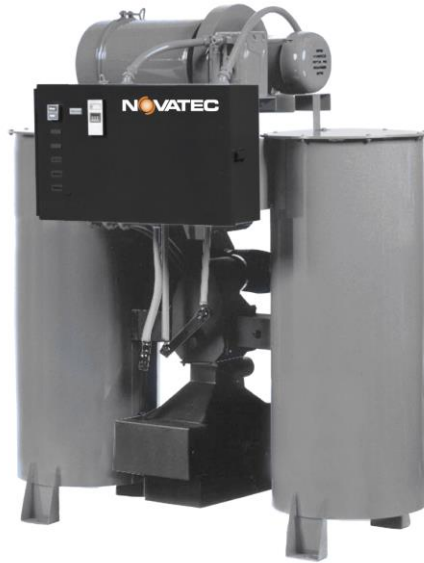


POD Silo Dehumidifier Series with Logo!™ PLC



POD-150

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DOCUMENT: POD IM 15 MAY 2017



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NOTES:

Please record the following information, which is specific to this piece of equipment, in the space provided. Our Parts/Service Department will need these numbers to properly respond to any of your requests.

Instruction Manual: POD IM 15 MAY 2017

Model #: _____

Serial # _____

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1.0 GENERAL DESCRIPTION

1.1 Introduction

The POD Series dual-bed dryer is a continuous-duty desiccant dryer designed to supply an uninterrupted flow of constant, low dew point air. The unit is completely automatic and requires very little maintenance to offer many years of trouble free service. Cycle operation is controlled by a Siemens Logo PLC.

1.2 Principle of Operation

1.2.2 Adsorption Cycle

The reduction of moisture is accomplished by use of an adsorbent material (Silica Gel). The adsorption blower draws humid air across the filters (and if supplied a pre-cooler) and down through the tower of adsorption. The desiccant material extracts water vapor from the flow, and dry air is supplied at the dehumidifier outlet.

Before the bed on adsorption reaches the saturation point, the 4-way valves automatically reverse and transfer the humid airflow to the opposite tower that has been previously regenerated.

1.2.3 Regeneration cycle

While one bed is on adsorption, the opposite is on regeneration. The regeneration blower forces ambient air through the regeneration heater and up through the saturated bed. The air is heated to the temperature required to vaporize water absorbed by the desiccant during the preceding drying period. Water vapor carried from the tower by the air is discharged to the ambient through the regeneration outlet duct. The heater is de-energized when the desiccant is dry, and the bed is cooled to the required adsorption temperature. Adsorption and regeneration alternate automatically between the two towers in a continuous cycle.

Pre-cooling the drying air returning from the hopper lowers inlet temperature to below 150 degrees F., maintaining high desiccant efficiency. Pre-coolers also condense out unwanted contaminants including plasticizers harmful to the dryer operation.

2.0 UNPACKING AND INSTALLATION

2.1 Unpacking

Caution should be exercised to see that the equipment is not handled roughly. The crate must be removed carefully. The machine must not be used to pry against when removing the crate. The dryer is shipped completely assembled and requires no further attention prior to installation.

2.2 General Inspection

When the unit is unpacked, make a visual inspection looking for missing parts or damage received during shipment. All electrical and mechanical connections should be checked for tightness, as vibration during transit may cause them to loosen.

2.3 Installing the Dehumidifier

2.3.1 Locating the dehumidifier

The dehumidifier should be placed on a level base so the desiccant bed remains level inside the unit. This is extremely important! If the desiccant level is not the same across the bed, the resistance to airflow is different and the air will take the path of least resistance, which affects the efficiency of the unit.

2.3.2 Regeneration Outlet

The regeneration outlet duct discharges hot, humid air and although it is not required, in some cases ducting this air away may be desirable. Extreme caution must be given to the length of this duct as not to cause back - pressure to the regeneration blower. Contact the factory if the duct length will exceed 4 feet. If ducting outside, the reactivation air duct should be slanted down to prevent rain and condensation from entering the dryer. A trap for the condensate should be installed at the lowest point.

2.4 Utility Connection

Connect the proper power supply through a main line disconnect (field supply) to terminal block marked L1-L2-L3 and ground in the control cabinet. This is the only power supply required, as the unit is completely pre-wired and supplied with a control voltage transformer to supply 115 volt to the control circuit.

If the unit is equipped with a pre cooler, the condensate drain underneath the pre-cooler should be connected to suitable drainage. The proper water supply should be connected to pipes marked “Inlet-Outlet” on the side of the pre-cooler.

