UNIVERSAL DYNAMICS, INC.

SYSTEM ENGINEERING WORLDWIDE

9/06

Overview

Understanding the properties of plastic resins, as well as, why, when and how to dry them are the first steps towards achieving the perfect end product. The first three subtitles of this document are intended to offer an education into the characteristics of the plastics resin pellet, the basic elements of drying, what type of dryer is appropriate for a particular resin, the configurations available for a drying system and how the twin bed dehumidifying dryer operates. The remaining subtitles offer basic but thorough information for the DHD and PCT^2 Series dehumidifying dryers, hoppers and any options available to enhance the system you choose.

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Formulate the best system for your application!

Basic Principles of Drying

Resin drying is a critical step in preparing the resin prior to being molded or extruded. Drying the resin sufficiently before processing assures the quality of the end product. Generally the resin manufacturer will specify the resin drying time and maximum acceptable moisture level before it is processed.

There are many different types of resin used in molding and extrusion. Regardless of type, for purposes of drying, all resins fall into one of two basic categories: Hygroscopic or Non-Hygroscopic. Hygroscopic resins retain moisture within the pellet. The amount of moisture plastic resin absorbs is determined by the chemical composition of the resin, the material's temperature, and the amount of moisture the pellets are exposed to, pre-process. This results in different specified drying times and moisture removal requirements for different types of resins. With Non-Hygroscopic resins the user only deals with surface moisture. The amount of moisture depends primarily upon the humidity and condensation.

Both categories of resins need to be dried before being processed. Understanding and knowing the different characteristics of the resin being used and providing the basic requirements of drying through proper equipment selection helps to ensure the quality of the end product and customer satisfaction.

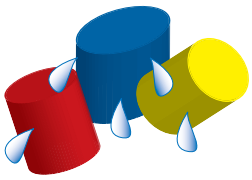
Plastic Resin: Hygroscopic vs Non-Hygroscopic

Non-Hygroscopic

- Moisture only on the surface of the pellet
- Moisture easily removed by preheating
- Generally, drying with hot air is sufficient for moisture removal

Example of Typical Non-Hygroscopic Resin

Natural Polyethylene, Polypropylene and PVC



Non-Hygroscopic

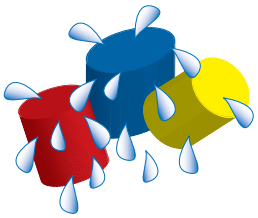
Water molecules must be removed from the pellet surface.

Hygroscopic

- Moisture is absorbed into the pellet
- Moisture is not removed by preheating alone
- Dehumidifying dryer is used for moisture removal

Example of Typical Hygroscopic Resin

All engineered plastic resins[1]



Hygroscopic

A sufficient amount of water molecules must migrate to the surface of the pellet, in order to reduce the moisture to the resin manufacturer specifications.

Four Basic Elements of Drying:

Heat

Dry Air

Airflow

Exposure Time

The basic elements that must be employed by a drying system to effectively reduce moisture content for processing are heat, dry air, airflow and exposure time. ***Heat*** is required for drying to raise the temperature of the air inside the drying hopper which increases the capacity of the dry air to take away water molecules. ***Dry Air***, measured as dewpoint (typically -40 ºF), combined with heat, is delivered by ***Airflow***. Airflow is measured in cubic feet per minute, or CFM, through a drying hopper. The hot dry air then carries the moisture away from the resin and out of the drying hopper. Residence ***Time***, measured in hours, is the specified amount of time the resin must be exposed to the hot, dry air to reach the required dryness for processing.

Hot Air Dryer or Desiccant Dryer?

Which type of dryer is best for your application? The first step in deciding which is best is made by determining the type of resin to be dried. Generally a Non-Hygroscopic resin requires a simple dryer using only heated ambient air. Operating as an open loop configuration, the hot air from the dryer collects surface moisture from the pellets residing in the drying hopper. The hot air that flows through the hopper is released back into the atmosphere along with any moisture being extracted from the process material. The released hot air is never reintroduced back into the system. Hence the term “open loop”.

