

UDC/ GS Trouble Shooting Guide

Click-on a symptom from the chart and you will be moved to information on suspect items or components and recommended solutions.

Solutions to process drying problems are presented in each column below as a “most likely” cause. These are ranked by numeral; the lowest being the most likely cause.

For example: under the Column - Low Air Flow, the Blower Rotation is indicated as the most likely cause.

<i>Problem</i>	High Dewpoint	Low Air Flow	High Air Flow	Over Temp	Under Temp
	<i>Solution</i>				
Valves	3	5		5	
Blower Rotation	12	1		1	
Blower Amps	8	3	1		
Cooling Coil	10	4		4	
High Return Temperature	4				
Blower Filter	7	2		2	
Regeneration Air Flow	6			6	
Desiccant	9	7			
Air Leaks	2	6			2
Pressure at Hopper Air Outlet	11			8	
Vacuum at Hopper Air Inlet					3
Plugged Hopper		8		7	
Regeneration Heater Amps	5				
Process Heater Amps				3	1
Dewpoint Instrument	1				

Dewpoint Instrument | [Back to Selection Chart](#)

The Dewpoint Instrument uses air flow from the dryer to detect the dewpoint of the air leaving the drying system. A reading of -40°F is typically considered optimum.

Over time the sensor in the dewpoint instrument may become contaminated or connections may loosen. Operation should be checked against another instrument to confirm actual dewpoint

If the instrument is faulty you should test to determine the cause: faulty mechanical connection, faulty or contaminated sensor, faulty cable or faulty dewpoint board. All of these tests are simple to perform.

To perform dewpoint instrument test:

1. Check sample cell for positive air flow. If no positive air flow check the lines going to the instrument.
2. Test sensor by placing in ambient and view readings - should climb to 0°F or higher.
3. Test cable by unplugging from sensor and view reading - should drop to -40°F or lower.
4. Test dewpoint board by removing cable from board and view reading - should drop to -40°F or lower.

Repair or replace components are required.

Air Leaks | [Back to Selection Chart](#)

Leaks must be detected and repaired or hose replaced as these leaks allow ambient (wet) air into the drying system having a significant impact on drying.

Some of the problems associated with air leaks are *High Dewpoints*, *Low Air Flow* through the drying system and *Low Process Temperatures* detected at the hopper. Some systems can be hard piped to eliminate the chance of flexible hose leakage. Over time flexible dryer hose may develop pin hole air leaks.

Also mechanical connections may loosen with vibration over time. Check mechanical fasteners. Tighten as required and then check hose for physical leaks. If leaks are detected the hose should be replaced.

Valves | [Back to Selection Chart](#)

The *UDC* dryer uses a spool valve with high temperature seals and an actuator motor to direct airflow through the appropriate beds of the dryer. Proper alignment is crucial for satisfactory system operation.

Some of the problems associated with improper alignment of the valves are:

- High Dewpoints as moist regeneration air enters the process air stream.
- Low Air Flow as process and regeneration air fight against each other within the system.
- Over Temperature conditions at the hopper because the regeneration air during a portion of its cycle is at a significantly higher temperature than material is normally exposed to.

How to check for leakage at the valves:

1. Set controller for 32°F
2. Turn dryer off.
3. Remove two top hoses from spool valve assembly and cover openings with tape.
4. Turn dryer on.
5. Check exhaust ports on back of machine. There should be no air coming out of the exhaust ports.

If air is detected you have a sealing problem.

6. Cycle the dryer through changeover and check both valve positions.

If leakage is detected at either position adjust the sealing disks or replace as required.

High Return Temperature | [Back to Selection Chart](#)

When the temperature of the air returning from the hopper exceeds 150 °F (66°C) desiccant cannot adsorb as much moisture. This gives you higher dewpoints. The return air temperature must be lowered. Typically this is not a problem using *UNADYN'S* patented Pulse Cool Technology (PCT) but if you encounter a return air temperature problem the following may help.

Check the temperature of the air returning to the dryer from the hopper. If you cannot lower the process air temperature going into the hopper you must lower the temperature of the air returning from the hopper.

The use of a Return Air Cooler (Install in-line between the hopper and dryer on the return line) may be required to lower the return air temperature.

The flow of water through the coil may be either continuous or regulated by a temperature control valve.

If you are using a cooling coil and suspect it is cooling the air in the system you can determine if the water is absorbing the heat energy by noting the relative temperature of the inlet and outlet water lines.

The return air temperature to the dryer should be regulated to approximately 150°F (66°C) or less for optimum performance.

Regeneration Heater | [Back to Selection Chart](#)

A faulty Regeneration Heater can cause incomplete desiccant regeneration and thus High Dewpoints. The heater amperage should be checked on each leg of the heater.

To perform heater test:

1. In control cabinet locate the regeneration heater contactor.
2. Use the controller to cycle to the dryer so that the heater is on.
3. Use an amp probe to check each wire coming from the contactor and record your findings.

