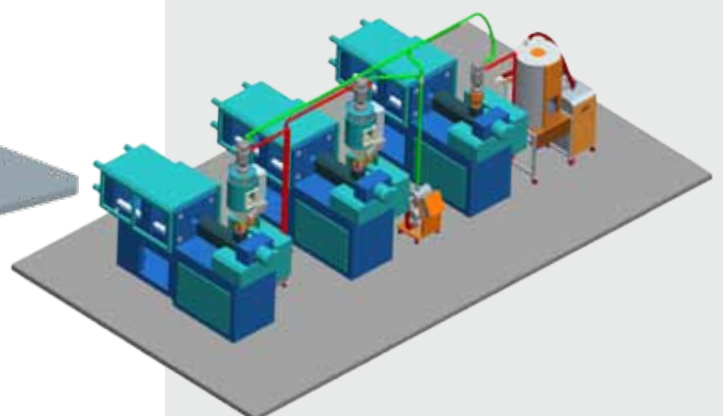
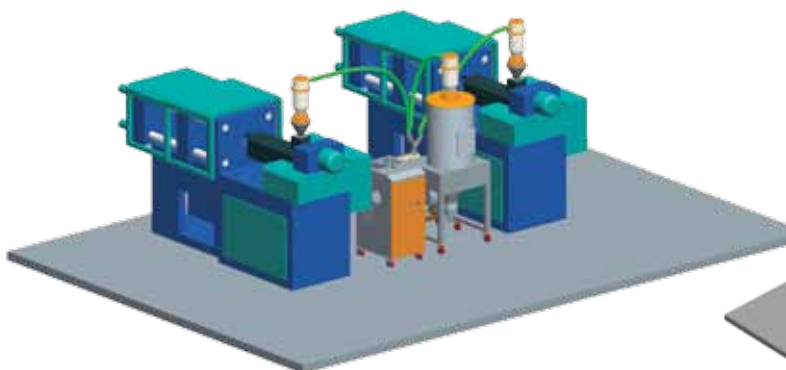
Model: HLBET-15 & HLBET- 30 - 2.2 / 4.0 kW Blower Station

PVC hose dia. 60mm -16mts (8mtrs – Vacuum Line + 8mtrs Material line)
Option of having larger return air dust filter
Suction probe dia.60mm – 2 Nos
Hose Clip dia.60mm – 8 nos

Model: HLBE- 3 / 4 - 1.3 / 2.2 kW blower station

Blower station: 1.3 or 2.2 kW
Hopper assembly: 8L - 3 nos for E 3 and 4 nos for E 4
Y- piece 45-45: 2 / 3 nos
PVC hose dia. 45mm -8 mts (4mtrs – Vacuum Line + 4mtrs Material line) per loader
Hose Clip dia.45mm – 20 nos

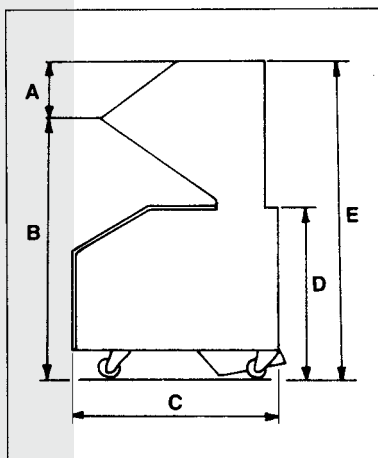
Note: 1.3kw is recommended for loading drying bins/ Blending units & 2.2kW is recommended for loading the machines. Selection to be based on distance and Kg/hr output in total. Option of rigid piping for VL and ML also available



GRANULATING SYSTEMS



LSG 5



Dimensions in mm

Model	LSG1	LSG5
A	200 x 150	250 x 400
B	1007	1050
C	550 x 500	800 x 720
D	710	715
E	1160	1300

SPRUE GRANULATOR

Dimensions

Model	LSG1	LSG5
Throat (mm)	200 x 150	420 x 200
Rotor ϕ (mm)	150	180
Speed of rotor (rpm)	330	330
No. of rotating blades	3	3
No. of fixed blade	1	1 / 2
Rotating blade length (mm)	195	415
Fixed blade length (mm)	199	419
Throughput (kg/h)	20 - 30	50 - 80
Standard Sieve hole dia (mm)	5 / 7	5 / 7
Power (kW)	1.5	5.5
Power supply	3 PNE, 415 Volts, 50Hz	
Collection Tray Capacity (Liters)	5 / 12*	5 / 30*
Weight (kg) approx	150	235

*Option: Table & Frame with Large Collection Tray

SPRUE GRANULATOR – LSG 1

- Standard unit is mobile on castors with a suction pipe, dia 7 mm sieve for ON – LINE Recycling
- Option of having a Table & Frame with large container for OFF – LINE application
- Option of special blades to granulate runners up to 30% GF materials

SPRUE & SMALL PARTS GRANULATOR – LSG 5

- Standard unit is mobile on castors with a suction pipe, dia 7 mm sieve for ON – LINE Recycling
- Option of having a Table & Frame with large versatile container for ON & OFF – LINE application. The granulate can be collected in a crate OR can be also directly connected to the Vacuum Loader
- Option of special blades to granulate runners up to 30% GF materials
- Option of Muffler Hood for noise reduction

PET DRYING SYSTEM

FOR STRETCH BLOW MOULDING MACHINES



Models	- ASB 01, ASB 02, ASB 03
	ASB 04, ASB 05
On request	- Dryers of capacity 600 to 2400m ³ /hr (dry air generation) - Bin capacity 1200 to 2400 liters
Dry Air capacity in m ³ /hr	- 80 to 250
Bin size in ltr.	- 100 to 900
	• Continuous supply of dry air to the drying bin • Closed loop system regeneration • PLC Control with four line display to monitor all dryer functions • Machine mounted version • Water based after cooler (20-40lpm at 15 °C, normal pressure)

Technical Data

Model	ASB 01	ASB 02	ASB 03	ASB 04	ASB 05
Dry Air Capacity (m ³ /hr)	75	120	160	200	250
Drying Temp (° C)	160 - 180				
Total Connected Load (kW) *	7.80*	11.0*	12.0*	14.0*	18.0*
Compressed air pressure (bar)	5 - 7 (Oil & Moisture Free)				
Power Supply	415V, 50Hz, 3 Phase (Other frequency on request)				
Specific Air Volume (m ³ /kg)	2.5	2.5	2.5	2.5	2.5
Bin Capacity (litre)	100 / 150	350	450	600	900
Maximum Throughput (kg/hr)	16 / 24	48	64	80	115
Overall Dimensions LxBxH (mm)	1303x859x2219	1450x859x2621	2000x1050x2700	2000x1050x2820	2250x1150x3830
Weight in kgs (approx)	200	250	300	430	480
* Dryer Generator + Bin + Conveying Blower + Controls ❖ Machine mounted and Floor mounted versions to suit requirements					

PET - SYSTEMS

DRYING & COOLING SOLUTIONS - PREFORM MOULDING

Machine	Product	Maximum Throughput	Chillers	Flow Rate @ 4- 5 bar pressure	Dehumidified Air Dryers
		Kg/Hr	Tr	Lpm	
100T	Bottle Preforms	70	7.5	200 - 250	LMD 160 + 450 Liter Bin
150T	Bottle Preforms	95	12.5	380	LMD 250 + 600 Liter Bin
200T	Bottle Preforms	130	15	400	LMD 400 + 900 Liter Bin
250T	Bottle Preforms	180 - 200	25	700 - 800	LMD 400 + 1200 Liter Bin
500T	Bottle Preforms	200 -300	40	700 - 800	LMD 800 + 2400 Liter Bin
250T	Bubble Top	50	7.5	200	LMD 160 + 450 Liter Bin
500T	Bubble Top	90	12.5	380	LMD 250 + 600 Liter Bin

Note

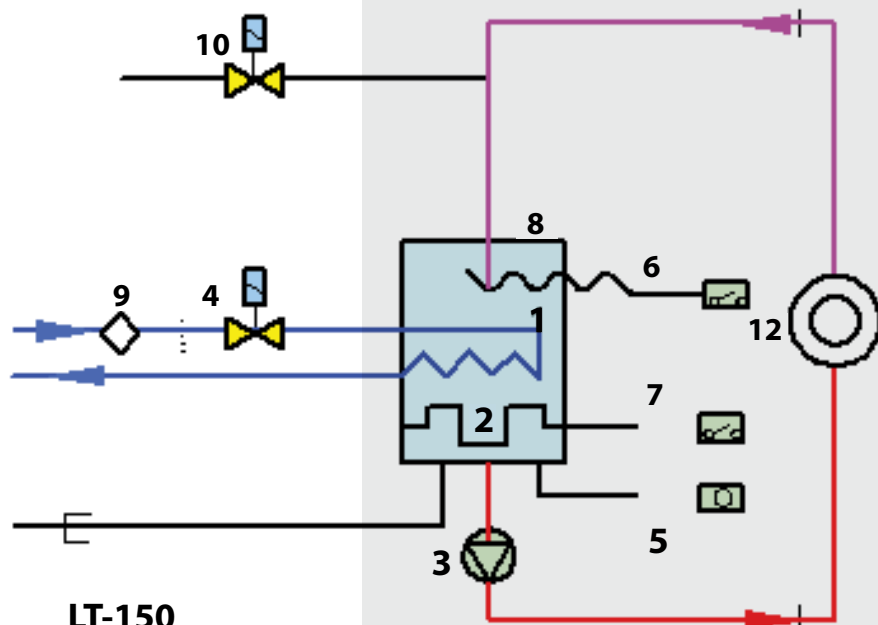
- Couple LTDk Unit if required for high pressure, high flow, different operating temperatures
- Water Cooled Unit are selected Only If there is a Cooling Tower & Water Supply ph value 7.0
- All Selection Is Based On Assumption Chiller Is Within 7 Meters From Machine
- Option: Mould Sweat Protection Systems, Energy Saving Features in Drying Systems