Hygroscopic resins require “treated” air for moisture removal. For this application it is best to employ a dehumidifying dryer. These systems are generally a closed loop design using desiccant in conjunction with hot air to improve the drying efficiency of the process air, absorbing water like a magnet. In a typical dehumidifying dryer there are two beds of desiccant, one that is collecting moisture from the process air and the other which is being regenerated in order to remove the collected moisture. Regeneration means that the moisture is removed from the desiccant so when the first bed becomes saturated and the dewpoint degrades, the dryer can then switch to the regenerated desiccant bed. This will ensure the dryers ability to provide dehumidified, low dewpoint air to the drying hopper at all times.

Dryer Size and Components

Now that you know what type of dryer to use there are other decisions you will need to make to complete your drying system. After identifying the specific drying requirements of the resin, you must choose an operating configuration that meets your needs and operational specifications. There are advantages as well as disadvantages of each configuration and the choices you make will have a direct impact on energy consumption, floor space utilization, material handling configurations, maintenance and much more. Whichever configuration you choose, it is important for you to understand the equipment, its capabilities and limitations as well as the optional components available, which may enhance the performance of your system.

UnaDyn has created this dryer catalog to assist in the process of understanding the capabilities of the dryer and drying systems. Technical information and formulas are included to assist in sizing and selection. Our sales and technical support staff are always available to assist you with your selections to help assure that the decisions you make are economical and adequate for your current and future applications.

[1] This includes non-hygroscopic material that has been compounded with hygroscopic agents like Carbon Black, minerals and flame retardants.

Drying System Configurations:

Dryer with Single Drying Hopper

Dryer Floor Mounted, Hopper On or Over The Process Machine

The floor mounted dryer is located adjacent to the processing machine. Depending on size, the drying hopper may either be mounted directly to the throat of the machine, or if the hopper is too large, it may be mounted on a straddle support stand or mezzanine above the machine. In either case, the dried resin feeds directly into the throat of the machine.

To the Right: **Floor Mounted Dryer, Hopper Mounted With Straddle Style Support Stand Above Processing Machine.**

Dryer and Hopper Positioned Near the Machine

The dryer and the hopper are located adjacent to or in relatively close proximity to the processing machine. The hopper is mounted on a floor stand and equipped with a vacuum take off adaptor. The dried material is conveyed from the drying hopper to a receiver which is mounted either directly on the machine or to a material hopper on the machine.

To the Right: **Dryer is Positioned Near the Machine and the Hopper is Mounted on a Stand. (Material is conveyed with either dry or ambient air depending on the resin specifications.)**

Central Drying with Single Drying Hopper

Dryer with Single Hopper for Central Drying

Even a single dryer and hopper configuration can be used as a central drying system when a single resin is used in more than one processing machine. Typically the dryer and hopper are floor mounted. The drying hopper is sized to accommodate the maximum resin usage and can be equipped with a multiple port vacuum take off device. The hopper may also be equipped with an adjustable high (fill) level sensor to reduce the hopper fill level in the event the system is not operating at its full rated processing capacity.

Central Drying with Multiple Drying Hoppers

Dryer with Two Hoppers

Above: Portable Configuration - Single Dryer and Two Hoppers Mounted on a Single Stand.

A drying system with multiple hoppers is frequently designed to dry different resins in two or more drying hoppers at different drying temperatures simultaneously. The multi-hopper configuration generally involves remote mounted heaters with individual controls for each drying hopper. A dry air manifold delivers dry air to each drying hopper and each hopper has a diverter valve which permits the user to adjust or shut off the air flow to each hopper. Managing air flow to each drying hopper is critical to proper performance of this type of drying systems. If one or several of the hoppers are off line with low or no material, the diverter valves must be closed in order to avoid channeling dry air through empty hopper(s) at the expense of the remaining hopper(s) in the process loop. Each drying hopper has a vacuum take off with single or multi ports to permit conveying to individual or multiple machines, depending on operational requirements.

