



FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

**FACTORY ACCEPTANCE TEST
FOR
CLOSED LOOP GRANULATION LINE 5 KG**

SUBMITTED TO

M/s.



FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

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QUALITY ASSURANCE DEPARTMENT

FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

APPROVAL SHEET

M/s.					
	Name	Department	Designation	Signature	Date
Prepared by		QA			
Checked by		QA			
Approved by		QA/QC			

M/s.					
	Name	Department	Designation	Signature	Date
Reviewed by					
Reviewed by					
Reviewed by					
Reviewed by					
Approved by					

REVISION HISTORY:

S.No.	REVISION	DATE	REVISION SUMMARY



FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

SYSTEM INFORMATION:

EQUIPMENT	CLOSED LOOP GRANULATION LINE 30 LTRS
MANUFACTURER	M/s.
CUSTOMER	M/s.
MODEL NUMBER	
SERIAL No.	
SITE	

INTRODUCTION & PURPOSE OF DOCUMENTS:

1.1 WE ARE LIFE ENGINEERS

We are an engineering solutions company working as an essential piece of massive life sciences ecosystem. By bringing together our customers, partners, industry leaders, regulators and governments, we effect greater impact and bring our mission to life.

Our purpose is reflected through our strategy, approach and objectives. We consciously evaluate our performance through a broader lens for creating value – economic benefits to our customers, environmental benefits for a greener planet and social benefits to people everywhere.

1.2 LET'S SAVE LIVES TOGETHER

Our start-to-finish engineering solutions help you accelerate growth and optimize costs. With every project we take on, irrespective of size, complexity, or geography, we commit resources, people, know-how and technology to deliver a successful outcome.

Our purpose is deeply rooted in our belief that all lives have equal value. Together with our customers and partners, we're building pharmaceutical and biotech capability, so everyone, wherever they are in the world has the same access to affordable life-saving medicines.

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OBJECTIVE:

Factory acceptance test is a comprehensive document providing all the details required for design and operational point of view. It thus ensures that proposed design of the equipment is suitable for its intended purpose & provides documented evidence that quality is built into the design of the equipment.



FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

This documentation will define the responsibilities, acceptance criteria, basis of design, technical specifications, list of major bought out parts, utility requirements, safety and c-GMP features.

M/s. has prepared kindly note, this text. The contents include detailed information & No part of it can be changed without our written approval.

SUMMARY:

- M/s.has received an order for the manufacture and supplies **CLOSED LOOP GRANULATION LINE 5 KG** to M/s. .vide their Purchase Order.
- FAT will enable to analyze **CLOSED LOOP GRANULATION LINE 5 KG** fitment it is assembled and trial point of view all accessories a.....re matching with reference Approved drawing.
- The team from M/s.and M/s.will jointly ensure execution, review and approval of protocol.

VERIFICATION:

- Factory Acceptance Test (FAT), undergo complete checkup **CLOSED LOOP GRANULATION LINE 30LTRS** from document verification through DQ, fitment through assembly and trial through utility mentioned in compliance with Approved GA drawing & P & ID.
M/s. assures M/s., that the machine is manufactured and tested as per URS and PO.
- M/s. assures M/s. by undergoing the above said document verification in DQ. Approved GA Drawing, Electrical Drawing, fitment and trial through this Factory Acceptance Test (FAT), will ensure M/s.that they are being given what they have offered in Offer Specification (OS) & Purchase Order (PO).



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INFORMATION FLOW & FEED BACK PROCESS:

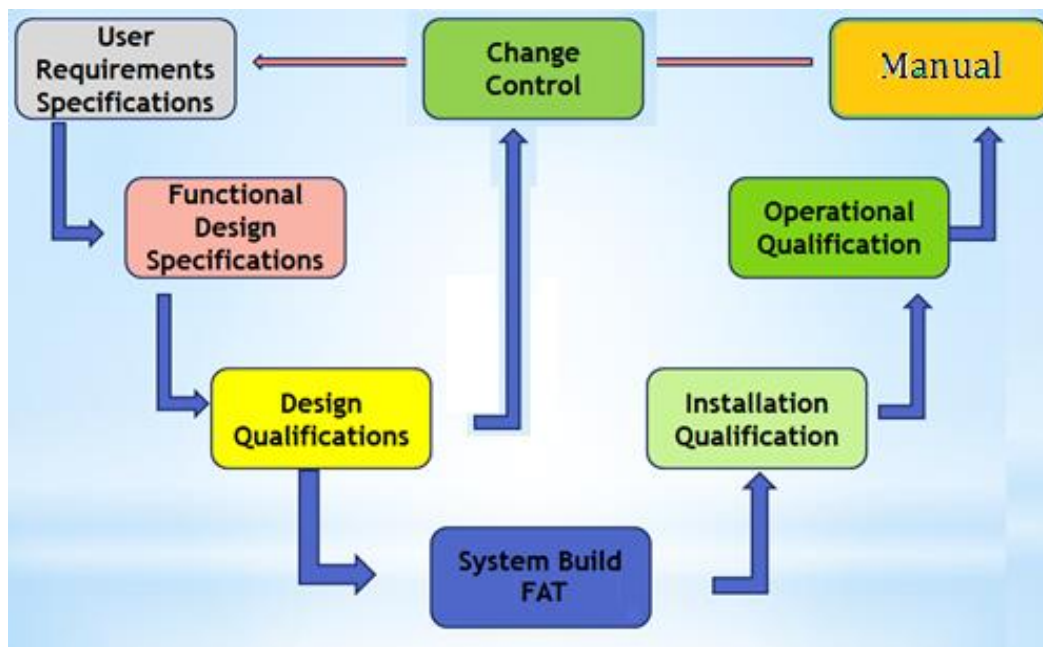
SCOPE

Successful completion of the FAT will allow the shipment procedure to commence and will provide a higher degree of assurance that the system will operate in the manufacturing environment as intended. Thus, the objectives of FAT can be enumerated as follows:

- To ensure the client gets what is specified and paid for.
- To begin execution process of validation plans.
- Assembly of documents as a standard package to demonstrate that the product is suitable for the given application.
- An early understanding of the required testing from the client will ensure that any change to this project will be made within minimum schedule or monetary impact.

