



DESIGN QUALIFICATION PROTOCOL FOR FILTER DRYING BOOTH

CUSTOMER:

EQUIPMENT: FILTER DRYING BOOTH

SUBMITTED BY:

PHARMA ENGINEERS

PLOT NO. 113/A/1, LANE 8, PHASE II,
IDA CHERLAPALLI, HYDERABAD- 500051.

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DESIGN QUALIFICATION PROTOCOL APPROVAL

This document is prepared by the documentation team of **M/S. PHARMA ENGINEERS** for

EQUIPMENT : FILTER DRYING BOOTH (FDB-01)

PLANT /PROJECT :

CLIENT :

Hence this document before being effective shall be approved by **Client / Customer**

M/s. PHARMA ENGINEERS:

	Name	Designation	Signature	Date
Prepared By				
Reviewed By				

CLIENT / CUSTOMER:

	Name	Designation	Signature	Date
Reviewed By				
Approved By				

Client:

Supplier/ Manufacturer: PHARMA ENGINEERS, HYDERABAD

Equipment: FILTER DRYING BOOTH

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DESIGN QUALIFICATION (DQ)

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1. OBJECTIVE

The objective of this document is to comply with **URS** Document Number:
_____ pertaining to design specification of Filter Drying
Booth (FDB-01).

2. SCOPE

Design Specifications of Filter Drying Booth Comprising of the following main
Equipments.

- Material of Construction
- Blower Motor Assembly
- Filter drying station
- Heating Coil
- Manifold
- Control Panel



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3. RESPONSIBILITIES

M/s. Pharma Engineers:

1. Shall agree and follow the URS.
2. To Prepare the detailed engineering drawings.
3. To submit the technical details of equipment as per the scope of supply.
4. To ensure safe delivery of equipment
5. To Complete the equipment qualification.



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4. EQUIPMENT DESCRIPTION

Filter Dryer is designed for isolating the water particles from the filter. Filter dryer is of recirculating / once through type made from double skin panels filled with PUF insulation and assembled as a close box with Aluminum extruded profiles. Filter Dryer is provided with drain tray for collection of water droplets.

Access doors are provided for each section and door locks are provided with gasket, to avoid leakages from the doors.

Manual/Motorized volume control dampers shall be at fresh air, return air and exhaust air.

Filters which are placed inside the Filter Drying Station undergo three phases as stated below.

In the first phase (once through mode), the fresh air damper and exhaust air dampers will open, recirculation/return damper will close. During this phase, air is exhausted from the system with continuous blow of hot air over the filter for certain period which is pre-defined.

In the second phase (recirculation mode), the fresh air damper and exhaust air dampers will close, recirculation/return damper will open. During this phase, air is recirculated with in the system to remove excess moisture in the filter for certain period which is pre-defined.

In the final phase (Exhaust mode), the fresh air damper and exhaust air dampers will open, recirculation/return damper will close. During this phase, air is exhausted from the system the cool the filters for certain period which is pre-defined.

After the process, filters can be removed from the system for reuse.

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5. SYSTEM ARCHITECTURE

Any one type of filters can be dried in the filter drying booth, details are as follows.

SR.NO	FILTER SIZE	QTY
1.	610x610x305	6 No's
2.	610x610x150	12 No's
3.	610x610x50	18 No's
4.	610x305x305	12 No's
5.	610x305x150	24 No's
6.	610x305x50	36 No's