Dryer with More Than Two Hoppers

***Above (Top):* Side View of Large DHD Dryer, Floor Mounted, for Central Drying Configuration.**
***Above (Bottom):* Floor Mounted Dryer with Multiple Hoppers Equipped with Individual Process Heaters.**

A multi hopper drying system utilizes a floor mounted dryer with the hoppers either mounted on a common support stand or on individual floor stands. The process air and return air flow to and from the hoppers are piped through a header system.

The header system is equipped with butterfly dampers, or half valves, to balance the air flow to each hopper. If more precise air flow distribution is needed, individual blower units may be used for each drying hopper.

When multiple drying hopper systems are considered for drying multiple resins, each hopper is equipped with a process heater and an individual temperature controller.
The individual hoppers are equipped with a vacuum take off assembly to accommodate the required number of take off ports. If each hopper is intended to supply dried resin to more than one process machine the hopper(s) can also be equipped with adjustable high (fill) level sensors to reduce the hopper fill level when not operating at its full rated capacity.

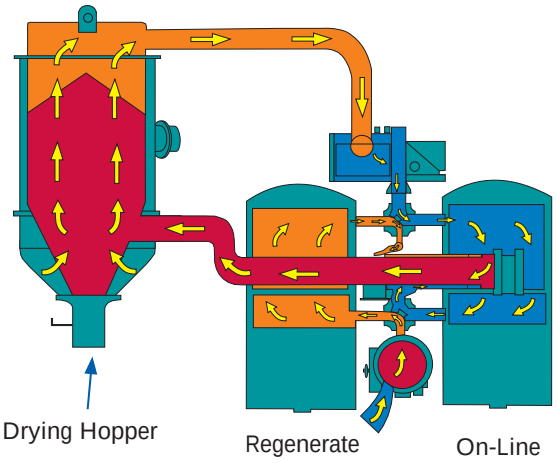
A less popular style of multiple hopper drying system involves the individual drying hoppers being mounted on or above the individual processing machines. The method of air distribution to the hoppers would be the same as the above configuration, however, the routing of the duct work for these systems can be both complex, cumbersome and difficult to maintain a properly balanced process air flow.

Twin Bed Desiccant Dryer Operation:

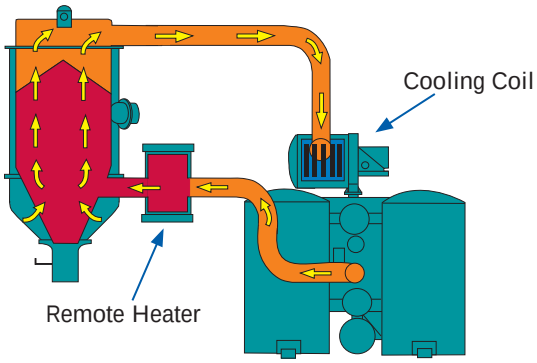
Standard Drying Operation

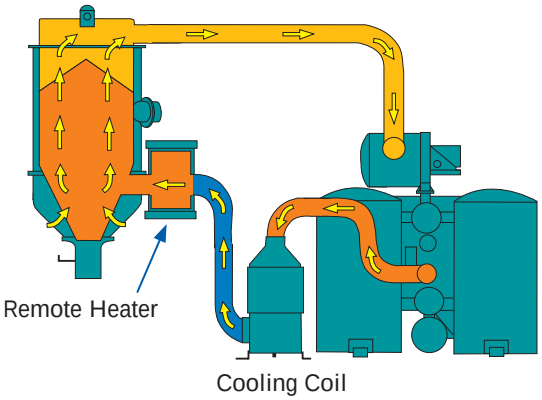
Performance, reliability and simplicity are key design features of the UnaDyn solid bed dryer design. Solid desiccant beds develop uniform air flow which ensures the maximum contact between the moist air and the desiccant resulting in improved moisture removal, performance and efficiency. Controlling the dryer cycle on dewpoint demand increases cycle time and substantially reduces regeneration energy usage.