3.0 START-UP PROCEDURE

- 3.1 With electrical connections checked, and the proper power supply connected, see that the Power On/Off switch, located on the outside of the control cabinet, is in the Off position.
- 3.2 Energize the dryer by switching ON the field supplied disconnect switch, Power light and Logo PLC should energize.
- 3.3 Start the dryer by moving the Power OFF/ON switch to the ON position.
- 3.4 At first, jog the Power OFF/ON switch to establish blower rotation. (Do not assume that the blower is turning correctly if air is moving across the towers. Blowers of this design move air in either direction.) Make certain that the blower (s) are turning in the direction of the rotation arrow or by removing the filter (s) and observing the blower wheel(s).
- 3.5 With blower rotation established, check the three electrical leads in the control cabinet to see that the blower(s) are not pulling the above nameplate amperage (see nameplate on blower for amperage rating at proper voltage). If the blower is equipped with an adjustable slide gate, adjust this slide gate so blower is pulling nameplate amperage. (In some cases, the slide gate will be fixed and the blower will operate below nameplate amperage. This condition was established in the factory.) **DO NOT ATTEMPT TO CHANGE.**
- 3.6 Press ESC button on the Logo PLC, press the ↓ arrow to the Set Param line. Press OK button. Main counter B1 should display with Cnt value at bottom of screen. Cnt value represents current count in minutes for the total cycle. If counter B1 fails to display, press ↓ or ↑ arrows until B1 displays with Cnt value. To fast cycle advance counter B1 connect the 115V hot wire to PLC input I2. Check schematic diagram for wires numbers to jump for fast cycle advance. Each 1 minute count becomes 1 second in the fast advance mode. On initial start fast advance B1 counter to 0 or 1 Counter value. Reference the chart below for sequence of operation.

4.0 THREE HOUR SEQUENCE of OPERATION

| Time | Counter, B1 | 3 Hour Cycle |
|--------------------|-------------|--|
| 0 Hour, 0 Minutes | 0 | Bed shift, Left bed drying. |
| 0 Hour, 1 Minutes | 1 | Right bed heating, regen blower & heater on. |
| 1 Hour, 10 Minutes | 70 | Right bed dynamic cooling, regen heater off. |
| 1 Hour, 20 Minutes | 80 | Right bed static cooling, regen blower off. |
| 1 Hour, 30 Minutes | 90 | Bed shift, right bed drying. |
| 1 Hour, 91 Minutes | 91 | Left bed heating, regen blower & heater on. |
| 2 Hour, 40 Minutes | 160 | Left bed dynamic cooling, regen heater off. |
| 2 Hour, 50 Minutes | 170 | Left bed static cooling, regen blower off. |
| 3 Hour, 0 Minutes | 180 | Bed shift, left bed drying. |

- 4.1 When Counter B1 has a value of 1 the regeneration heater contactor is energized and the right bed will begin heating. Verify regen blower rotation (if a 3Ph regen blower is supplied). Check each heater lead for proper amperage (See Schematic Diagram). Verify adjustment of regeneration temperature controller. (Factory preset, See Schematic Diagram.) This can be accomplished by removing the ½” pipe plug located in the right tower lower duct and temporarily installing a thermometer. This actual inlet temperature may be less than the preset adjustment of the controller.

The regeneration air outlet temperature should also be checked after the unit has cycled at least 24 hours with no load on the initial start-up. At the end of the heating period the regen outlet temp should be 275 degrees F. A ½” pipe plug located in the right tower upper duct can be removed and a thermometer temporarily inserted for this purpose. If the correct temperatures are obtained with the right bed, the left regeneration temperature will also be correct.

5.0 PLC COUNTER SETTINGS

| Counter | ON Value | OFF Value | Description |
|---------|----------|-----------|------------------------|
| B1 | 180 | 0 | Cycle reset, bed shift |
| B3 | 0 | 90 | Bed shift |
| B4 | 91 | 170 | Left regen blower |
| B5 | 1 | 80 | Right regen blower |
| B7 | 91 | 160 | Left regen heater |
| B8 | 1 | 70 | Right regen heater |

6.0 MAINTENANCE AND INSPECTION SCHEDULE

6.1 It is recommended that maintenance and inspection is done on a scheduled basis. Maintenance requirements will naturally vary widely for each installation and specific operation conditions. It is suggested that a complete inspection be performed with necessary maintenance at the end of the first month, the first three months, and the first six months. These inspections will be indicative of how often future maintenance will be necessary.

6.2 Every Month

- A. Inspect air filters, Clean or replace as required. Replace if cartridge is broken. The time interval for inspection should be shortened if experience indicates unusual dust loading.
- B. Check system for air leaks and correct as required.

6.3 Every 3 Months

- A. Units equipped with sleeve bearing motors should be lubricated with SAE 20 oil.
- B. Units equipped with ball bearing motors are factory greased and should be re-lubricated with a high - grade ball bearing grease.