LMD 800 With 2 x 1200 Liter Bin

TEMPERATURE

OPEN TANK SYSTEMS



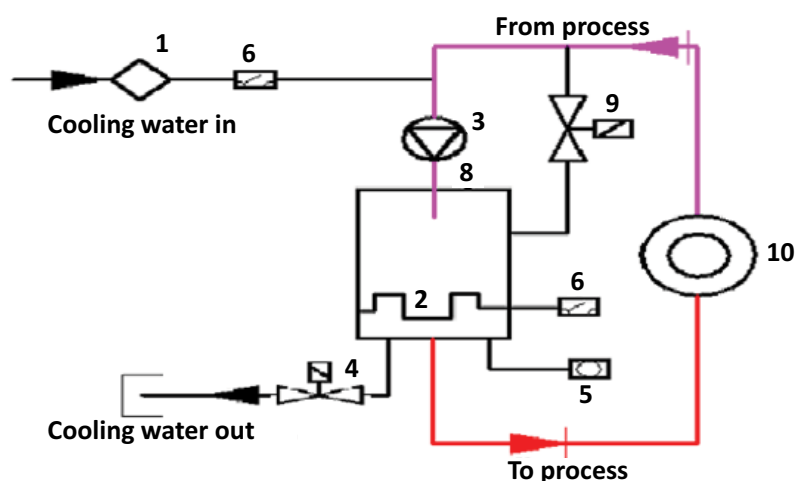
1. Cooler, 2. Heater, 3. Pump, 4. Solenoid valve. cooling
5. Temperature probe, 6. Level control, 7. Thermostat, 8. Tank
9. Filter, water mains, 10. Solenoid valve, 12. Consumer

Technical Data		LT150		LT200	
Outlet temperature (max)	°C	150	90	200	95
Heat transfer fluid		Oil	Water	Oil	Water
Filling quantity	l	12		30	30
Expansion volume (max)	l	4		10	10
Heating Capacity at 400V	kW	6 / 9	6 / 9	12	9 / 12
Cooling Capacity	kW	32	32	32	32
at outlet temperature	°C	140	80	140	80
Cooler (K)		2	2	2	2
Pump capacity / type at 400V	kW				
Flow rate (max)	L / min	70	60	100 / 70	100 / 70
Pressure (max)	bar	5.4	3.8	3.8 / 5.4	3.8 / 5.4
Motor	kW	1.5	0.5	2.8 / 1.0	2.8 / 1.0
Control		P I D		P I D	
Measuring mode (std.)		Pt 100		Pt 100	
Operating voltage (std.)	V / Hz	3 Ph, 415V / 50 Hz / N+PE			
Connection					
Outlet / inlet	G	1 / 2"		1" / 1/2"	
Cooling water mains		1 / 2"		1/2" / 1/2"	
Dimensions W/H/D	mm	200 x 650 x 700		810 x 270 x 880	
Weight	kg	50		100	
Ambient temperature	°C	40			
Noise level	dB	<70			

Optional: Audible Alarm, Outlet Pressure Gauge, Auto Water Refill, Manifold and Nylon / Steel braided hoses

CONTROL UNITS

PRESSURISED SYSTEMS



1. Strainer (optional), 2. Heater, 3. Pump,
4. Solenoid valve – Cooling, 5. Temperature probe,
6. Pressure Switch, 7. Safety thermostat,
8. Heater housing, 9. Excess Pressure Relief Solenoid valve,
10. Consumer

Unit can be used only for Operation with Water as Thermal Medium

Model	LT DK70	LT DK150	LTDK200	LTDK300	LTDK400
Temp. Control Range	40 ~ 100°C (Max.120°C)				
Temp. Control Accuracy	± 2°C				
Temp. Control Method	P I D				
Power	3 Ph, 415V / 50 Hz / N+PE				
Heat Transfer Medium	Water with Ph Value - 7.0				
Cooling Method	Direct Cooling				
Heating Capacity (Kw)	9	9	9 / 18	12 / 18	18
Pump Power (Kw)	0.84	1.85	2.20	4.00	4.40
Max Pump Flow (l/min)	70	150	200	300	400
System Pressure (max/bar)	3	3	3	3	3
Cooling water pipe	1 / 2 "	1 / 2 "	1 / 2 "	1 / 2 "	1 / 2 "
Circulation water pipe	3 / 4 "	1 1/2 "	1 1/2 "	2 "	2 "
Dimensions L (mm)	400	400	400	400	510
Dimensions B (mm)	950	800	800	930	1150
Dimensions H (mm)	660	870	870	870	1000
Weight (kg)	70	110	110	110	110

* Special Units for Operation at 140 Deg C on request . Optional: Pressure Guage, Y Strainer, Manifold, Nylon braided hoses.

DEHUMIDIFIED



Models

- LMD50, LMD80, LMD120, LMD160
LMD200, LMD250, LMD 400
LMD800

Also available

- Dryers of capacity 1200 to 2400m³/hr (dry air generation)

Dry Air capacity in m³/hr - 50 to 800

Bin size in ltr.	- 15 to 4000 and above
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- Continuous supply of dry air to the drying bin
- Closed loop regeneration process
- PLC Control facility to monitor all drying functions
- Large cleaning windows from 60 liter bins
- Integrated conveying versions

Technical Data

Models

Data	LMD 50				LMD 80					LMD 120				LMD 160			
Dry air capacity (m³/h)	50				80					120				160			
Compressed air pressure (bar) Oil & Moisture free	4-5									Not Required							
Air Consumption (l/h)	2.3									-							
Power Supply	3 Phase, 415V + N + PE, 50 Hz																
Connected load dryer (kW) (excluding drying bin, load-ers)	1.9				2.4					5.0				6.5			
Volume of drying bins (litres)	30	60	100	150	60	100	150	250	100	150	250	350	150	250	400	600	
Standard Combinations (no. of respective bins)	3	2	1	1	3	2	2	1	3	2	1	1	3	2	1	1	
Drying temperature °c maximum Standard bin HT-High temperature bin (Dryer equipped with after cooler)	130				130					130				130			
	180				180					-		180		-		180	
Heater (kW) Standard bin HT-High temperature bin (Dryer equipped with after cooler)	1.5	1.5	2.5	2.5	1.5	2.5	2.5	2.5	2.5	2.5	2.5	4.5	2.5	2.5	4.5	4.5	
	-				-					-		4.5	4.5	-	4.5	6.0	6.0
Dimension (mm) Length L1 Height H1 Depth	2205	1630	1085	1085	2205	1665	1665	1255	2390	1775	1440	1500	2400	2200	1425	1565	
	1310	1500	1705	2040	1500	1705	2040	2040	2040	2450	2050	2450	2450	2040	2450	2450	
	600	600	840	840	600	840	840	840	1080	1080	1080	1080	1080	1080	1080	1080	
Weight of drying bin each with frame (kg) approx	50	70	75	90	70	75	90	120	75	90	120	120	90	120	120	135	
Weight of dry air generator (kg) approx	95				105					140				160			
Colour	RAL 5007 / RAL 7035																

AIR DRYER

LMD 120 / 160



LMD 50 / 80



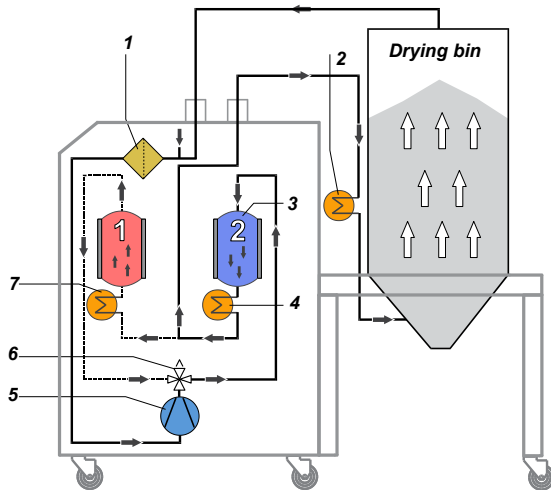
Options for LMD 50, LMD 80 and LMD 120, LMD 160, LMD 200, LMD 250, LMD 400, LMD 800

- **Pneumatic Operated Suction box for purging operation during conveying**
- **Dry air conveying**
- **Water based After / Pre Cooler for HT / N - HT version 20 - 40 lpm (Tap / Chilled Water, 2 - 3 bar pressure)**
- **Dew point based change over with display**
- **Energy Saving & Automatic Temperature regulation , VFD Drives in Large dryers**

LMD 200				LMD 250				LMD 400				LMD 800			
200				250				400				800			
5-7				5-7				5-7				5-7			
2.3				2.3				3.5				3.5			
3 Phase, 415V + N + PE, 50 Hz															
5.7				6.5				11.5				28.5			
100	150	250	600	100	250	450	600	450	600	900	1200	600	1200	1800	2400
5	4	2	1	6	3	2	1	3	2	1	1	5	3	1	1
130				130				130				130			
-		180		-		180		-		180		-		180	
3.0	3.0	3.0	6.0	3.0	3.0	4.5	6.0	4.5	6.0	8.0	8.0	6.0	8.0	12.0	18.0
-		4.5	6.0	-	4.5	6.0	8.0	-	-	12.0	12.0	6.0	12.0	18.0	24.0
3700	3120	2400	2000	4880	3100	2780	2000	4200	3050	2600	2600	7000	6800	2850	2820
2040	2450	2040	2450	2040	2040	2260	2450	2260	2450	3030	3500	3020	3500	3800	4400
980	980	980	1050	980	980	1060	1050	1100	1100	1220	1220	1460	1460	1550	1550
350	320	240	135	90	120	260	135	360	270	220	160	650	360	220	320
278				320				400				580			
RAL 5007 / RAL 7035															

COMPACT DRYER LMD 50 / LMD 80

The mobile compact dryer LMD 50 and LMD 80 generates 50 and 80 m³/hr of dry air respectively, the ideal amount for production of small precision parts. These drying systems are provided with the latest servo cylinder change over systems ensuring consistent supply of Dry Air for drying various Engg. plastic pellets. The air generator can be equipped with up to three fully insulated drying bins to suit the requirement for drying different grades of plastic pellets.