If readings vary from leg to leg by more than 10% you may have a faulty regeneration element. Repair or replace as needed.

Process Heater | [Back to Selection Chart](#)

A faulty Process Air Heater can cause *Under Temperature* if an element has failed in the open condition or *Over Temperatures* if an element has failed in the closed condition. Amperage should be checked on each leg to begin your diagnostics.

To perform heater test:

1. In control cabinet locate the regeneration heater contactor.
2. Set the process temperature to 32°F.

3. Use an amp probe to check each wire coming from the contactor and record your findings.

If you detect amperage on any leg one of the elements has failed “closed” and over temperatures may result. Repair or replace as needed.

3. Raise the process temperature to a setting that is safe for your drying conditions but that will enable the heater to cycle on for testing.

4. Use an amp probe to check each wire coming from the contactor and record your findings.

If readings vary from leg to leg by more than 10% you may have a faulty regeneration element. Repair or replace as needed.

Regeneration Air Flow | [Back to Selection Chart](#)

A single blower supplies air to both the regeneration process sides of this system. Bleed air is used in the regeneration side while the process side uses the main part of the air stream. Air must flow freely and correctly through the regeneration heater, past the valve and through the desiccant bed or the system will be adversely affected.

Problems associated with restricted or misdirected Regeneration Air Flow include:

- High dewpoints develop as moisture laden air enters the process air stream.
- High Process Temperatures at the hopper as regeneration air at 600°F is misdirected into the process air stream

Some of the causes of restricted air flow are:

- Clogged filter; filter should be checked and cleaned or replaced as required.
- A loop in the return air line from the hopper restrict air flow. Remove loops.
- A return line packed with material will also restrict air flow. Remove the obstruction.

One of the causes for misdirected air flow is a misaligned valves allow process air to enter the regeneration air flow. Valves should be adjusted as required.

Blower Filter | [Back to Selection Chart](#)

A filter that is contaminated may restrict air flow and allow dirt to build up in the blower housing. This causes incomplete desiccant regeneration, and *Over Temperature* conditions at the hopper because of the restricted airflow.

To Check and Clean or Replace the Blower Filter:

1. Turn the dryer off.
2. Remove the scalloped knob holding the cover on over the filter.
3. Remove filter and check for contamination. Replace or Clean as needed.

4. Filter can be cleaned by using compressed air from the inside out.
5. After cleaning return the filter to the housing. Replace cover and resume operation.

Desiccant Maintenance and Testing | [Back to Selection Chart](#)

In *UDC* style dryers, air from the dehumidifier is heated by the process heater and circulated through the hopper of material, which gradually gives off some of its moisture to the surrounding air. The moisture thus removed from the material is carried back to the dehumidifier, where it is adsorbed by the molecular sieve type desiccant and held there.

If the desiccant is contaminated or degraded its ability to adsorb moisture is affected. Return air temperature must also be 150°F or less for effective desiccant operation.

Some of the problems associated with faulty desiccant are:

- High Dewpoints as moist air reenters the process air system.
- Low Air Flow through the system as the process air fights against compacted, shifted or contaminated desiccant.

To check the Desiccant:

1. Remove the tower lid. The desiccant may have shifted during transit. It should sit level across the width of the tower. Simply level out the desiccant if it has shifted.
2. Perform a desiccant test if you feel the desiccant is faulty or has become contaminated.
 - a. Fill a 150 ml glass beaker with 45 ml (approx 1.36 oz.) of water.
 - b. Measure water temperature and record. The water temperature should not be below 60°F or above 85°F.
 - c. Fill a 150 ml glass beaker with 45 ml (approx 1.36 oz.) of regenerated type 4A molecular sieve (desiccant may be regenerated using the dryer or an oven) - when using an oven.
 - d. Bake the desiccant at 400°F (220°C) for 2 hours, place in a sealed container and allow to cool to ambient temperatures before proceeding with the desiccant test.
 - e. Place a temperature probe in the beaker with the molecular sieve. Quickly pour the water into the beaker containing the molecular sieve, as you stir.
 - f. Never add the molecular sieve to water, since the resulting peak temperature can be as much as 10°F below what it should be.
 - g. Record the peak temperature which should be reached in 10-20 seconds.
 - h. Subtract the starting water temperature from the peak temperature of the mixture to get the resulting temperature rise.
 - i. A 40°F temperature rise is considered an adequate reading and indicates that your desiccant is not contaminated.

If your desiccant is contaminated do not replace and begin operation without a thorough understanding of what could have contaminated the desiccant.

Volatile may be passing the filter; a Plasticizer Coil may be needed. Simple housekeeping could be the problem; the filter may not have been checked, changed or cleaned regularly.