6.4 WHEN ADDING LUBRICANT

- 1. Remove filter - plug at the bearings and install grease fittings suitable to your grease guns. Also, remove the drain plug at the bearings.
 - 2. Add ball bearing grease until all of the old grease is expelled through the drain hole.
 - 3. Run motor with drain plug removed to eliminate excess grease.
 - 4. Clean and replace drain plugs.
- C. Check heater amperage (See Electrical Drawing).
- D. Check motor (s) amperage (See Electrical Drawing).
- NOTE: Most units are equipped with permanently lubricated bearings and no lubrication is required. All motors should be examined on an individual basis.**

6.5 Once Every Year

Check dehumidifier valve linkage and operation of valve.

6.6 Every 2 Years or as Needed

Remove top covers of towers and replace desiccant. Replace sealing gaskets under lids. (See Mechanical Drawing for amount of desiccant).

7.0 TROUBLE SHOOTING GUIDE

Most drying problems are the result of dirty filters, air leaks, desiccant contaminants and malfunctioning regeneration heaters. It is seldom that other components fail.

| <u>PROBLEM</u> | <u>INVESTIGATE</u> |
|--|------------------------------|
| Machines won't start | A, B, C, D |
| Inadequate or No Regeneration Heat | B, F, G, H, I, J, K, L, M, N |
| Inadequate or No Adsorption Air Flow | B, E, I, K, L, N |
| Inadequate or No Regeneration Air Flow | B, F, H, I, K, L, N |
| Inadequate Dew Point | F, G, H, I, J, K, L, M, N, P |
| Changeover Temp. Too High | F, H, K, L, M, N |

| <u>CHECK</u> | <u>CONDITIONS</u> | <u>SOLUTIONS</u> |
|-----------------------|---|--|
| A. Power Supply | No voltage or voltage | Check field installed incorrectly Disconnect and re-connect incoming power supply. |
| B. Motor Starter | Overloads tripped 1. Voltage on line side starter energizes, no voltage on load side. | Reset Replace starter |
| C. Transformer | No voltage on primary 1. No voltage on secondary | See A Check fuse; if ok replace transformer |
| D. On/Off Switch | No voltage through switch | Replace switch |
| E. Adsorption Motor | No voltage at motor 1. Voltage at motor amperage incorrect. | See B Replace motor |
| F. Logo PLC | Voltage at PLC, but no outputs | Check that PLC is in start mode & input I1 is on. |
| G. Heater Amperage | Voltage correct, amperage Incorrect | Replace Heater |
| H. Regeneration Motor | No voltage at motor 1. Voltage at motor amperage incorrect. | See B Replace motor |
| I. Valve position | Valve position not correct | Check Valve linkage |
| J. Valve Motor | No voltage at motor 1. Voltage at motor, valves move freely by hand with linkage disconnected. | Replace motor |
| K. Blower Rotation | Incorrect | Reverse phase |
| L. Filter | Filter dirty | Replace element |

CHECK

CONDITION

SOLUTION

| | | |
|--|--|--|
| M. Regeneration Heater Temperature Controller | Adjustment incorrect. No voltage across | Adjust Replace controller switch. |
| N. Air Ducts | Obstructed | Remove obstruction |
| O. Leaks in system | Air leaking in or out of system. | Replace gaskets, repair leaks as necessary |
| P. Desiccant | Contaminated | Replace desiccant 1. Saturated Dry cycle for 24 hours. |

8.0 WARRANTY

WARRANTY – NOVATEC, INC. - Effective Date 8 MAY 2017

NOVATEC, INC. offers COMPREHENSIVE PRODUCT WARRANTIES on all of our plastics auxiliary equipment. We warrant each NOVATEC manufactured product to be free from defects in materials and workmanship, under normal use and service for the periods listed under **“Warranty Periods”**. The obligation of Novatec, under this warranty, is limited to repairing or furnishing, without charge, a similar part to replace any part which fails under normal use due to a material or workmanship defect, within its respective warranty period. It is the purchaser’s responsibility to provide Novatec with immediate written notice of any such suspected defect. Warranted replacement parts are billed and shipped freight pre-paid. The purchaser must return the suspect defective part, freight prepaid and with identifying documentation to receive full credit for the part returned. Novatec shall not be held liable for damages or delay caused by defects. No allowance will be made for repairs or alterations without the written consent or approval of Novatec.

Please note that we always strive to satisfy our customers in whatever manner is deemed most expedient to overcome any issues in connection with our equipment.