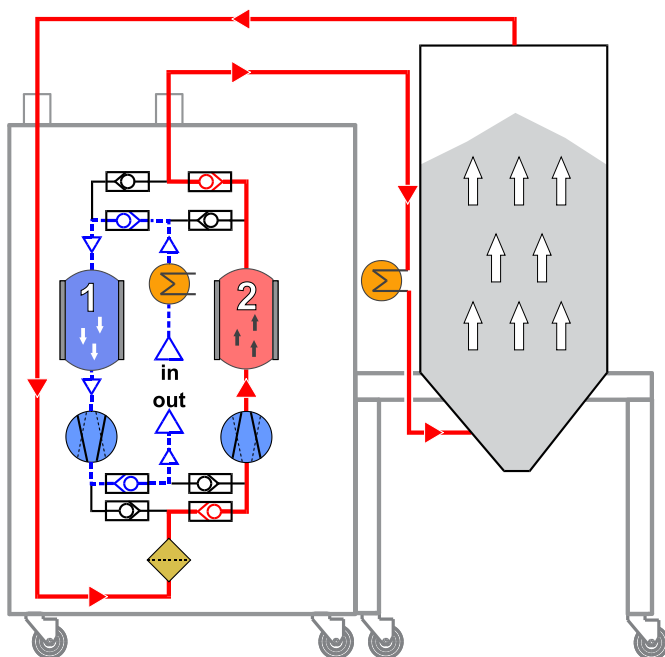


1. Filter
2. Heater
3. Desiccant cartridge 2
4. Regenerating heater
5. Blower
6. Reversing valve
7. Regenerating heater
8. Water based Aftercooler

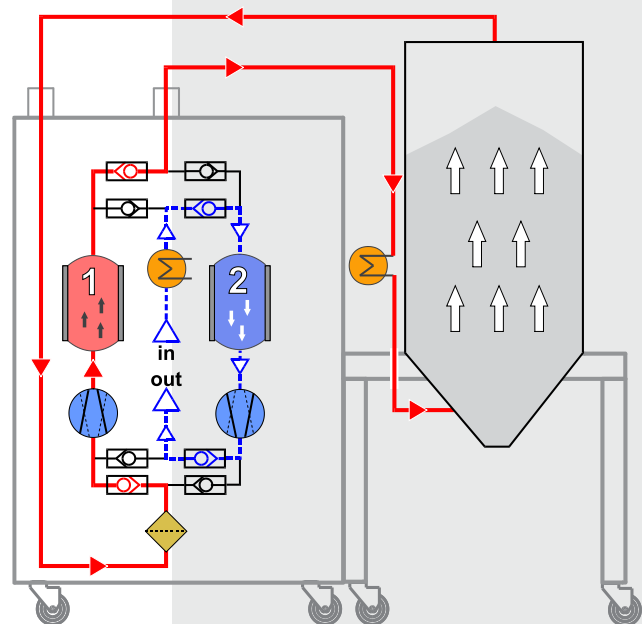
MEDIUM CAPACITY DRYER LMD 120 / LMD 160

The dry air generator operates with air directional flow control valve and hence compressed air not required for dryer operation. Separate Blowers for the Drying & Regeneration Circuit operates as required for the process condition. The PLC controls the drying system operation with a four line display of alarm for quick trouble shooting.

Option: Energy Saving feature, Pre - Dry Confirmation and Closed Loop Regeneration System



Cartridge 1 in Drying



Cartridge 2 in Drying

AIR DRYER

LARGE CAPACITY DRYER LMD 200 / 250 / 400 / 800

Toshiba Machine dry air generator design incorporates two high capacity desiccant drying beds. Airflow alternates between these two desiccant beds in a programmed sequence resulting in high moisture extraction efficiency. While one bed is extracting moisture from the air returning from the drying bin, the second bed is being regenerated and the absorbed moisture is exhausted to the atmosphere.

The switching sequence is controlled by highly reliable pneumatic valves eliminating the conventional mechanisms.

Close loop drying system

The dry air generator supplies air at a very low dew point to the drying bins to extract moisture from the plastic granules. The heater mounted on the bin heats the dry air to the required temperature just before it enters the bin. The moisture-laden air coming out from the bin then passes through the special molecular sieve in the desiccant cartridge. Moisture is absorbed here and the air that comes out is once again ready for the above process.

Regeneration cycle

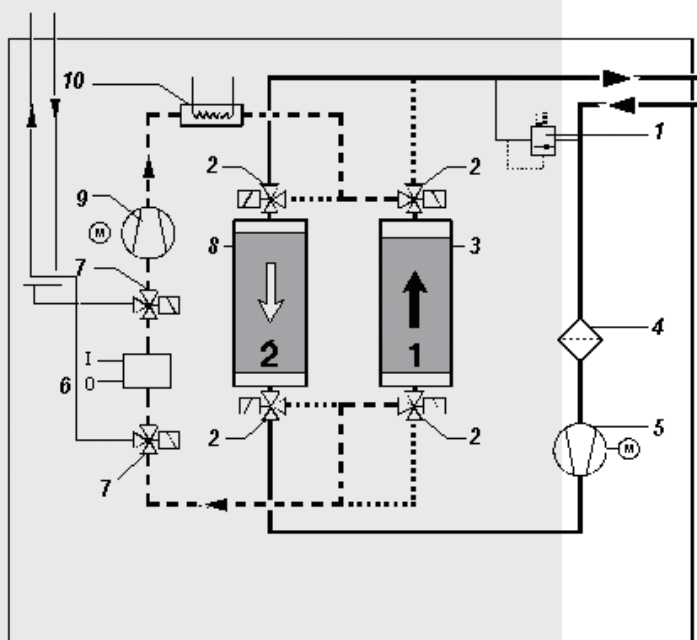
The drying and regeneration process run in parallel, in different phases. Thus one desiccant cartridge is always located in the drying circuit, and the other in the regenerating circuit. Regeneration of the saturated cartridge is done by a time & temperature / temperature based process, optimized through a PLC controller to yield high-energy efficiency.

Drying bin

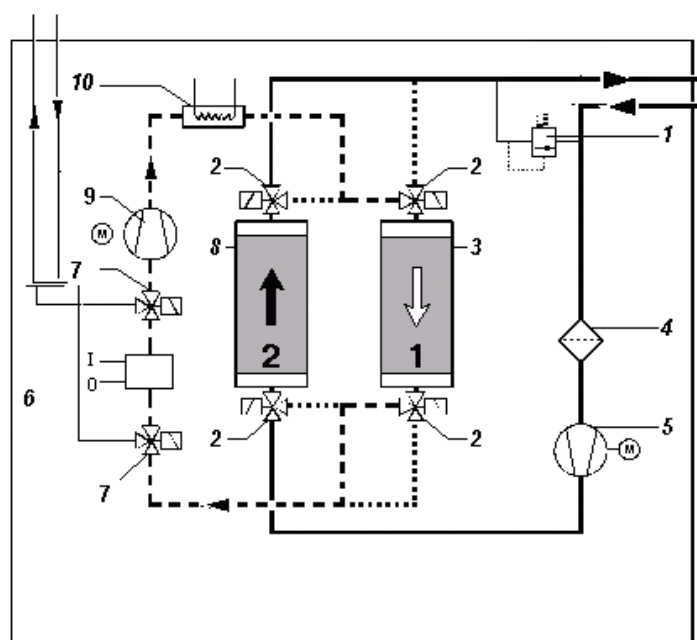
Drying bins are fully insulated for energy savings. A specially designed trumpet provided in the bin ensures uniform distribution of air from the bottom to the top of the bin. A special ball valve is provided in the air inlet of the drying bin for regulating the airflow.

Controls

Individual bin heaters with PID control regulate the drying bin temperature. Four line display of Alarm up to TB wiring for quick trouble shooting.



Cartridge 1 in Drying



Cartridge 2 in Drying

DRYING BIN OUTPUT WITH RESPECT TO PLASTIC PELLET GRADES

Material	Drying Time (Hr)	Drying Temp. In Deg C	Standby Temp. In Deg C	Output in each Bin (Liters)										
				30	60	100	150	250	450	600	900	1200	1800	2400
ABS	3	80	64	7	13	22	33	54	98	130	195	260	390	520
CA	3	75	60	7	13	22	33	54	98	130	195	260	390	520
CAB	3	75	60	7	13	22	33	54	98	130	195	260	390	520
CP	4	75	60	5	10	16	24	41	73	98	146	195	293	390
EPDM	4	75	60	5	10	16	24	41	73	98	146	195	293	390
LCP	4	150	120	5	10	16	24	41	73	98	146	195	293	390
PA 6	5	75	60	4	8	13	20	33	59	78	117	156	234	312
PA 6 40% GF	6	80	64	3	7	11	16	27	49	65	98	130	195	260
PA 6.10 / 66	6	80	64	3	7	11	16	27	49	65	98	130	195	260
PA 6.11	6	80	64	3	7	11	16	27	49	65	98	130	195	260
PAEK	4	160	128	5	10	16	24	41	73	98	146	195	293	390
PBT	3	110	88	7	13	22	33	54	98	130	195	260	390	520
PC	3	105	96	7	13	22	33	54	98	130	195	260	390	520
PE	2	120	96	10	20	33	49	81	146	195	293	390	585	780
PE - BLACK	3	105	84	7	13	22	33	54	98	130	195	260	390	520
PEEK	3	150	72	7	13	22	33	54	98	130	195	260	390	520
PE - I	4	150	72	5	10	16	24	41	73	98	146	195	293	390
PES	4	150	120	5	10	16	24	41	73	98	146	195	293	390
PET - Blow Molding	6	165	120	3	7	11	16	27	49	65	98	130	195	260
PET - Film	6	170	120	3	7	11	16	27	49	65	98	130	195	260
PET - Prefrom	6	170	120	3	7	11	16	27	49	65	98	130	195	260
PET - Inj. Molding	4	175	120	5	10	16	24	41	73	98	146	195	293	390
PET - G	4	66	52	5	10	16	24	41	73	98	146	195	293	390
PI	2	140	112	10	20	33	49	81	146	195	293	390	585	780
PMMA	3	80	64	8	16	22	33	54	98	130	195	260	390	520
POM	3	110	88	5	16	22	33	54	98	130	195	260	390	520
PP	3	110	88	8	16	22	33	54	98	130	195	260	390	520
PP Talc - 40 %	3	110	88	8	13	22	33	54	98	130	195	260	390	520
PPO (PPE)	3	110	88	8	13	22	33	54	98	130	195	260	390	520
PPS	3	150	112	6	13	22	33	54	98	130	195	260	390	520
PC (Optical disk)	3	110	88	8	13	22	33	54	98	130	195	260	390	520
PS	2	80	64	10	20	33	49	81	146	195	293	390	585	780
PSU	4	130	120	6	10	16	24	41	73	98	146	195	293	390
PUR/TPU	3	90	72	8	13	22	33	54	98	130	195	260	390	520
PVC	2	70	56	13	20	33	49	81	146	195	293	390	585	780
SAN	3	80	64	8	13	22	33	54	98	130	195	260	390	520
SB	2	80	64	10	20	33	49	81	146	195	293	390	585	780

The throughput rates indicated in the table are based on approx. values applicable to commercially available materials. Depending on bulk density, initial moisture and chosen drying parameters they can vary.