The Factory Acceptance Test process verifies that:

- The equipment operates as specified in the URS/PO/DQ.
- Electrical rating will be as per requirements.
- The build quality is acceptable.
- The equipment includes the instrument and components as specified in the respective list.
- The equipment meets the requirement of the Approved drawing.



- The equipment has been constructed according to the design specification(DQ)

The documentation specified in the PO & DQ has been provided.

RESPONSIBILITIES:

Specific requirements regarding testing of this equipment are:



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1.3 CUSTOMER'S:

M/s.

- Approval of this protocol.
- Verified all challenge tests as per approved FAT protocol.
- Post approval of the after challenge tests.

1.4 MANUFACTURER'S:

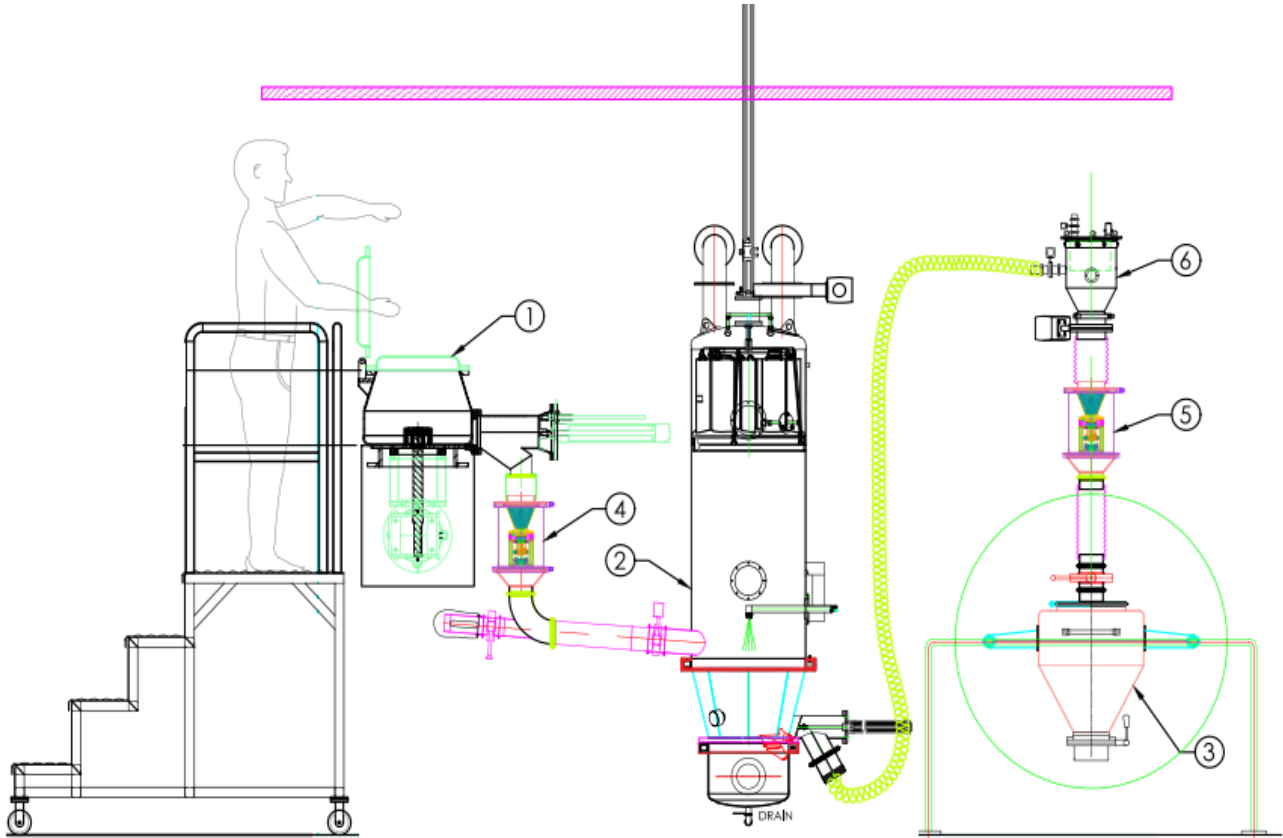
1.5 M/S.

- To prepare and review of the FAT Protocol.
- To manufacture and supply the equipment incorporating all the specifications as per purchase order.
- To assist client.
- To design, engineer and provide the complete technical details of the equipment pertaining to its design qualification viz.
- Machine overview.
- Equipment orientation with layout.
- Specification of the sub-components/ bought out items, their make, model, quantity.
- Backup records/brochures.
- Details of Utilities.
- Identification of components.
- Material of construction of component



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SCHEMATIC DIAGRAM:



1. Rapid mixer granulator
2. Fluid bed processor
3. Bin blender
4. Wet co- mill
5. Dry co- mill
6. Vacuum transfer system

SCHEMATIC DIAGRAM OF CLOSED LOOP GRANULATION LINE



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SYSTEM VERIFICATION

1.6 PHYSICAL VERIFICATION

Method	Description	Acceptance Criteria	Observation
Internal Surface finish Verification	Check internal surface of machine	-Mirror finish -No visible spot of welding.	Yes <input type="checkbox"/> No <input type="checkbox"/>
External Surface finish Verification	Check outer surface of machine	-Matt finish -No visible spot of welding.	Yes <input type="checkbox"/> No <input type="checkbox"/>
Document Verification	Verification of Wiring diagram	-As per wiring diagram attached in FAT.	Yes <input type="checkbox"/> No <input type="checkbox"/>
Document Verification	Verification of Input / Output connection	-As per Input/ Output List are Mention in PLC FDS	Yes <input type="checkbox"/> No <input type="checkbox"/>
Document Verification	Verification of MOC certificate	-MOC of all contact and component mentioned in DQ or test certificate from manufacturer /accredited test lab.	Yes <input type="checkbox"/> No <input type="checkbox"/>
Panel Positioning verification	Panel positioning	Control panel positioning is assessable and at standard visible height.	Yes <input type="checkbox"/> No <input type="checkbox"/>
Machine Dimension	Verification with machine	As per attached Layout drawing in FAT.	Yes <input type="checkbox"/> No <input type="checkbox"/>

1.7 DRAWING VERIFICATION:

S.No.	DRAWING NAME	DRAWING No.	REVISION
1.	G A Drawing		0.0
2.	Electrical Drawing		0.0
3.	P&ID		0.0

Checked By: _____

Reviewed By: _____



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COMPONENTS VERIFICATION OF CLOSED LOOP LINE:

Verification

Major components in GA drawing to be covered in component list any discrepancies and deviations are to be noted in deviations report.