[Make sure you know WHY the desiccant failed.](#)

Blower Motor Amps | [Back to Selection Chart](#)

Air must flow freely past through the filter, through the appropriate bed and out of the system. If it does not the desiccant cannot release its trapped moisture and high dewpoints develop. The blower motor has been appropriately sized to produce enough velocity to move air through the system. If the blower is not moving air at an appropriate rate you should test the blower for proper amperage draw.

[Look for appropriate nameplate readings at each leg of the heater.](#)

To perform blower motor test:

1. In control cabinet locate the blower motor contactor or relay.
2. Use an amp probe to check each wire coming from the contactor and record your findings.
3. If readings vary from leg to leg by more than 10 percent you may have a faulty regeneration blower motor.
4. Faulty motors should be repaired or replaced immediately to avoid adverse affect to the drying systems.

Blower Rotation (**[UDC 100 & 150 only](#)**) | [Back to Selection Chart](#)

Air must flow at the correct rate through the system. If the blower is rotating in the wrong direction it cannot deliver the correct amount of air. This seriously affects dryer performance.

If the wheel is turning in the wrong direction it will deliver air BUT not enough for correct operation and the rotation should be corrected immediately.

Two of the problems associated with incorrect blower rotation are *[Low Air Flow](#)* and *[Over Temperature](#)* conditions at the hopper.

To check the blower rotation:

- Remove the cover from the housing so you clearly see the blower wheel.
- Locate the blower motor contactor for the blower to be checked. Momentarily engage the contactor so the motor turns on.
- Observe blower wheel rotation. It should rotate so that air is delivered to the desired components.

Cooling Coil | [Back to Selection Chart](#)

There are three cooling coils that can be used with these dryers: Plasticizer Cooler, Process Cooler and Return Air Cooler.

The Plasticizer Cooler is used to condense volatiles from the return air stream before they enter the system and contaminate the desiccant and filters.

The Process Cooler is used when drying at temperatures below 120°F. It lowers the temperature of the air leaving the dryer (which can typically reach 150°F because of residual heat from the desiccant beds) before it reaches the process heater and hopper.

The Return Cooler is used for drying at temperatures above 250°F. It lowers the air temperature of the process air returning to the desiccant beds. If the return air temperature is not 150°F or lower the desiccant cannot adsorb moisture from the air stream.

A cooling coil that is clogged will cause *Low Air Flow* and *Over Temperatures*. Check the coil on a regular basis and clean as required.

If water is not delivered to the cooling coil at an appropriate rate it cannot do its job and *High Dewpoints* and *Over Temperature* can also result.

If you are using a cooling coil and suspect it is not cooling the air in the system you can determine if the water is adsorbing heat energy by noting the relative temperature of the inlet and outlet water lines.

The flow of water through the coil may be either continuous or regulated by a temperature control valve.

Plugged Hopper | [Back to Selection Chart](#)

Over Temperatures result from the *Low Air Flow* caused if the hopper, spreader cone or return air line are plugged. Air cannot move through the system as it is designed to do.

Check the spreader cone and make sure it is properly seated in the hopper. If it is not, material may have bypassed the cone and entered the return air line. Clean the line, seat the spreader cone and begin operation.

If the spreader cone is properly seated check the spreader cone surface. If the cone is a perforated style the holes in the cone may have become clogged. After cleaning the cone return to normal operation.

Vacuum at Hopper Air Inlet | [Back to Selection Chart](#)

If you have Vacuum at the Hopper Air Inlet you can experience *Under Temperature* or *Over Temperature* conditions and High Dewpoint.

Vacuum at the hopper inlet can be caused by several things:

1. Valve Leakage caused by misaligned or worn valves. Check alignment and wear. Leakage here not only causes vacuum at the hopper inlet but over and under temperature conditions.

2. Desiccant Bed Leakage caused by bad gaskets or desiccant bed lids that are not seated to the tower or contaminated desiccant also cause vacuum at the hopper inlet. Check all systems and components for correct operation, fit and seal.
3. Improper adjustment of the process air damper.
4. The process air filter, if allowed to become plugged, will also cause vacuum at the hopper air inlet. Clean or replace the filter.
5. Hopper loaders can also contribute to vacuum at the air inlet. If the flapper is not sealing properly during loading air is being drawn from the hopper rather than from the material source. Check flappers for fit. Repair or replace as needed.

Positive Pressure at Hopper Air Outlet | [Back to Selection Chart](#)

If you have Positive Pressure at the Hopper Air Outlet you can experience *Under Temperature* conditions and *High Dewpoint*.

Positive Pressure at the hopper inlet can be caused by several things:

- Valve Leakage caused by misaligned or worn valves.
- Check alignment and wear. Leakage here not only can cause positive pressure at the hopper inlet but under temperature conditions.

The regeneration air filter, if allowed to become plugged, will also cause positive pressure at the hopper air outlet.

Clean or replace the filter.

If you need further assistance or require a service call, please contact:

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