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DESIGN QUALIFICATION (DQ)**6. TECHNICAL SPECIFICATIONS:**

NOMENCLATURE:	
Equipment TAG Number	FDB-01
Manufacturers name	M/s Pharma Engineers
Qty	01 No.
Type of Heating	Hot Water @ 50° C ; Steam NMT 0.75 bar
CONSTRUCTION DETAILS:	
Overall dimensions (L X W X H) (MM)	2870x2105x1700
Type	Double Skin panels
Plenums Outer skin(MM)	0.6 mm PP GS sheet.
Plenums Inner skin(MM)	0.6 mm PP GS sheet.
Panel thickness(MM)	43±0.5 mm
M.O.C of Frame work	Aluminum Extruded Profile
M.O.C of Base of the unit	14G G.S Sheet Plain
BLOWER DETAILS	
Make	EBM PAPST INDIA PRIVATE LIMITED
Model	D4E 180-CA02-02
Power	405 W, 1 Ø, 50 Hz
R.P.M	1200 RPM
Qty	6 No
FILTRATION SCHEME WITH IN EQUIPMENT	
FILTRATION DETAILS	
Make	AAF
Type of filter	COMBINATION FILTER
Test method	EN 779
Filter classification as per EN 779	G-4 +F-7
Average efficiency	$90 \leq Am + 80 \leq Em < 90$
Media MOC	Synthetic
Washable compatibility	Yes
Equivalent particle size in terms of market language	10 micron + 3 micron (un authenticated data)
Size	610 x 610 x 355.
Qty	1 no's
Size	610 x 305 x 355
Qty	1 no's
HOT WATER COIL	
Manufacturers name	M/s Hyderabad Coils Pvt. Ltd
Quantity	1 No.
Fluid	Hot water
Coil size (fin ht. x fin Length)	48 " x 72 "

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No. of Rows	2
Tube MOC	Copper
Tube Diameter	1/2"
Fins MOC	Aluminum
DETAILS OF VOLUME CONTROL DAMPERS	
Make	Pharma Engineers / Srivin Air Tech / System air
MOC	Aluminum extruded aero foil design
Fresh Air Damper Size	865 x 550
Qty	1 no's
Recirculation / Return Air Damper Size	700 x 500
Qty	1 no's.
Exhaust air Damper Size	700 x 500
Qty	1 no's.
ACTUATORS FOR DAMPERS	
Make	M/S. Belimo
Model	NFA-S2
Qty	3 No's
Power supply	AC 24V 50Hz
Location	Return Air Duct, Exhaust Air Duct, Fresh Air Duct
HOT WATER CONTROL VALVE WITH ACTUATOR	
Make	Siemens
Model Number	
Actuator Model Number	
Size	32 mm
Qty	1no.
BALL VALVES	
Make	L&T
Size	32 mm
Qty	1 Nos.
STRAINER	
Make	Creative / Zoloto
Size	32 mm
Qty	1No.
PID CONTROLLER	
Make	Honey well
Model	DC 1010
Input	4-20 mA

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Out put	0-10 mA
Control mode	PID
Power Supply	85-260V AC 50/60Hz 4VA
Location	Control Panel Door
INSTRUMENTATION DETAILS	
SENSOR DETAILS	
TEMPERATURE SENSOR	
Make	Radix
Model	
Type	
Range	
Location	
Qty	01 No's

7. SAFETY FEATURES & INTERLOCKS

Sr.No.	ACTIVITY	ACTION	ALARMS
1.	ONCE THROUGH PHASE	Fresh air damper and exhaust air dampers will open, recirculation/return damper will close. During this phase, air is exhausted from the system with continuous blow of hot air over the filter for certain period which is pre-defined.	No Alarm Provided
2.	RECIRCULATION PHASE	Fresh air damper and exhaust air dampers will close, recirculation/return damper will open. During this phase, air is recirculated within the system to remove excess moisture in the filter for certain period which is pre-defined.	No Alarm Provided
3.	EXHAUST PHASE	Fresh air damper and exhaust air dampers will open, recirculation/return damper will close. During this phase, air is exhausted from the system the cool the filters for certain period which is pre-defined.	No Alarm Provided

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8. UTILITIES REQUIRED

S.NO	DESCRIPTION	CONSUMPTION
1.	Electricity 3Ø	
2.	Hot water GPM @ NLT 50° C	
3.	Steam Kg/Hr @ NMT 0.75 bar	

9. LIST OF DRAWINGS AND DOCUMENTS ENCLOSED

S.NO	DRAWING NAME	ENCLOSED (YES / NO)
1.	GA Drawing for Filter Drying booth	
2.	Electrical Drawings	