Compliance

Major components mentioned below should comply in accordance with the approved GA Drawing.

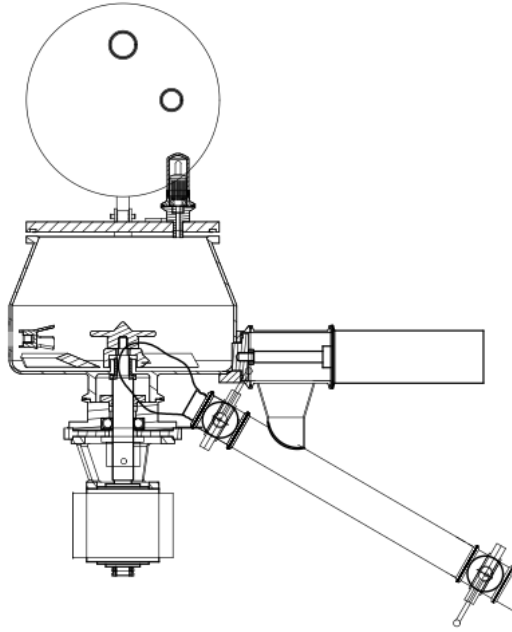
1.8 ELECTRICAL HARDWARE VERIFICATION

IPC	
Make	Advantech
Model	
Serial No.:	
Size	15 Inch Industrial PC
Capacity	8 GM RAM, 1 TB Hard disk
Quantity	1 No.
Location	Operating Panel
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
PLC	
Make	Mitsubishi electrical
Model	
Serial No.:	
Quantity	1 No.
Location	Control Panel
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
SCADA SOFTWARE	
Make	ZENON
Version	8.1
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	

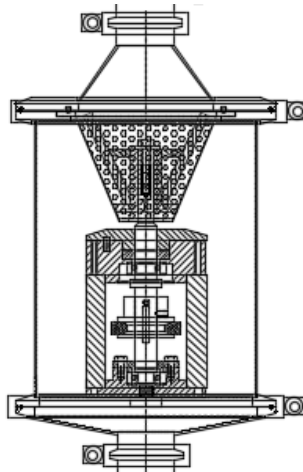


FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

RAPID MIXER GRANULATOR (RMG) 15 LTRS



SCHEMATIC DIAGRAM OF RAPID MIXER GRANULATOR



SCHEMATIC DIAGRAM OF WET CO MILL



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MAJOR COMPONENTS VERIFICATION OF RMG:

IMPELLER MOTOR	
Make	Hindustan electric motor
Serial No.:	
HP	3
Volt	415V± 10%
Speed	2880 RPM
Hz	50
Type	Foot mounted ,NONFLP
Quantity	1 No
Location	Inside structure
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
GEAR BOX	
Make	Bonfiglioli
Type	W 75 UF 1 D30 10 P90 B5 B3
Serial No.:	
Ratio	10:1
Quantity	1 No
Location	Inside structure
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
VFD1(FOR IMPELLER MOTOR)	
Make	Mitsubishi Electric
Model	
Serial No.:	
Quantity	1 No
Location	Control Panel
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
CHOPPER MOTOR	
Make	Hindustan electric motor
Serial No.:	
Voltage	415V± 10%
HP	0.5
Speed	2810 RPM
Type	Flanged type, FLP motor
Hz	50 Hz
Quantity	1 No
Location	Inside structure
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
VFD2(FOR CHOPPER MOTOR)	
Make	Mitsubishi Electric
Model	
Serial No.:	
Quantity	1 No



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Location	Control Panel
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
WET CO MILL MOTOR	
Make	Hindustan electric motor
Serial No.:	
Voltage	415V± 10%
HP	1
Speed	2845 RPM
Type	Flanged type, FLP motor
Hz	50 Hz
Quantity	1 No
Location	Inside structure
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
VFD3(FOR WET CO MILL MOTOR)	
Make	Mitsubishi Electric
Model	
Serial No.:	
Quantity	1 No
Location	Control Panel
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
PRESSURE REGULATOR	
Make	Festo
Model	LR-D-MINI
Part No.:	159625
Quantity	1 No.
Location	Pneumatic Panel
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
AIR FILTER REGULATOR WITH PRESSURE SWITCH	
Make	Festo
Model	AIR FILTER REGULATOR -MS6-LFR-3/8-D7-E-R-M-AS PRESSURE SWITCH- SPAN-P10R-R18M-PN-PN-L1
Part No.:	529228 , 8035547
Quantity	01 Nos.
Location	Pneumatic Panel (common for all)
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
PRESSURE SWITCH	
Make	Festo
Model	SPAN-P10R-R18M-PN-PN-L1
Part No.:	8035547
Quantity	01 No.
Location	Pneumatic Panel
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>