A continuous stream of dry air exits the “on line” desiccant tower, passes through the change over valve to the process air heater which raises it to the setpoint drying temperature prior to entering the drying hopper. The moisture laden air stream exits the drying hopper to the process air filter and blower. The air is then directed into the active desiccant bed where the moisture is absorbed from the process air loop.



Simultaneously the desiccant in the second tower is being regenerated. Air is drawn into the regeneration air filter and blown to the heater which raises it to the regeneration temperature. The change over valve directs the air through the saturated desiccant bed driving off the moisture. The desiccant regeneration cycle includes three separate stages; Active heating, dynamic cooling and static cooling, all of which are phases of a complete regeneration bed cycle.





High Temperature Drying Operation

The lower the temperature of the process air returning to the desiccant, the more efficiently the desiccant will remove moisture. The maximum desirable operating return air temperature is 150ºF. Drying at elevated temperatures, typically greater than 250ºF, often results in return air temperatures in excess of 150ºF.

If the return air temperature is expected to exceed 150ºF, a water cooled coil is recommended to be installed in the return air line between the filter and the dehumidifier. This coil can be integral with the process air filter or freestanding depending on the size of the dryer.

Additionally on drying applications requiring temperatures in excess of 250ºF we recommend high temperature hose, insulated drying hoppers and mounting the process air heater on the hopper.

Low Temperature Drying Operation

When applying a dehumidifying dryer system on a low temperature drying application, typically 180°F or less, it is recommended that a cooling coil be included. This cooling coil is installed between the dehumidifier and the drying hopper. Connection to a water source at 75ºF or less is required. When cool desiccant absorbs moisture it generates heat which may exceed the process air set point. This coil is intended to protect the material being dried from exposure to process air which is at an elevated temperature.

DHD & PCT² Series

Dehumidifying Dyers

DHD Series Dryer

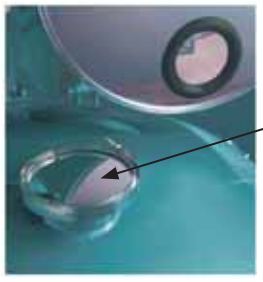
DHD-8

High Performance Precision Air Valves

Exclusive Valve Tensioning System

(Above) Interior view of Air Valves with silicon seal (red)

- *Valves are "seated" to prevent leakage.*
- *Seal is produced using a high-temp silicone that has excellent heat resistance.*
- *Valve Tensioning System on valves prevent leakage.*



Desiccant Sample/ Auto Fill and Removal Port

- *Easily check desiccant through sample port or use to remove and refill desiccant to its proper level automatically.*

Standard Features

- Gas or Electric Dryer
- *EASY* Accessibility for Maintenance
- *High Performance Change Over Valves* for Positive Sealing Bed Change Over and Effective High Temperature Isolation Between Regen and Process Air
- ***Separate blowers*** for process and regeneration air.
- High efficiency filter systems - *sight glass on process filter*
- *Low Dewpoint* -40ºF
- Up to 4500 CFM

Options

- *Energy Saving* Desiccant Bed Insulation
- Fused Disconnects
- FN Controller w/ SPI Connect & Dewpoint Sensor
- PLC w/Panel View Touchscreen Controls
- Kahn Dewpoint Sensor
- Data Logger

The DHD Series Dryer is a fully automatic high performance solid bed dehumidifier featuring two molecular sieve desiccant beds. ***High Performance Change Over Valves*** and our ***exclusive valve tensions system*** ensure proper seating and reduced pressure loss across the system. Better air flow and positive sealing improve overall operation and efficiency. Designed for quick access and easy maintenance; sample, remove and fill the desiccant through the ***sample port.***

The DHD standard processing temperature range is 180° to 250° F. Optional heaters and cooling coils permit drying at temperatures below 180ºF or up to a maximum of 375°F. For drying temperatures higher than 250ºF with higher throughputs, gas dryers may be more cost effective.