DEHUMIDIFIED

AIR DRYER

PLASTIC PELLETS & DETAILS							
Material	Starting Moisture %	Max. permissible residual moisture %	Drying Temperature Deg C	Drying Time (Hr)	Bulk Density kg/ cu dm	Density kg/ cu dm	Recommended Standby Temperature Deg C
ABS	max. 0,4	<0,2	80	2,5	0,63	1,05	64
CA	1	<0,2	75	2,5	0,77	1,28	60
CAB	0.9	<0,2	75	3	0,71	1,18	60
CAB	1	<0,2	75	4	0,72	1,2	60
EPDM	0.5	<0,1	75	4	0,65	1,09	60
LCP	0.04	<0,01	150	4	0,97	1,62	120
PA 6	1	<0,1	75	5	0,68	1,13	60
PA 6.10 / 66	1	<0,1	80	5	0,68	1,14	64
PA 6.11	1	<0,1	80	6	0,62	1,04	64
PAEK	0,1	<0,05	160	4	0,78	1,3	128
PBTP	max. 0,5	<0,03	110	3	0,78	1,3	88
PC (Standard)	0,1	<0,02	120	2,5	0,75	1,25	96
PC (Optical disk)	0,1	<0,01	120	2,5	0,75	1,25	96
PC /ABS	0,2	<0,04	105	2,5	0,68	1,12	84
PE *3	0,05	<0,01	90	2	0,56	0,94	72
PE black	0,5	<0,02	90	3	0,57	0,95	72
PEEK	0,5	<0,05	150	3	0,79	1,32	120
PEI	0,25	<0,01	150	4	0,78	1,3	120
PES	0,8	<0,01	150	4	0,82	1,37	120
PET (Blow Mould.)	0,1	<0,02	165	6	0,85	1,34	115
PET (Films)	0,2	<0,02	170	6	0,85	1,34	120
PET (Preforms)	0,2	<0,004	175	6	0,85	1,34	120
PET (Inj. Moulding)	0,1	<0,02	160	4	0,85	1,3	110
PET G	0,3	<0,07	66	6	0,8	1,27	52
PI	0,2	<0,02	140	2	0,84	1,4	112
PMMA	max. 0,3	<0,08	80	2,5	0,71	1,19	64
POM	max. 0,8	<0,1	110	2,5	0,85	1,41	88
PP *3	0,1	<0,01	120	2,5	0,54	0,9	96
PPO (PPE)	0,1	<0,01	110	2,5	0,64	1,06	88
PPS	0,1	<0,01	150	3,5	0,81	1,35	112
PS	0,05	<0,04	80	2	0,63	1,05	64
PSU	0,3	<0,05	130	3	0,75	1,25	104
PUR/TPU	0,4	<0,02	90	3	0,72	1,2	72
PVC	0,3	<0,2	70	2	0,84	1,4	56
SAN	0,3	<0,2	80	2,5	0,65	1,08	64
SB	0,3	<0,05	80	2	0,64	1,06	64

CENTRAL CONVE

Toshiba Machine Central Material Handling Systems are designed to suit customer needs in Injection, Blow Moulding, Thermoforming, Extrusion (Cable / Pipe / Sheet) and Blown Film Lines.

Benefits of Central Systems:

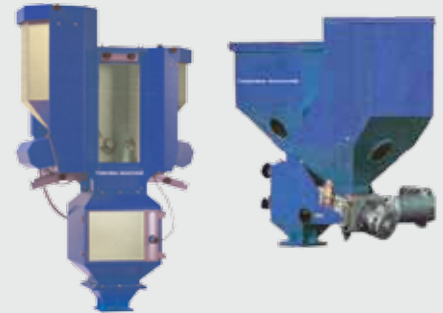
- Increased machine uptime
- Lower scrap/higher yield
- Improved quality, reduced rejections
- Reduced spillage and wastage
- Improved or gained floor space
- Improved safety
- Reduced labour and maintenance
- Reduced energy costs
- Neat and clean shop floor
- Better aesthetics
- User friendly & Modular



DRYING SYSTEM :

Reduce drying costs and improve drying performance

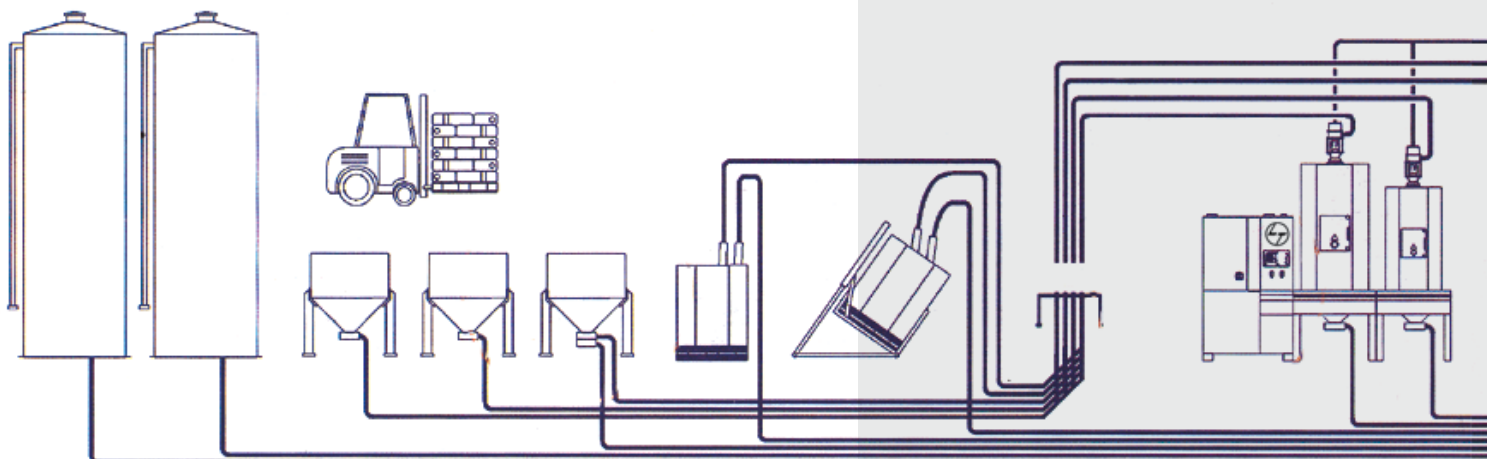
- Energy efficient Drying.
- Modular & flexible



BLENDING SYSTEM :

Accuracy and consistency of the blend are the key factors in determining product quality

- Greater accuracy with inclined dosing screws
- Choice of Volumetric & Gravimetric units
- Lower materials costs.



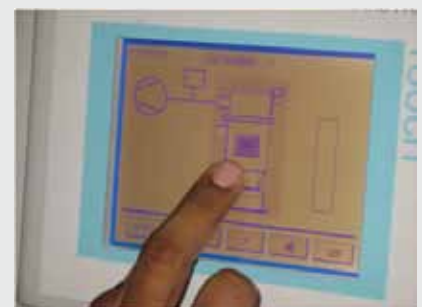
SYSTEM LOADERS:

HLS series is controlled by the Central PLC Control. Maintains minimum reserve and prevents machine starving.



CENTRAL CONTROL PLC

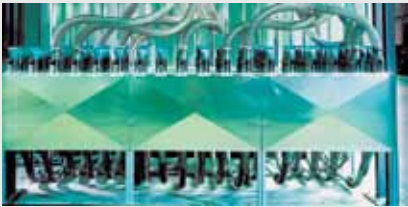
Off the Self Controller controls the conveying operation with a normal display or with a touch panel. Option of Bin Selection, Pre Drying Hours Confirmation, Throughput monitoring and other user required pages can be programmed to suit the needs of the operation.