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Remark	
PNEUMATIC CYCLINDER	
Make	SMC
Quantity	01 No.
Location	At Discharge
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
VENT FILTER	
Make	Finix filter
MOC	SS 316
Pore size	0.5 Micron
Quantity	1 No.
Location	On RMG Vent
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
LID GASKET	
Make	JMT
MOC	Silicon food grade
Type	D-type
Quantity	1 no
Location	Lid
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
VIEW GLASS	
Make	Amafhh
size	Dia. 50 mm
MOC	Toughened
Thickness	8mm
Location	At top lid
Quantity	1 No
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
PROXY SENSOR	
Make	Pepperl + Fuchs
Model	NBB4-12GM50-E2
Supply	30 VDC
Quantity	1 No's
Location	Top lid
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
SIEVE	
Make	
MOC	SS 316 L
Size	Hole Dia 10 mm & 12 mm,
Quantity	Each 1 No
Location	Inside co-mill hopper
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>



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FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

Remark

Comments:

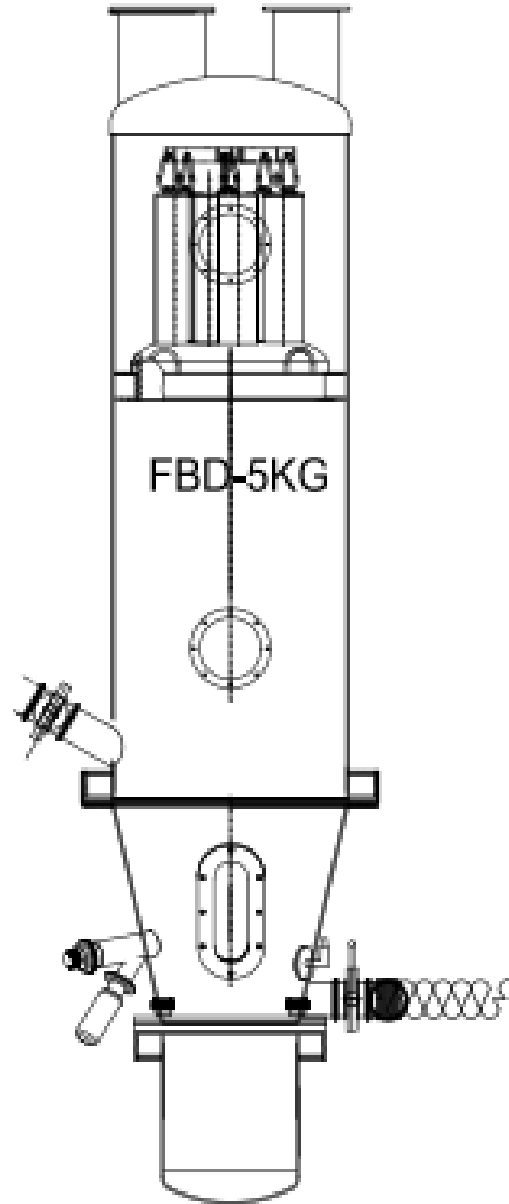
Checked By: _____

Signature & Date : _____



FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

FLUID BED DRYER 5KG



MAJOR COMPONENTS VERIFICATION OF FBD

EXHAUST BLOWER	
Make	Universal Air technologies
Serial No.:	UAT/500/16
Static	@ 16Inch
Air flow	@ 500 CFM
Type	Centrifugal
Quantity	1 No.
Location	At Exhaust
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>



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FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

Remark	
EXHAUST BLOWER MOTOR	
Make	Hindustan Motors
Serial No.:	80602504
Speed	2900 RPM
HP	5
Voltage	415 V
Frequency	50 HZ
Quantity	1 No
Location	At Service Floor
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
VDFOR BLOWER MOTOR	
Make	Mitsubishi electrical
Model	FR-D740-080-E16
Serial No.:	B1X25L042
Quantity	01 No.
Location	Control Panel
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
PROXY SENSOR	
Make	Pepperl + Fuchs
Model	NBB4-12GM50-E2
Quantity	01 No.
Location	At product container
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
RH SENSOR	
Make	Radix
Model	SC807
Type	NONFLP
Serial No.:	421030702
Range	0 – 100% RH
Permissible error	±2% Rh
Output	4-20 mA
Quantity	01 No.
Location	At Inlet Duct
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
PRODUCT TEMPERATURE SENSOR	
Make	Radix
Model	PT 100 3 Wire
Type	NONFLP
Serial No.:	221052630
Range	0-200°C
Quantity	01 No.
Location	At Product Container



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Verification	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Remark		
INLET TEMPERATURE SENSOR		
Make	Radix	
Model	PT 100 3 Wire	
Type	FLP	
Serial No.:	221035748	
Range	0 to 150°C	
Quantity	01 No.	
Location	At Inlet Ducts	
Verification	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Remark		
EXHAUST TEMPERATURE SENSOR		
Make	Radix	
Model	PT 100 3 Wire	
Type	FLP	
Serial No.:	221035747	
Range	0 to 150°C	
Quantity	01 No.	
Location	At Exhaust Ducts	
Verification	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Remark		
SOLID FLOW MONITOR		
Make	Micro art	
Type	FLP	
Serial No.:	MAT5670322	
Range	0-999.9mg/m ³	
Quantity	01 No.	
Location	Exhaust Duct	
Verification	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Remark		
PNEUMATIC CYLINDER – 1		
Make	Airmax	
Model	B-00039669-0322-9937	
Quantity	01 No	
Location	Top Of FBD (Bag up , down & shaking)	
Verification	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Remark		
PNEUMATIC CYLINDER -2		
Make	Festo	
Model	DSBC-32-100-PPVA- N3	
Quantity	01 No	
Location	Side bottom of FBE bowl	
Verification	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Remark		
INLET PNEUMATIC BUTTERFLY VALVE		
Make	Aira	