The provisions in equipment specifications are descriptive, unless expressly stated as warranties. The liability of Novatec to the purchaser, except as to title, arising out of the supplying of the said equipment, or its use, whether based upon warranty, contract or negligence, shall not in any case exceed the cost of correcting defects in the equipment as herein provided. All such liability shall terminate upon the expiration of said warranty periods. Novatec shall not in any event be held liable for any special, indirect or consequential damages. Commodities not manufactured by Novatec are warranted and guaranteed to Novatec by the original manufacturer and then only to the extent that Novatec is able to enforce such warranty or guaranty. Novatec, Inc. has not authorized anyone to make any warranty or representation other than the warranty contained here. Non-payment of invoice beyond 90 days will invalidate the warranty. A renewed warranty can be purchased directly from Novatec.

Warranty Periods:

Note: All warranty periods commence with the shipment of the equipment to the customer.

5-Year

Resin Drying to Include

NovaWheel™ Dryers *
Dual Bed Dryers
NovaDrier *
NDM-5 Membrane Dryer
Gas-Fired Process Heaters
Gas-Fired Regeneration Heaters
Drying Hoppers
Central Drying Hopper Assemblies
Heater/Blower Units and Hot-Air Dryer
Silo Dehumidifiers
NovaVac Dryers *

Resin Blending and Feeding to Include

WSB Blenders, MaxiBatch & Feeders *
Gaylord Sweeper Systems

Resin Conveying to Include

GSL Series Vacuum Loaders
GlassVu Loaders, Receivers and Hoppers

Downstream Extrusion Equipment to Include

C and NC Bessemer Series Cutters
NPS Bessemer Series Pullers
NPC Mini Puller/Cutter
All NS Series Servo Saws
All Cooling and Vacuum Tanks Manufactured by Novatec

3-Year

When a Prophecy data plan is activated for VPDB and SVP pumps with PumpSense™, Novatec automatically extends the warranty to 3 years. The data plan must be activated within 60 days after pump shipment, and remain active through the warranty period to maintain extended warranty eligibility. The first 6-months of data plan usage is free from Novatec.

2-Year

Central System Controls to Include

FlexTouch™ Series Controls
FlexXpand™ Series Controls
OptiFlex™ Series Controls
PLC Communications Modules
Greenboard Communications Modules
LOGO! Mini PLC

Moisture Measurement Equipment to Include

MoistureMaster®

PET Resin Crystallizers

Resin Conveying and Systems Components to Include

VL/VLP Series Loaders
VRH, VR, VR-FL & VRP Series Receivers
Compressed Air Loaders
AL-B Barrel Loader
Cyclone Dust Collectors
Conveying System Accessories
Surge Bins
Valves and Accessories
Electronic Metal Separators
Quick Select Manifolds
Tilt Tables
Filter Dust Collectors
Drawer Magnets

1-Year

Resin Conveying System Components to Include

*VPDB Vacuum Positive Displacement Pumps
*SVP Vacuum Pumps
MVP Vacuum Pumps
UltraVac Vacuum Pumps
Vacuum Regenerative Blower Pumps
Velocity Control Valves

Central System Controls to Include

MCS-600 Series Controls – (Distributed I/O)
MCS-400 Series Controls
CL Silo Manager

Infrared Dryers
Custom Equipment of any kind unless otherwise specified
Railcar Unloading Systems

*See 3-Year Warranty above

Exclusions:

Routine maintenance/replacement parts are excluded from the warranty. These include, but are not limited to: hoses, desiccant, filters, filter elements, wiper seals, gaskets, dew point sensors, infrared lamps, motors, internal solenoids, fuses and motor brushes. Use with abrasive materials will void the warranty of any standard product. Wear resistant options may be available to extend usable service life with abrasive materials. Novatec reserves the right to limit the warranty if the customer installs replacement parts that do not meet the specifications of the original parts supplied by Novatec.

***Specific Exclusions:**

1. NovaDrier warranty is void if coalescing filters are not replaced on a 6-month or yearly basis (per instruction manual) and/or membrane has been exposed to ozone.
2. NovaVac Dryer -The ability of the canisters to hold vacuum will be compromised if the vacuum seal edge is damaged from mishandling. We do not warranty canisters damaged from improper handling. We do, however, warranty the seals.
3. LOAD CELLS on our WSB's are covered by Novatec standard warranty as long as they have not been damaged from improper handling.
4. Desiccant Wheel Warranty will be void if the wheel has been exposed to plasticizer, dust or other contaminants as a result of negligence on the part of the processor.

This warranty shall not apply to equipment:

1. Repaired or altered without written approval of NOVATEC unless such repair or alteration was, in our judgment, not responsible for the failure
2. Which has been subject to misuse, negligence, accident or incorrect wiring by others
3. Warranty is void if processing rates exceed manufacturer-recommended levels or if damage is caused by ineffective power isolation and/or power spikes/sags or incorrect installation.

NOTE: All conditions and content of this warranty are subject to changes without notice.