PCT² Dryer Series

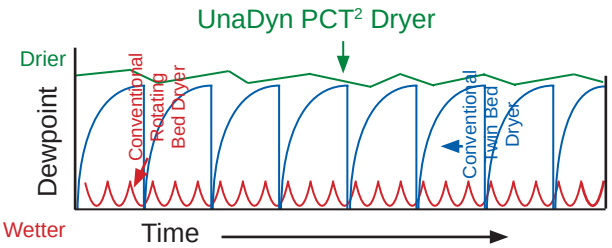
Standard Features

- *Space Saving* Cabinetized Components and Assemblies
- Gas or Electric
- *Pulse Cooling Technology*
- Maintain Material Temperature at ***±1ºF*** From Setpoint
- Low Dewpoint (-60ºF)
- FN Controller w/ SPI Connect & Dewpoint Sensor
- Minimal Moving Parts
- Side Panels remove for *EASY* Maintenance Accessibility
- *High Performance Change Over Valves*
- Insulated Desiccant Towers
- Large Capacity Filter Element

Optional Features

- Fused Disconnects
- PLC w/Panel View Touchscreen Controls
- Kahn Dewpoint Sensor
- Data Logger

Pulse Cooling Technology (PCT) Produces Tighter Temperature and Dewpoint Control



Reliable and optimally energy efficient, the PCT² Dryers are equipped with ***heavy duty change over valves*** that statically seal for a tight seal, experience minimal wear and never leak. The ***sleek cabinetized design*** is space saving, sound reducing and all operational and maintenance panels are located at one end of the machine for easy access. Pulse Cooling Technology (PCT²) produces tighter temperature and dewpoint controls which result in remarkably constant and stable dewpoint process temperatures throughout the drying cycle. Its closed loop design, insulated desiccant beds and material saver delivers ***more drying efficiency per unit of power than any other comparable dryer on the market***.

Available in either Electric or Gas, the PCT² delivers this enhanced performance while maintaining the simplicity of the twin tower design and minimal moving parts. The PCT² dryer has a built-in cooling coil and is capable of ***processing resin at temperatures from 160ºF to 400ºF*** with a ***throughput range of 300lbs/hr to 4000lbs/hr.***