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Model	ARA-DD-63D		
Serial No.	A-630419387		
Size	4"		
Quantity	01 No.		
Location	Inlet of FBD		
Verification	Yes <input type="checkbox"/>	No	<input type="checkbox"/>
Remark			
EXHAUST PNEUMATIC BUTTERFLY VALVE			
Make	Aira		
Model	ARA-DD-63D		
Serial No.	A-630419380		
Size	4"		
Quantity	01 No.		
Location	Exhaust of FBD		
Verification	Yes <input type="checkbox"/>	No	<input type="checkbox"/>
Remark			
PNEUMATIC BUTTERFLY VALVE (for material charging)			
Make	Aira		
Size	3"		
Model no	ARA- 49-D		
Serial no	A-490222328		
Quantity	01 No.		
Location	At material charging port		
Verification	Yes <input type="checkbox"/>	No	<input type="checkbox"/>
Remark			
MAGNEHELIC GAUGES (Differential Pressure transmitter)			
Make	Dwyer		
Model No.	2000-250 Pa		
Range	0-250 Pa		
Quantity	02Nos		
Location	On service plenum		
Verification	Yes <input type="checkbox"/>	No	<input type="checkbox"/>
Remark			
INLET AHU (FOR FBD)			
Make	Damcon		
Quantity	01 No		
Location	Service Floor		
Verification	Yes <input type="checkbox"/>	No	<input type="checkbox"/>
Remark			
MAGNEHELIC GAUGES			
Make	Dwyer		
Model No.	2000-50mm		
Range	0-50 & 0-100mm of Water		
Quantity	03No's.		
Location	Inlet AHU & polish filter		
Verification	Yes <input type="checkbox"/>	No	<input type="checkbox"/>
Remark			



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STEAM COIL	
Make	Damcon
Size	12"X12"X6 row
Location	Inside Inlet AHU
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
PRE FILTER	
Make	Fine Airsys
Grade	10 MICRON
Efficiency	90% down to 10 micron
Serial No	R 27369
Quantity	01 No.
Location	Inlet AHU
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
FINE FILTER	
Make	Fine Airsys
Grade	3 MICRON
Serial No	R 37375
Efficiency	99% down to 3 micron
Quantity	01 No.
Location	Inlet AHU
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
HEPA FILTER	
Make	Fine Airsys
Grade	0.3 MICRON
Serial No	H 5771
Efficiency	99.99% down to 0.3 micron
Quantity	01 No.
Location	Inlet AHU
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
POLICE FILTER	
Make	Fine Airsys
Grade	0.3 MICRON
Serial No	H 5599
Efficiency	99.99% down to 0.3 micron
Quantity	01 No.
Location	At exhaust
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
FINGER BAG	
Make	Siddhi filter media
Pore size	5Microns
MOC	Anti-static polyester
Location	Inside expansion chamber



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Verification	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Remark		
INFLATABLE GASKET		
Make	Vijay Rubber	
Type	Silicone food grade	
Quantity	03 No's.	
Location	Bottom chamber, Expansion chamber & Finger bag ring	
Verification	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Remark		
WIP SPRAY BALL		
Make	JET SPRAY	
Model No	JRSB 014 020 TR	
MOC	SS 316 L	
Rotation	360°	
Quantity	03 No's.	
Location	Bottom chamber, Retarding Chamber Middle , Above finger bag	
Verification	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Remark		
VIEW GLASS		
Make	Amafhh	
Shape	Circular and Elliptical	
MOC	Toughened glass	
Thickness	8mm	
Quantity	03 No's.	
Location	Product container 01Nos & Expansion Chamber 02Nos	
Verification	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Remark		
EXPLOSION LIMIT SWITCH		
Make	Honeywell	
Model	SZL-WL-K-A01H	
Quantity	01 No.	
location	Top of expansion chamber	
Verification	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Remark		
PRESSURE SWITCH		
Make	Festo	
Model	SPAN-P10R-R18M-PN-PN-L1	
Part No.:	8035547	
Quantity	03 Nos.	
Location	Pneumatic Panel	
Verification	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Remark		
PRESSURE REGULATOR		
Make	Festo	
Model	LR-D-MINI	
Part No.:	159625	
Quantity	03Nos.	



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Location	Pneumatic Panel	
Verification	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Remark		

Comments:

Checked By: _____

Signature & Date : _____

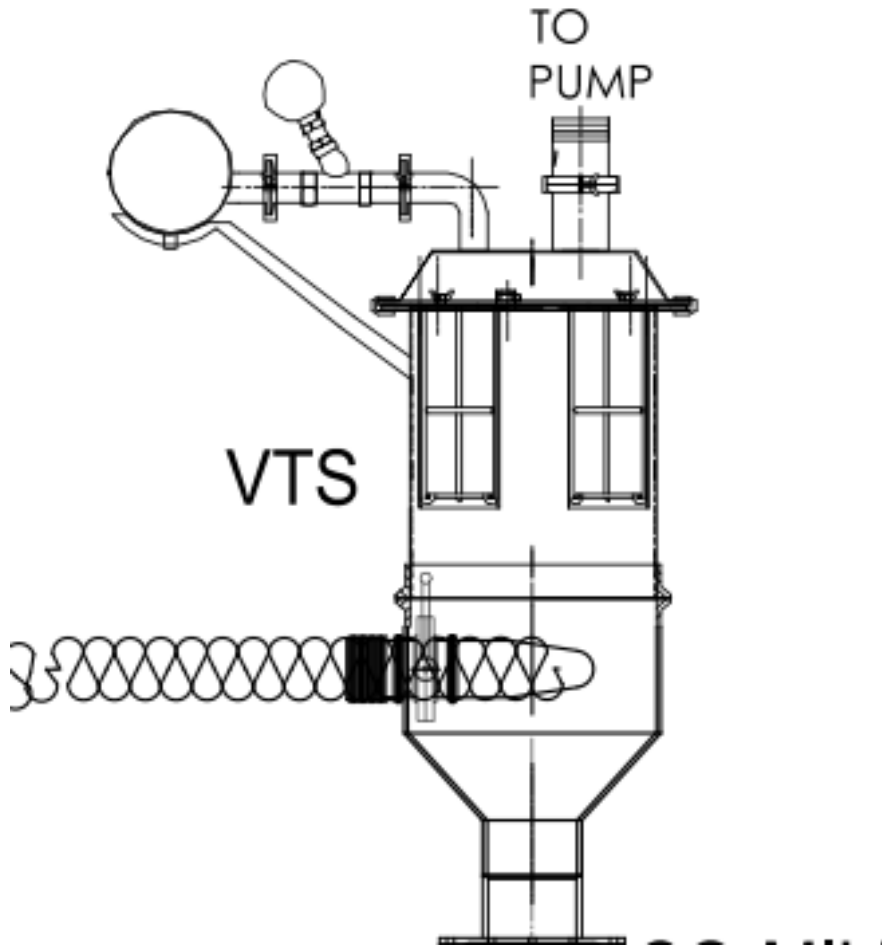


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FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