YING SOLUTIONS

COUPLING STATION:

Flexibility in conveying - any material to any machine, any time



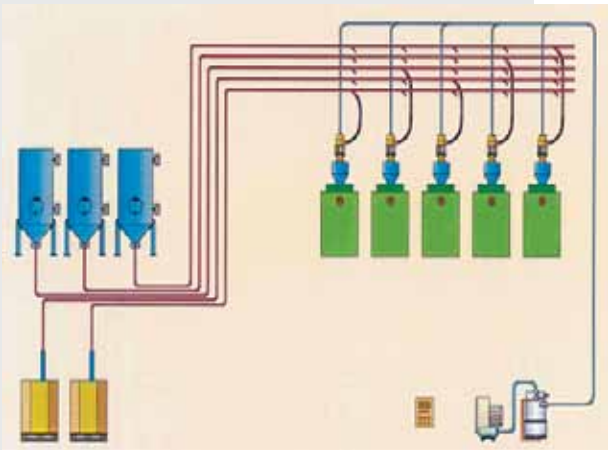
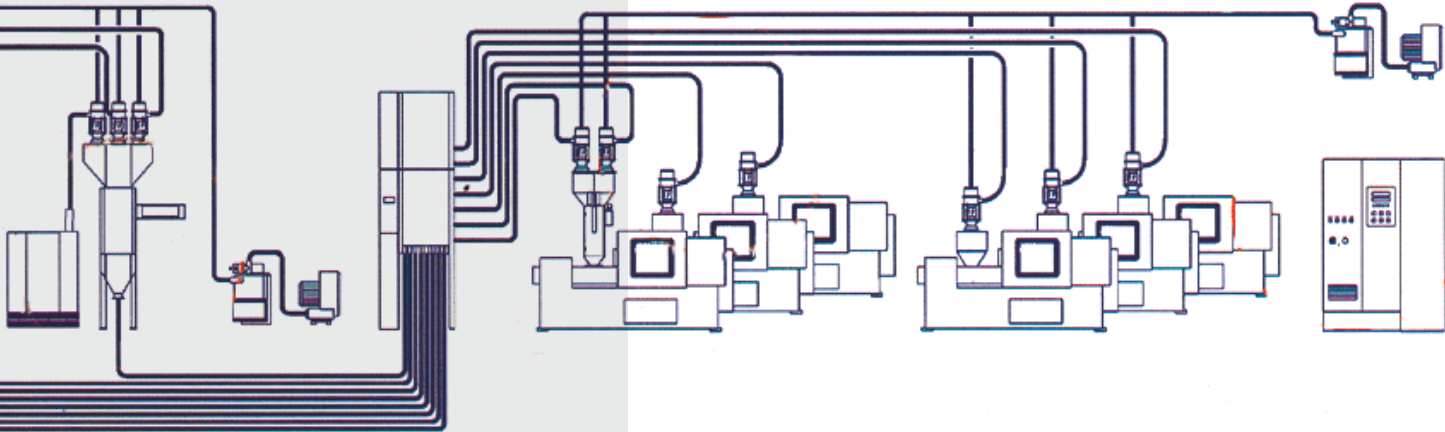
CENTRAL BLOWER STATION:

The Central Blower Station Coupled with Central dust filter does the function of vacuum conveying . The fine dust from the raw material is collected at the dust filter. After the preset conveying time the by pass valve at the dust filter opens removing the load on the Blower.



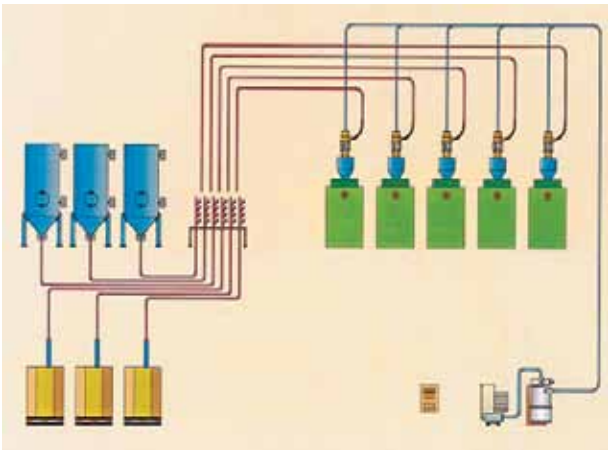
PNEUMATIC DISCHARGE OUTLET:

Precise metering of the dried material into the vacuum stream is done by the pneumatic operated suction box. The purging feature ensures no material is trapped in the pipe lines and hoses after every conveying cycle. Optional : Dry Air Conveying.



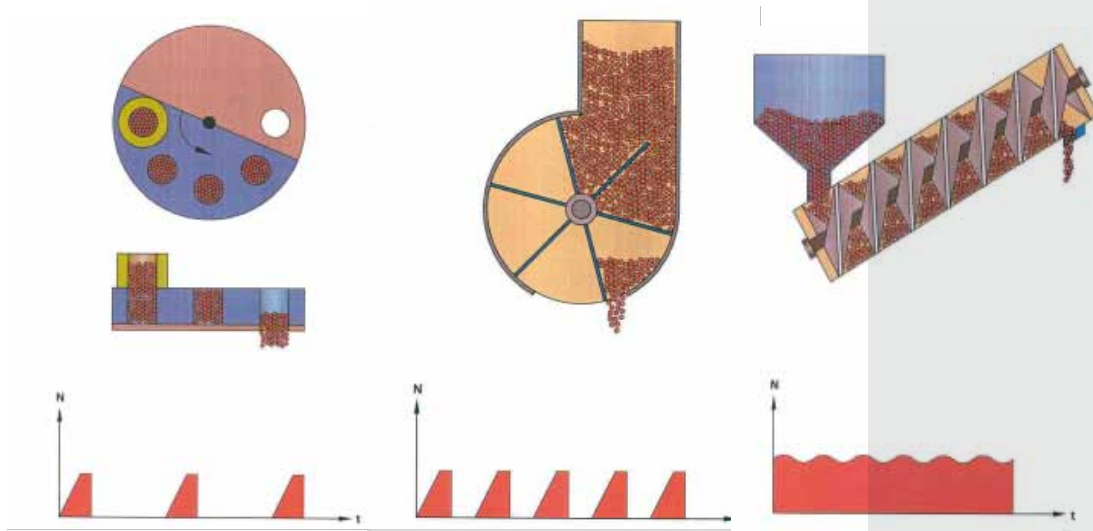
Machine dedicated system
Large variety of materials feeding number of machines

Material dedicated system
Fewer materials feeding large number of machines



VOLUMETRIC & GRAVIMETRIC

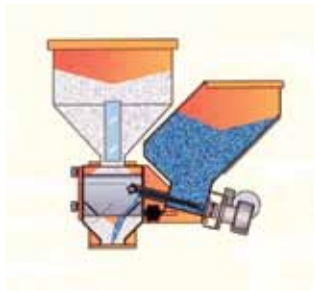
VOLUMETRIC BLENDER



SC 1200

- Consistent dosing with brush less motor
- PLC supported control
- Saving on additives, high repeatability
- Inclined Screw Setting for accurate dosing

MB MINI



Model	MB MINI	MB 250	SC 100	SC 250	SC 1200
Total Throughput (kg/hr)	120	250	100	250	1200
Applicable dosing units /Throughput range (kg/hr)	G1S	0.1 - 1.5	0.1 - 1.5	0.1 - 1.5	0.1 - 1.5 ②
	G2S	0.5 - 9.0	0.5 - 9.0	0.5 - 9.0	0.5 - 9.0 ②
	G3S	1.5 - 20.0	1.5 - 20.0	1.5 - 20.0	1.5 - 20.0 ②
	G4S	-	5.0 - 75.0 ③	5.0 - 75.0 ③	5.0 - 75.0 ②
	G5S	-	-	10.0 - 130.0	
	G5L	-	-	-	10.0 - 130.0
	G7L	-	-	-	50.0 - 700.0
Max.no. of stations	2	3	3	4	4
Volume of dosing station (Liters)	5	15	5	15	40 / 15
Voltage	230V, Single Phase 50Hz				
External signal	Potential free in IMM & Blow Moulding / 0 - 10 V Interface in Extrusion				
Power (watt. approx.)	200	500	500	700	700
Dimensions (mm approx.)	Length	543	629	880	1020
	Width	307	359	880	1020
	Height	710	562	1640	2625
Weight (kg. approx.)					
Basic unit +1 station	26	30	30	86	94

② = with 15 litre hopper ③ = with mixer in storage chamber

Optional: Mechanical stirrer for homogeneous mix of main material, master batch and regrind.
Level Sensors for dosing stations. Low Through put Dosing Screw on Request.

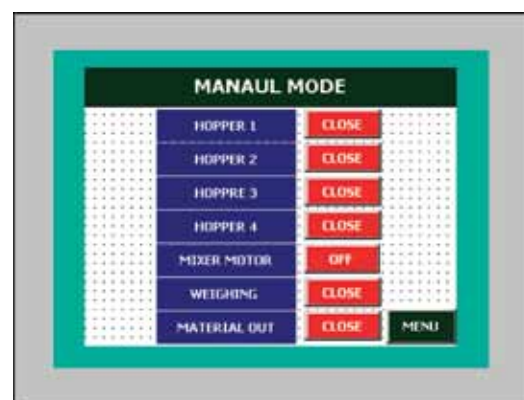
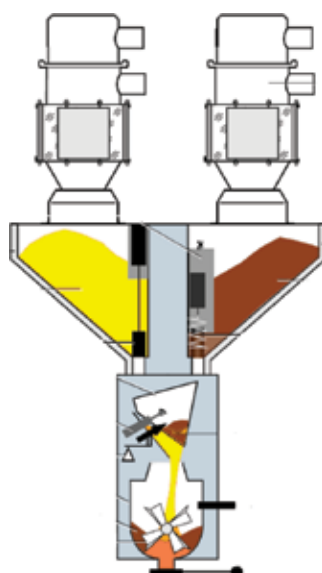
BLENDING SYSTEMS

GRAVIMETRIC BLENDER

- Precise Dosing of pellets & additives
- PLC with touch panel
- Saving on additives, high productivity
- Consistent Batches & Quality
- Up to 100 Recipe storage
- Dedicated PLC Module for Load Cell
- Central Mixing Unit with Mech. stirrer
- Pneumatic slide gate for discharge
- Report print function
- Inventory Management
- Selection of Volumetric / Gravi Mode
- Intelligent self optimising control

Optional

- Pneumatic Suction box for line purging
- Vacuum Loader for dosing stations
- Three level password & special programs
- Micro Dosing screw for low additive Throughputs (less than 4%)