DHD - ELECTRIC AND GAS MODEL FEATURE COMPARISON

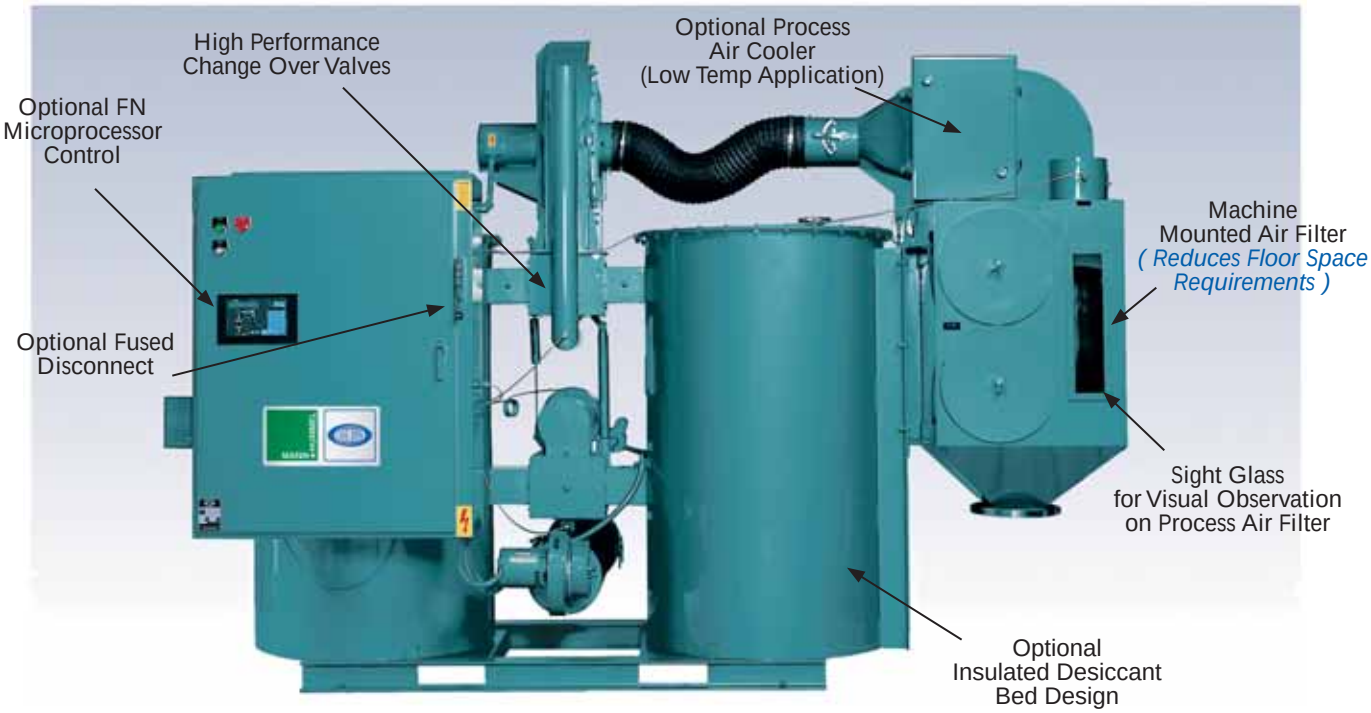
FEATURE	E - ELECTRIC G - GAS	4	6	8	11	15	25	30	40	60	100	120
High Performance Air Valves	E & G	●	●	●	●	●	●	●	●	●	●	●
Solid Desiccant Beds	E & G	●	●	●	●	●	●	●	●	●	●	●
Desiccant Fill/Sample Ports	E & G	●	●	●	●	●	●	●	●	●	●	●
Dual Blowers - Process & Regen	E & G	●	●	●	●	●	●	●	●	●	●	●
Process Return Air Filter	E & G	●	●	●	●	●	●	●	●	●	●	●
Filter View Glass	E & G	●	●	●	●	●	●	●	●	●	●	●
Hose Pkg. - Dryer to Hopper	E & G	●	●	●	●	●	●	N/A	N/A	N/A	N/A	N/A
Tubular Heaters	E	●	●	●	●	●	●	●	●	●	●	●
Digital Electronic Temp Control	E	●	●	●	●	●	N/A	N/A	N/A	N/A	N/A	N/A
FNG Microprocessor w/ *SPI Connect & Dewpoint Sensor*	G	●	●	●	●	●	●	●	●	●	●	●
FN or FNMH Microprocessor Control	E	●	●	●	●	●	●	●	●	●	●	●
Remote FN or FNG Display	E & G	●	●	●	●	●	●	●	●	●	●	●
AB-PLC Mono Chrome Display w/ *SPI Connect & Dewpoint Sensor*	E & G	●	●	●	●	●	●	●	●	●	●	●
AB-PLC Maple Color Display w/ *SPI Connect & Dewpoint Sensor*	E & G	●	●	●	●	●	●	●	●	●	●	●
High Temperature Package	E & G	●	●	●	●	●	●	●	●	●	●	●
Low Temperature Package	E	●	●	●	●	●	●	●	●	●	●	●
Cyclone Pre-Filter	E & G	●	●	●	●	●	●	●	●	●	●	●
Plasticizer Filter/Cooler	E & G	●	●	●	●	●	●	●	●	●	●	●
Alarm Bell or Light	E & G	●	●	●	●	●	●	●	●	●	●	●
Kahn Dewpoint Sensor (Reads Below -40ºF)	E & G	●	●	●	●	●	●	●	●	●	●	●
Fused Disconnects	E & G	●	●	●	●	●	●	●	●	●	●	●
External SPI Port (Requires Optional Controller)	E	●	●	●	●	●	●	●	●	●	●	●
DataLogger	E & G	●	●	●	●	●	●	●	●	●	●	●
Insulated Desiccant Beds	E & G	●	●	●	●	●	●	●	●	●	●	●
13x Desiccant	E & G	●	●	●	●	●	●	●	●	●	●	●
Voltages other than 230 or 460	E	●	●	●	●	●	●	●	●	●	●	●
UL 508 Certified Electric Panel	E & G	●	●	●	●	●	●	●	●	●	●	●
Frame with Castors	E & G	●	●	●	●	N/A	N/A	N/A	N/A	N/A	N/A	N/A