VACUUM TRANSFER SYSTEM (VTS) 100 KG/HR



SCHEMATIC DIAGRAM OF VTS



FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

MAJOR COMPONENTS VERIFICATION OF VTS 100 KG/HR:

PNEUMATIC ATUATED BUTTERFLY VALVE	
Make	Vispa
Model	VA060DA
Serial No.:	202100658
Size	4"
Quantity	1 no.
Location	At discharge
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
PNEUMATIC ATUATED BUTTERFLY VALVE	
Make	Aira
Model	ARA-50-D
Serial No.:	A-501119139
Size	2"
Quantity	1 no.
Location	At inlet (suction)
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
PNEUMATIC ATUATED BUTTERFLY VALVE	
Make	Vispa
Model	VA040DA
Serial No.:	202100158
Size	1"
Quantity	1 no.
Location	For vent filter
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
PNEUMATIC ATUATED BUTTERFLY VALVE	
Make	Vispa
Model	VA040DA
Serial No.:	202100193
Size	2"
Quantity	1 no.
Location	For vacuum
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	



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FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

VACCUM PUMP	
Make	Kebivak
Model	KBRB-D-135
Sr. No.	210893
HP	5
Speed	2880 RPM
Quantity	1 No
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	

PRESSURE GUAGE	
Make	RADIX
Serial No.:	620016561
Range	0 to 10 kg/cm ²
Quantity	1 No
Location	On vacuum pump
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	

GASKET	
Make	JMT rubber
MOC	Silicon food grade
Quantity	1 no.
Location	At the top of VTS
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	

Comments:

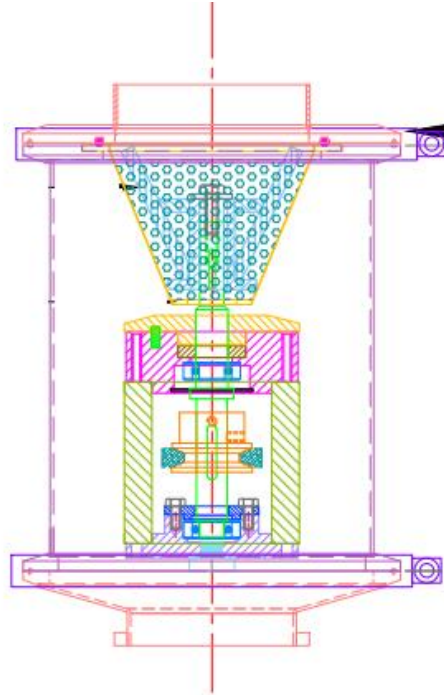
Checked By: _____

Signature & Date: _____



FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

DRY CO-MILL



SCHEMATIC DIAGRAM OF DRY CO –MILL



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FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

MAJOR COMPONENTS VERIFICATION OF DRY CO-MILL:

VFD	
Make	Mitsubishi electrical
Model No.	FR-D740-022-E16
Serial No.:	B1922F007
Quantity	1 No
Location	Control Panel
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
MOTOR	
Make	Hindustan Electric Motors
Serial No.:	20426715
Type	NONFLP
HP	1
Speed	2845 rpm
Voltage	415±10% V
Frequency	50 ± 5% Hz
Quantity	01 No.
Location	Inside structure
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
SIEVE	
Make	
MOC	SS 316 L
Size	3.0 mm & 1.5 mm Hole Dia.
Quantity	Each 01 No.
Location	Inside co mill
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	

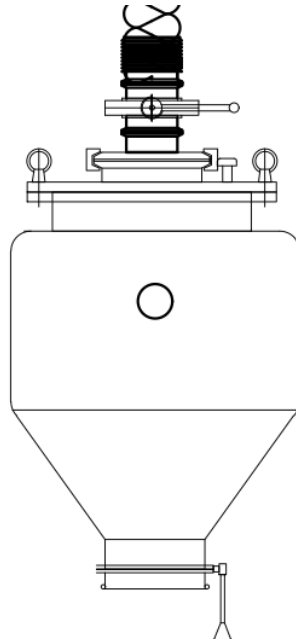
Comments:

Checked By: _____ Signature & Date: _____



FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

BLENDER BIN 15 L



SCHEMATIC DIAGRAM OF BLENDER BIN

MAJOR COMPONENTS VERIFICATION OF BLENDER

MOTOR	
Make	Hindustan Electric Motors
Serial No.:	20446944
Speed	1415 RPM
HP	1
Type	FLAMEPROOF
Voltage	415 V \pm 10 %
Quantity	01 No.
Location	Inside drive unit
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
VFD	
Make	Mitsubishi electrical
Model	FR-D740-022-E16
Serial No	B1922F001
Location	Control panel
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
GEARBOX	
Make	Bonfiglioli
Type	W63 UF1 38 P90 B5 B3
Serial No.:	21000001080110001
Ratio	38:1



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FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

Quantity	01 No.
Location	Inside drive unit
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
PROXY SENSOR	
Make	Pepperl + Fuchs
Model	NBB4-12GM50-E2
Quantity	1 No
Location	For home positioning
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
VENT FILTER	
Make	Finix filter
MOC	SS 316
Filter size	0.5 Micron
Quantity	1No.
Location	At top of IPC bin
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	
MANUAL BUTTERFLY VALVE	
Make	Das engineering
MOC	SS 316
Quantity	01 Nos.
Size	4"
Location	At bin outlet
Verification	Yes <input type="checkbox"/> No <input type="checkbox"/>
Remark	

Comments:

Checked By: _____

Signature & Date: _____



FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

MATERIAL OF CONSTRUCTION CERTIFICATE VERIFICATION

- This is to prove that the materials used for construction of components are as per the DQ Specification / Approved Drawing.
- The Vendor shall present certificates for the parts listed.
- The submitted certificates shall be checked for correct material usage against the details submitted in the DQ / Approved Drawing form by the vendor.