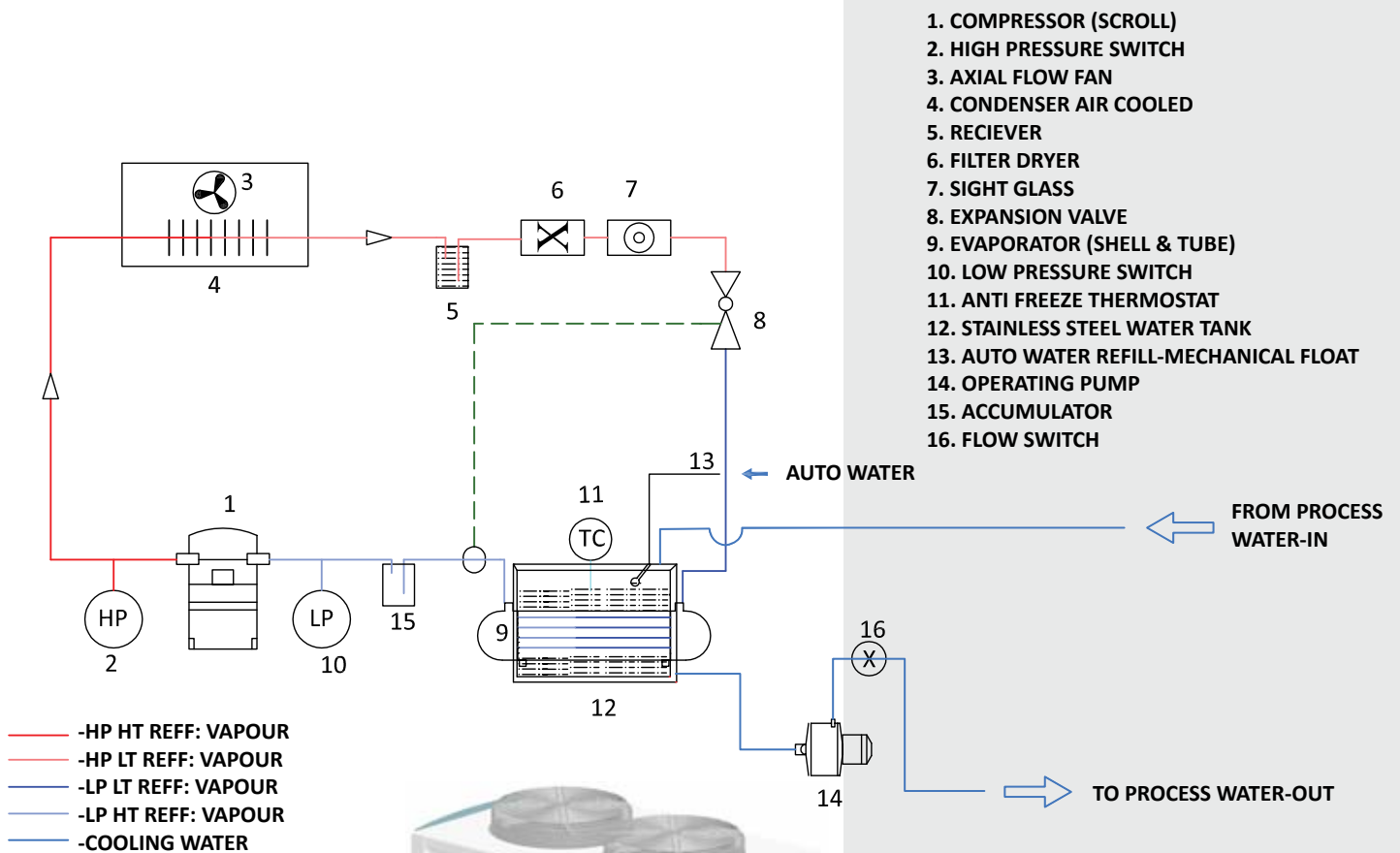


METRO GRAVI SERIES				
SPECIFICATION	UNIT	LTMG - 150	LTMG - 300	LTMG - 600
Max blending rate * (@ 0.7 Bulk Density)	(kg/h)	100	250	450
Max no of Blending materials	nos	4	4	4
Dosing percentage(Main component)	%	50 - 100	50 - 100	50 - 100
Dosing percentage(Additive)	%	4* - 10	4* - 10	4* - 10
Dosing Station Hopper	Liters	15	60	60
Load Cell capacity	kg	6	12	20
No. of Load Cell	No	1	2	2
Power supply 1PH+N+E	Volts/Hz	3 Ph, 415V / 50 Hz / N+PE		
Mixer Motor power	kw	0.12	0.25	0.25
Mixer Motor Speed	rpm	50	25	25
Compressed air supply	bar	5 - 7		
Compressed air Consumption	m³/h	0.30	0.45	0.45
Dimensions L X B X H	mm	625 x 850 x 1730	810 x 1050 x 2010	930 x 1090 x 2010
Total connected load	kw	0.25	0.45	0.45
Weight(Aprox)	kg	120	180	210

* Special units for % Less than 4% on request

* Throughput Varies with Bulk Density & MB percentage

AIR COOLED CHILLERS



Features

- High Pressure & Low Pressure Trip
- High Voltage Trip & Low Voltage Trip
- Overload Trip for fan, processes pump
- Low Temperature Anti-Freeze Safety Thermostat
- Safety pressure switch for process pump
- Internal Over Load Trip for Compressor
- Glass with moisture indicator
- Single phase & phase reversal preventer, MCB for Fan Motor
- Manual By pass valve
- Energy efficient Shell & Tube with immersion type Evaporator

Method of Cooling

Water flows through Shell and Tube with immersion type evaporator and maintains water at required temperature inside the inbuilt SS tank. Separate process Pump will circulate water to the process and returned to the tank. Process pump, Internal circulation pump, Heat Exchanger etc... are housed in the chiller and controlled by PLC / Microprocessor.

Indications

- Pump , Compressor, Fan ON/OFF
- Programmable digital controller
- Common Light indication with Alarm

Refrigerants circuit add ons

- Accumulator
- Liquid receiver from 12.5 TR onwards
- High/Low pressure Gauges
- Filter dryer
- Slight Glass with Moisture Indicator

SOLUTIONS

CHILLER-TECHNICAL SPECIFICATIONS							
	UNIT	LTAC-3.5	LTAC-5.0	LTAC-7.50	LTAC 12.5	LTAC-15.0	LTAC 20.0
Nominal Cooling Capacity	Kw	12.73	18.30	26.70	46.80	62.90	74.00
At Water Temperature	°C	+15°C					
Control Range	°C	+8°C to + 30°C					
Compressor Drive	Kw	3.68	5.30	7.80	13.65	18.20	22.90
Compressor Amps	A	8.30	9.60	15.70	28.0	35.70	41.40
Condensor fan Drive	Kw	0.5	0.6	0.9	1.85	1.85	2.5
Condensor fan Amps	A	0.94	1.2	1.8	3.2	3.2	3.8
Refrigerant	-	R-22 (R-407C on request)					
Power supply	V	415 V,50Hz, 3 Phase+N					
Control voltage	V	24 V DC					
Tank capacity	lts	75	100	150	300	300	400
Water Connection	BSP	1 1/2"	2 1/2"	2"	2"	2"	2 1/2"
Make up water connection	BSP	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
Process Pump Flow	Lpm	130	200	240	380	400	500
Process Pump Pressure	bar	5.5	5.0	5.5	5.3	5.0	5.5
Process Pump Drive	Kw	2.2	4.0	4.0	5.0	5.5	7.5
Pump Amperage	A	7.7	7.7	7.9	11.0	11.0	14.4
Total connected load	Kw	7.50	10.00	14.00	21.00	26.00	35.00
Dimensions L x B x H	mm	800 x 1400 x 1200	950 x 1800 x 1400	1200 x 1900 x 1800	1300 x 3000 x 1800		
Unit Weight	Kg	350	450	600	800	900	1000
Water	ph	7.0					
Control Unit		PLC / Microprocessor					