●	**Standard**
●	**Optional**

FEATURE	E - ELECTRIC G - GAS	300	600	1000	1250	1500	2000	2500	3000
Cabinet Design w/ *Removable Panels*	E & G	●	●	●	●	●	●	●	●
Pulse Cooling Technology	E & G	●	●	●	●	●	●	●	●
High Performance Air Valves	E & G	●	●	●	●	●	●	●	●
Solid Desiccant Beds	E & G	●	●	●	●	●	●	●	●
13x Desiccant	E & G	●	●	●	●	●	●	●	●
Dual Blowers - Process & Regen	E & G	●	●	●	●	●	●	●	●
Process Return Air Filter	E & G	●	●	●	●	●	●	●	●
High Temperature Package	E & G	●	●	●	●	●	●	●	●
Tubular Heaters	E	●	●	●	●	●	●	●	●
FN or FNG Microprocessor w/ *SPI Connect & Dewpoint Sensor*	E & G	●	●	●	●	●	●	●	●
Remote FN or FNG Display	E & G	●	●	●	●	●	●	●	●
AB-PLC Mono Chrome Display w/ Dewpoint Sensor	E & G	●	●	●	●	●	●	●	●
AB-PLC Maple Color Display w/ Dewpoint Sensor	E & G	●	●	●	●	●	●	●	●
Cyclone Pre-Filter	E & G	●	●	●	●	●	●	●	●
Plasticizer Filter/Cooler	E & G	●	●	●	●	●	●	●	●
Alarm Bell or Light	E & G	●	●	●	●	●	●	●	●
DataLogger	E & G	●	●	●	●	●	●	●	●
Kahn Dewpoint Sensor (Reads Below -40ºF)	E & G	●	●	●	●	●	●	●	●
Voltages other than 460	E & G	●	●	●	●	●	●	●	●
UL 508 Certified Electric Panel	E & G	●	●	●	●	●	●	●	●
UL 508 Flame Safety Certified	G	●	●	●	●	●	●	●	●

●	**Standard**
●	**Optional**

Electric Dryer System - DHD & PCT2



DHD-25

The all electric designed DHD & PCT² Dryers are available in a full range of sizes. Reliability is built in with ***tubular heaters*** that have very low watt density that increases heater life. ***Multiple elements*** *allow the heaters to operate even if an individual element has failed.* Each element can be replaced separately and are easily accessed through single bolt clamps designed for simplified maintenance.

Double walled construction of the process heater offers safety and efficiency. Cold air circulates around the heater core, preheating the air while cooling the outer surface of the heater housing. The heat which escapes is recovered and returned to the process air. Regeneration heaters are insulated with high temperature ceramic materials.