1.9 RMG 15 L

S.No.	COMPONENTS	SPECIFIED	COMPLIES Y/N
1.	RMG Bowl Shell, Cone	SS 316L, 5 mm thickness.	
2.	RMG Bowl bottom dish	SS 316L, 8 mm thickness	
3.	Impeller Blade	SS 316L, 12 mm thickness	
4.	Chopper Blade	SS 316L, 3 mm thickness	
5.	Co mill Charging Port	SS 316L , 1.6 mm thick	
6.	Co mill Hopper	SS 316L , 2 mm thick	
7.	Blades	SS 316L , 5 mm thick	

1.10 FBD

S.No.	COMPONENTS	SPECIFIED	COMPLIES Y/N
1.	Bottom Chamber	SS 316 L , 3 mm thick sheet	
2.	Product Container	SS 316 L , 3 mm thick sheet	
3.	Expansion Chamber	SS 316 L , 3 mm thick sheet	

1.11 VTS 100 KG/HR

S.No.	COMPONENTS	SPECIFIED	COMPLIES Y/N
1.	Main Body	SS 316L, 2 mm thick sheet	
2.	Top Dish	SS 316L, 2 mm thick sheet	

1.12 BLENDER BIN 15L,

S.No	COMPONENT	SPECIFIED	COMPLIES Y/N
1.	IPC BIN	SS 316L, 3 mm thick sheet	

1.13 DRY CO-MILL

S.No.	COMPONENTS	SPECIFIED	COMPLIES Y/N
2.	Co mill Hopper	SS 316L, 2 mm thick	
3.	Sieve	SS 316L, 1 mm thick	

Checked By: _____

Signature & Date: _____



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FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

EQUIPMENT DIMENSION VERIFICATION:

Verification

Refer the approved drawing and compare with the actual dimensions on the equipment. Re-check whether the drawing clearly specifies the manufacturing standards adopted.

Compliance

Deviations in the measured dimensions, if any, should be within acceptable limits.

Drawing No.:			Rev :
S.No.	Description	Dimension Observed	Comply Yes / No
1.	Overall Dimension		

Comments:

Checked By: _____

Signature & Date: _____

EQUIPMENT SURFACE FINISH VERIFICATION:

Verification:

Contact parts and Non-Contact parts finish as mentioned in Approved GA Drawing to be checked with Roughness Testing Machine (RA Meter). Visually check the overall finish.

Compliance:

Contact parts and Non-Contact parts finish should comply with Approved GA Drawing.



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FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

1.14 RAPID MIXER GRANULATOR:

Description of Item	Finish Required as per Approved GA Drawing		Finish Achieved as per Approved GA Drawing		Pass/Fail
	Area	Finish	Area	Finish	
Bowl	Internal	240 Grit Mirror Finish (RA \leq 0.4 μ m)	Internal		
	External	240 Grit Matt Finish (RA \leq 0.6 μ m)	External		
Wet Co mill	Internal	240 Grit Mirror Finish (RA \leq 0.4 μ m)	Internal		
	External	240 Grit Matt Finish (RA \leq 0.6 μ m)	External		

1.15 FLUID BED DRYER:

Description of Item	Finish Required as per Approved GA Drawing		Finish Achieved as per Approved GA Drawing		Pass/Fail
	Area	Finish	Area	Finish	
Bottom Chamber	Internal	240 Grit Mirror Finish (RA \leq 0.4 μ m)	Internal		
	External	240 Grit Matt Finish (RA \leq 0.6 μ m)	External		
Expansion chamber	Internal	240 Grit Mirror Finish (RA \leq 0.4 μ m)	Internal		
	External	240 Grit Matt Finish (RA \leq 0.6 μ m)	External		
Product Container	Internal	240 Grit Mirror Finish (RA \leq 0.4 μ m)	Internal		
	External	240 Grit Matt Finish (RA \leq 0.6 μ m)	External		

1.16 VTS:

Description of Item	Finish Required as per Approved GA Drawing		Finish Achieved as per Approved GA Drawing		Pass/Fail
	Area	Finish	Area	Finish	
Hopper	Internal	240 Grit Mirror Finish (RA \leq 0.4 μ m)	Internal		
	External	240 Grit Matt Finish (RA \leq 0.6 μ m)	External		



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FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

1.17 BLENDER BIN 15:

Description of Item	Finish Required as per Approved GA Drawing		Finish Achieved as per Approved GA Drawing		Pass/Fail
	Area	Finish	Area	Finish	
Blender Bin	Internal	240 Grit Mirror Finish (RA $\leq 0.4 \mu\text{m}$)	Internal		
	External	240 Grit Matt Finish (RA $\leq 0.6 \mu\text{m}$)	External		

1.18 DRY COMILL:

Description of Item	Finish Required as per Approved GA Drawing		Finish Achieved as per Approved GA Drawing		Pass/Fail
	Area	Finish	Area	Finish	
Dry Co mill	Internal	240 Grit Mirror Finish (RA $\leq 0.4 \mu\text{m}$)	Internal		
	External	240 Grit Matt Finish (RA $\leq 0.6 \mu\text{m}$)	External		

Comments:

Reviewed By: _____

Signature & Date: _____

FUNCTIONAL VERIFICATION OF RMG:

- IMPELLER MOTOR

NO LOAD TRIAL: - Acceptance Criteria: Motor should not be exceeding the rated ampere.

S.No.	Load (Kg)	Current (Amp)			RPM
		R	Y	B	
1.	N.A.				



FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

• **CHOPPER MOTOR**

NO LOAD TRIAL: -Acceptance Criteria: Motor should not be exceeding the rated ampere.

S.No.	Load (Kg)	Current (Amp)			RPM
		R	Y	B	
1	N.A.				

• **WET CO-MILL MOTOR**

NO LOAD TRIAL: - Acceptance Criteria: Motor should not be exceeding the rated ampere.

CO-MILL MOTOR					
S.No.	Load (Kg)	Current (Amp)			RPM
		R	Y	B	
1.	N.A.				

Checked By: _____

Signature & Date: _____

FUNCTIONAL VERIFICATION OF FBE:

• **MOTOR BLOWER**

OBJECTIVE: To measure and verify that the Exhaust Motor is as per the standard / design parameters

REFERENCES & TOOLS REQUIRED: Digital Clamp Meter,

TEST PROCEDURE: Verify the motor voltage, current drawn and direction of rotation by physically measuring the value in the actual equipment and record the actual results in the table below. A Minimum of three observations to be made.

Acceptance criteria: The observations made for different parameters should meet the specification.



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FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

NO LOAD TRIAL:-

S.No.	Load (Kg)	Current (Amp)			RPM
		R	Y	B	
1.	N.A.				

Reviewed By: _____

Signature & Date: _____

S.No.	Function	Verification	Comply Y/N
1.	Exhaust Blower working	Check the performance of blower	
2.	Inlet and Exhaust Valve Operation	Pneumatic Operated On/OFF type	
3.	Product temp. sensor	Product temp. sensor working	
4.	Temp. sensor working	Check the working of temp. sensor	
5.	Pneumatic cylinder working	Check the working of Pneumatic cylinder	
6.	Alarms & interlocks	Verify the alarm & interlock	
7.	SFM Sensor	SFM sensor trip	

Checked By: _____

Signature & Date: _____

FUNCTIONAL VERIFICATION OF VTS:

• **VTS MOTOR**

NO LOAD TRIAL: - Acceptance Criteria: Motor should not be exceeding the rated ampere.

VTS MOTOR					
S.No.	Load (Kg)	Current (Amp)			RPM
		R	Y	B	
1.	N.A.				

Checked By: _____

Signature & Date : _____



FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

FUNCTIONAL VERIFICATION OF CONTA BLENDER:

OBJECTIVE: To measure and verify that the Motor is as per the standard / design parameters

REFERENCES & TOOLS REQUIRED: Digital Clamp Meter, Tachometer

TEST PROCEDURE: Verify the motor voltage, current drawn and direction of rotation by physically measuring the value in the actual equipment and record the actual results in the table below. A Minimum of three observations to be made.

Acceptance criteria:

- The observations made for different parameters should meet the specification.

- **NO LOAD TRIAL: -**

S.No.	Load (Kg)	Current (Amp)			Blending RPM
		R	Y	B	
1.					

- **BLENDING OPERATION**

S.No.	Function	Verification	Comply Y/N
1.	Blending operation	Smooth blending operation	

Checked By: _____

Signature & Date: _____

FUNCTIONAL VERIFICATION OF DRY COMILL HP:

- **DRY CO-MILL MOTOR**

NO LOAD TRIAL: -Acceptance Criteria: Motor should not be exceeding the rated ampere.

DRY CO-MILL MOTOR					
S.No.	Load (Kg)	Current (Amp)			RPM
		R	Y	B	

Checked By: _____

Signature & Date: _____



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FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

COMPONENT CERTIFICATE VERIFICATION:

S.No.	COMPONENT	CERTIFICATE AVAILABLE (YES / NO)
1.	MOC Parts	
2.	Motors	
3.	Gearbox	
4.	Blower	
5.	HMI,PLC,VFD	
6.	Sensors	
7.	Filters	
8.	Pneumatic Butterfly Valves	
9.	Gaskets	
10.	Pneumatic Cylinder	

Comments:

Checked By: _____

Signature & Date: _____

CLEANING VERIFICATION:

Verification

Internal surfaces can be easily reached and washed and also confirms ease of cleaning external surfaces.

Compliance

Confirm that all internal and necessary external surfaces can be reached cleaned following the SOP.

ACCEPTANCE CRITERIA	COMPLIES YES / NO
All internal surfaces can be reached easily for operation and cleaning	
All external surfaces can be reached for operation and cleaning	

Comments:

Checked By: _____

Signature & Date: _____



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FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

POST FAT APPROVAL

S.No.	ACCEPTANCE CRITERIA	REMARKS (YES/NO)
1.	Visual Inspection and Fitment check carried out and found satisfactory.	
2.	MOC & Bought Out Item Verified and found satisfactory.	
3.	Deviations noted are compiled and CLOSED LOOP GRANULATION LINE 5 KG can be dispatched.	

Remark:

--

M/s.

	Name	Department	Designation	Signature	Date
Reviewed by					
Reviewed by					
Reviewed by					

ABBREVIATIONS

ABBREVIATIONS	FULL FORM
AISI	American Iron & Steel Institute
CFM	Cubic Feet Per Minute
cGMP	Current Good Manufacturing Practices
DQ	Design Qualification
FAT	Factory Acceptance test
FDS	Functional Design Specification
FLP	Flame Proof
GA	General Assembly
GEP	Good Engineering practices
IPC	Human Machine Interface
IQ	Installation Qualification
MCB	Miniature Circuit Breaker
MOC	Material of Construction



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FACTORY ACCEPTANCE TEST FOR CLOSED LOOP GRANULATION LINE

MS	Mild Steel
MS	Mild Steel
OA	Order Acknowledgement
OQ	Operational Qualification
P & ID	Process & Instrumentation Diagram
PLC	Programmable Logic Controller
PO	Purchase Order
QA	Quality Assurance
QC	Quality Control
RH	Relative Humidity
SAT	Site Acceptance Test
SOP	Standard Operating Procedure
SS	Stainless Steel
TC	Tri-clover
URS	User Requirement Specifications
VFD	Variable Frequency Drive
WIP	Wash-in-Place