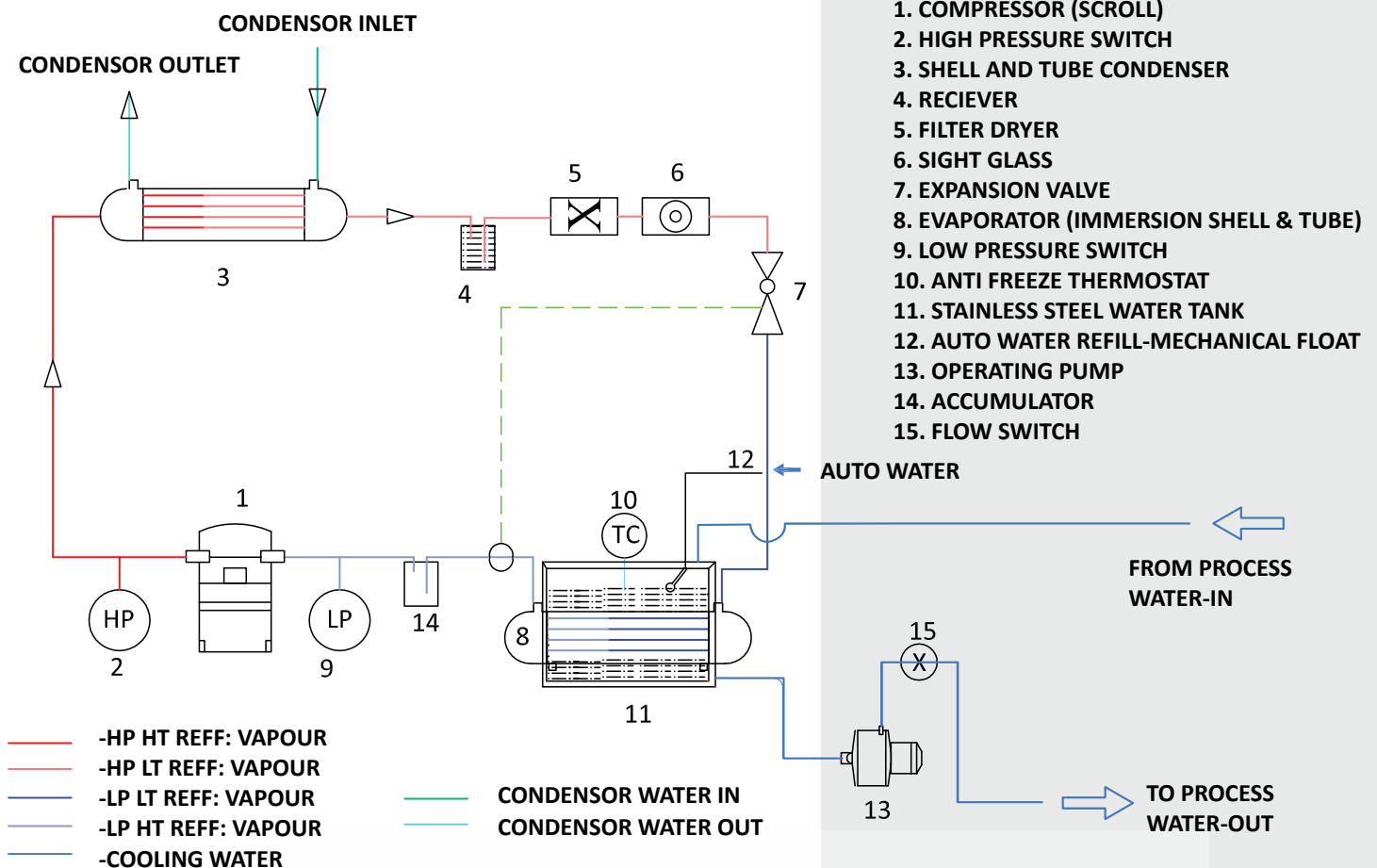
Selection Process

Water Cooled

Air Cooled

1. Adequate water supply available from tower or well source	1. Adequate water supply not available from tower or well sources.
2. Water supply is of good quality.	2. Water supply is not of good quality.
3. Heat recovery is not practical or unimportant.	3. Heat recovery is practical and important.
4. Plant ambient temperatures consistently exceed 95° F. / 35° C	4. Plant ambient temperatures will not consistently exceed 35° C.
5. Ambient air is polluted with large dust and dirt particles.	5. Ambient air is not polluted with large dust and dirt particles.

WATER COOLED CHILLERS



Features

- High Pressure & Low Pressure Trip
- High Voltage Trip & Low Voltage Trip
- Overload Trip for fan, processes pump
- Low Temperature Anti-Freeze Safety Thermostat
- Safety pressure switch for process pump
- Internal Over Load Trip for Compressor
- Glass with moisture indicator
- Single phase & phase reversal preventer, MCB for Fan Motor
- Manual By pass valve
- Energy efficient Shell & Tube with immersion type Evaporator

Indications

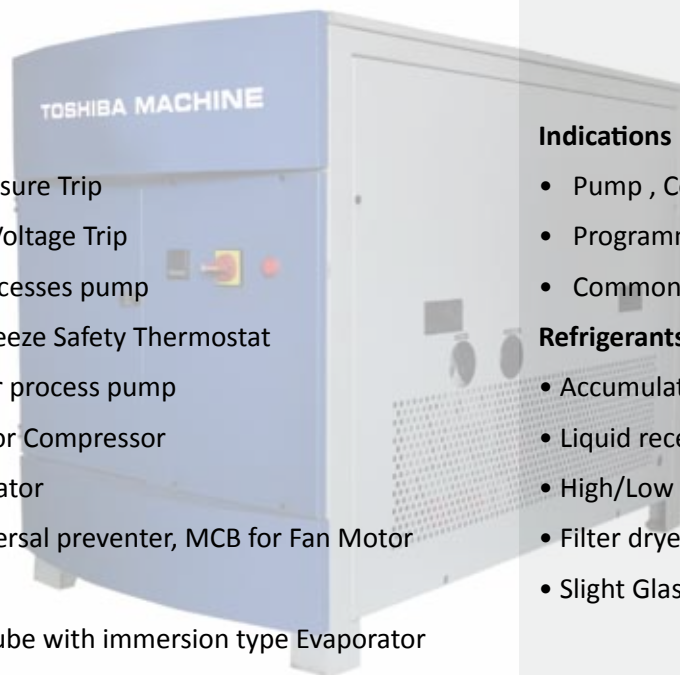
- Pump , Compressor, Condenser ON/OFF
- Programmable digital controller
- Common Light indication with Alarm

Refrigerants circuit add ons

- Accumulator
- Liquid receiver from 12.5 TR onwards
- High/Low pressure Gauges
- Filter dryer
- Slight Glass with Moisture Indicator

Method of Cooling

Internal circulation pump will circuit water through Shell and Tube Condensor and maintains water at required temperature inside the inbuilt SS tank. Separate process Pump will circulate water to the process and returned to the tank. Process pump, Internal circulation pump, Heat Exchanger etc... are housed in the chiller and controlled by PLC / Microprocessor.



SOLUTIONS

CHILLER-TECHNICAL SPECIFICATIONS							
	UNIT	LTWC-3.5	LTWC-5.0	LTWC-7.50	LTWC 12.5	LTWC 15.0	LTWC 20.0
Nominal Cooling Capacity	Kw	12.73	18.30	26.70	46.80	62.90	74.00
At Water Temperature	°C	+15°C					
Control Range	°C	+8°C to + 30°C					
Compressor Drive	Kw	3.68	5.30	7.80	13.65	18.20	22.90
Compressor Amps	A	8.30	9.60	15.70	28.0	35.70	41.40
Refrigerant	-	R-22 (R407C on request)					
Power supply	V	415 V,50Hz ,3 Phase+N					
Control voltage	V	24VDC					
Tank capacity	lts	75	100	150	300	300	400
Condensor Pump Flow	Lpm	50	80	100	150	200	240
Water Connection	BSP	1 1/2"	1 1/2"	2"	2 "	2"	2 1/2"
Make up water Connection	BSP	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
Process Pump Flow	Lpm	130	200	240	380	400	500
Process Pump Pres-sure	bar	5.5	5.0	5.5	5.3	5.0	5.5
Process Pump Drive	Kw	2.2	4.0	4.0	5.0	5.5	7.5
Pump Amps	A	7.7	7.9	7.9	11.0	11.0	14.4
Total connected load	Kw	7.00	9.50	12.50	19.00	24.00	30.00
Dimensions L x B x H	mm	800 x 1400 x 1200		950 x 1800 x 1400	1200 x 1900 x 1800		1300 x 3000 x 1800
Unit Weight	Kg	400	500	650	850	950	1500
Water	ph	7.0					
Control Unit		PLC / Microprocessor					
Note:		*CONDENSOR PUMP IS CUSTOMER SCOPE FOR WATER COOLED UNIT.					

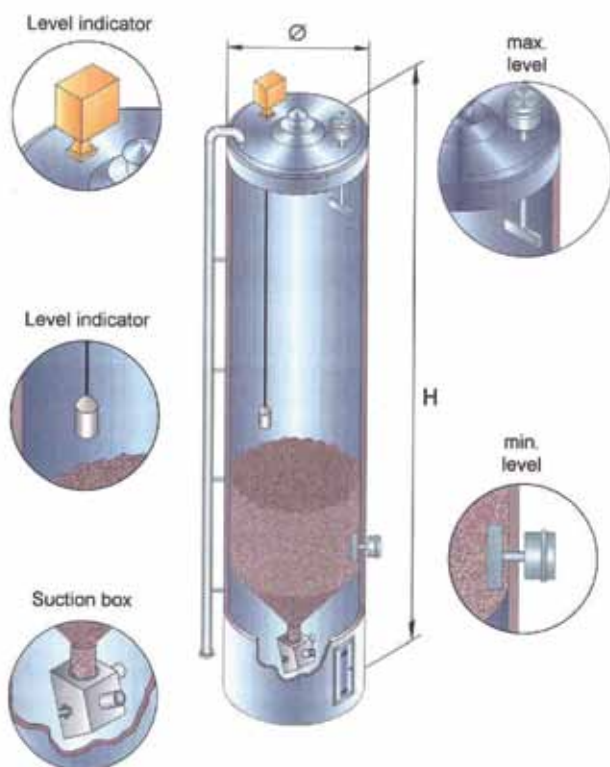
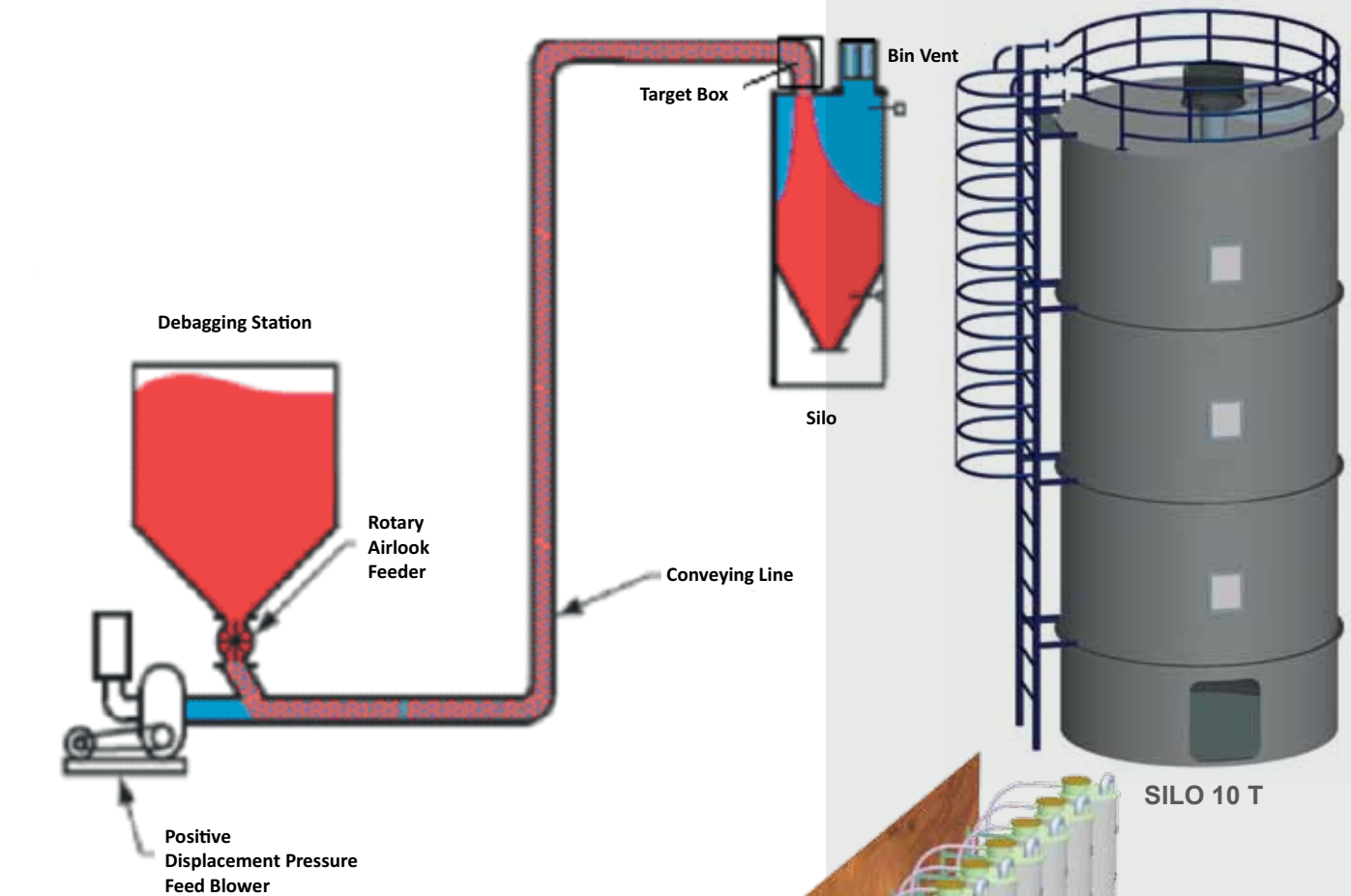
Air & Water Cooled Chillers

Product	Connected Load in kW	GAS Charging in KGS	Power Cable Specification sent with Unit (Sq.mm)	Standard length	Input MCB Rating required at Site Amps	Connection TO PRROCESS SIZE	Connection FROM PROCESS SIZE
LTAC 3.5	7.50	5.25	5 * 4	5 Meter Length standard for all units	32	1-1/2"	1-1/2"
LTWC 3.5	7.00	5.25	5 * 4		32	1-1/2"	1-1/2"
LTAC 5	10.00	7.50	5 * 4		32	1-1/2"	1-1/2"
LTWC 5	9.50	7.50	5 * 4		32	1-1/2"	1-1/2"
LTAC 7.5	14.00	11.25	5 * 10		63	2"	2"
LTWC 7.5	12.50	11.25	5 * 10		63	2"	2"
LTAC 12.5	21.00	18.75	5 * 16		63	2"	2"
LTWC 12.5	19.00	18.75	5 * 16		63	2"	2"
LTAC 15	26.00	22.50	5 * 16		63	2"	2"
LTWC 15	24.00	22.50	5 * 16		63	2"	2"
LTAC 20	35.00	30.00	5 * 16		100	2-1/2"	2-1/2"
LTWC 20	30.00	30.00	5 * 16		100	2-1/2"	2-1/2"

- Above details for our standard Chillers
- Cable Sizing, MPCB rating, Total connected load will vary based on the pump sizing
- Process pump is selected for standard 7 meter distance TO Process. Pump selection will vary depending on the flow rate , pressure requirement & distance

BULK MATERIAL

PRESSURE FEED SYSTEMS - 5 & 10 TONS / HOUR

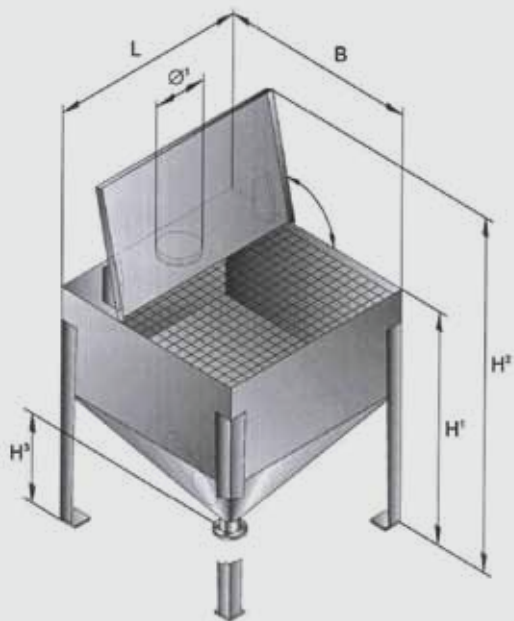


STORAGE SILOS

Volume in Tons	Weight (kg)	$\varnothing$ (mm)	H (mm)
05	1700	1900	4600
10	3500	2500	7000
15	5000	2800	7500
20	7000	2800	8400

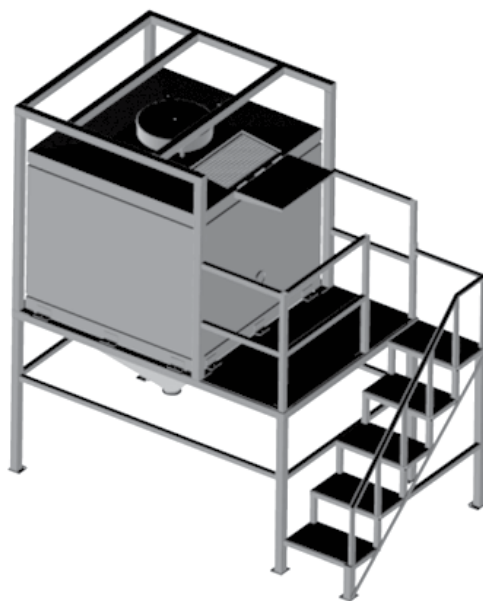
Taylor made sizes on request to suit site conditions

HANDLING SOLUTIONS



DEBAGGING STATION

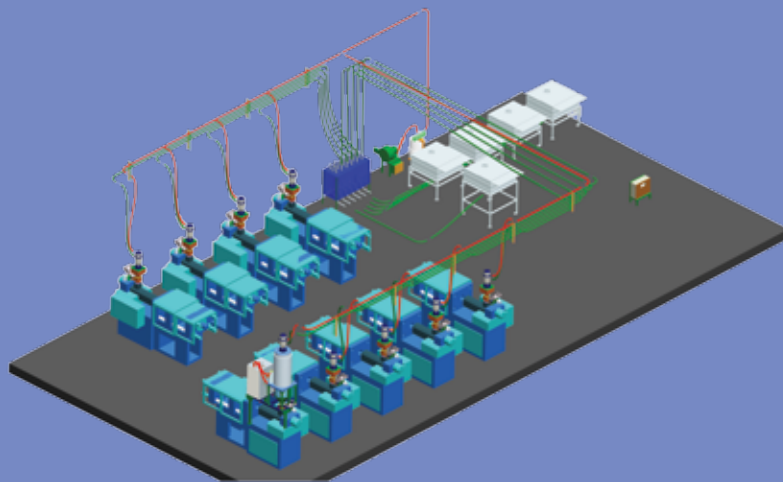
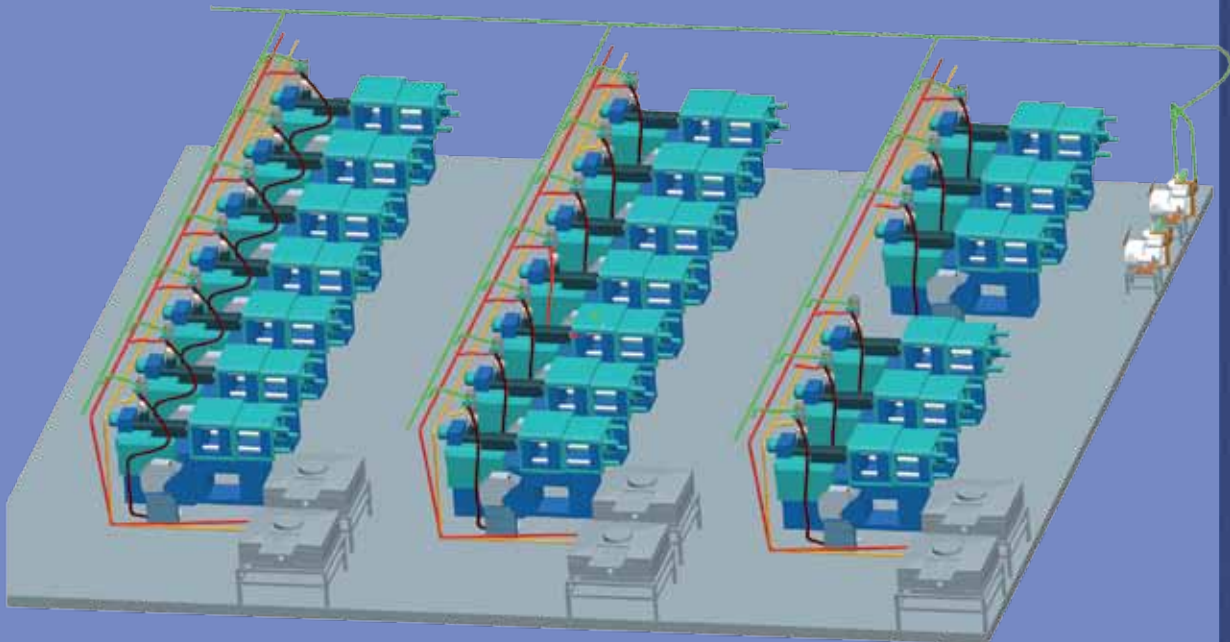
VOLUME	L	B	H1	H2	D1
500	1390	1700	1090	1900	200
1000	1390	1700	1480	1880	200
1500	1390	1700	1790	2150	200
2500	2800	1600	2790	-	500



DAY BINS

VOLUME	D1	D2	D3	H
120	605	65	100	1300
200	605	65	100	1470
300	900	65	100	1340
400	900	65	100	1470
500	900	100	100	1570





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