Each DHD dryer is equipped with a standard digital electronic temperature control. The PCT² is equipped standard with an FN (Electric) or FNG (Gas) microprocessor control. Optional controls available are the FN microprocessor control for the DHD and an advanced PLC control on the DHD or the PCT². All controllers display process setpoint and temperature and are simple to set up and operate. Optional controls display additional items such as dewpoint, alarms and a variety of other energy saving and processor friendly features. ***See our "Optional Controllers"*** section for details.

Standard Features

- Digital Electronic Temperature Control
- SPI Connect
- Dewpoint Meter
- Material Saver Function

Optional Features

- *High and Low Temperature applications for below 180ºF to above 250º - 375ºF*
- Fused Disconnects
- *Energy Saving* Desiccant Bed Insulation
- FN Controller w/ SPI Connect & Dewpoint Sensor
- PLC w/Panel View Touchscreen Controls
- Kahn Dewpoint Sensor
- Data Logger

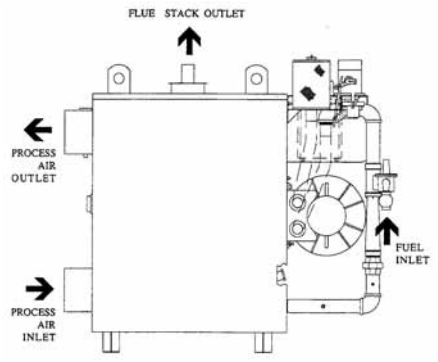
GAS Dryer System - DHD & PCT2

Standard Features

- External Gas Pack [1]
- FNG Controller
- SPI Connect
- Dewpoint Meter
- Material Saver Function

Optional Features

- *Energy Saving* Desiccant Bed Insulation [2]
- Fused Disconnects
- PLC w/Panel View Touchscreen Control
- *Hard Ducting recommended for dryer models DHD-25 or larger*
- Data Logger



(Top) Gas DHD Dryer
(Above) Gas Pack Illustration of airflow.
(Right) Gas PCT2 Dryer

Natural, clean and efficient, all DHD and PCT² Dryer models, *except the DHD-4*, are available in a gas fired configuration. DHD & PCT² gas fired dryers can be used with natural gas or propane which may help reduce energy costs. The gas fired heating system for both process and regeneration use non-ceramic type burners. Ceramic burners may, over time, become brittle and have, on average, a shorter life span than non-ceramic burners. The regeneration heating system is directly gas fired. The process air heating system uses an exclusive composite radiant burner harnessed in a heat exchanger. These highly efficient burners generate extremely low emissions.

The Gas Fired DHD and PCT² dryer configuration come standard with the FNG Microprocessor controller featuring SPI connect. PLC controls are available as an option on both dryer series. All controllers display setpoint, temperature, dewpoint, alarms and a variety of other energy saving and user friendly features.

[1] PCT² Model 300 has built-in Gas Pack
[2] Desiccant Bed Insulation Standard on all PCT² Models

DHD & PCT² Controllers

Standard Controls

Digital Temperature Controller: DHD Standard (Electric Only)

This ***Standard Control of the electric DHD dryer*** is equipped with a Digital Electronic Temperature Control.

- Basic Function of On/Off
- Temperature Control
- Time based Regeneration
- Extreme Temperature Fluctuation Protection.

FN & FNG Controller: DHD - Standard (Gas Only) & PCT² Standard (Gas or Electric)

The ***FN is Standard on the PCT²*** and the ***FNG is Standard on the DHD and PCT² Gas Dryers.*** Each display operating temperature and dewpoint with a setpoint flash approximately every three minutes.

- Control Regeneration by Dewpoint or Time
- Seven Day Clock - Auto operation as one time only or on a repetitive basis
- ***Material Saver*** function - protects material from overheating
- ***SPI Communications Protocol*** Built-in

Other functions include dual heater control, programmable alarms, SQC capability, password protection and system diagnostics.

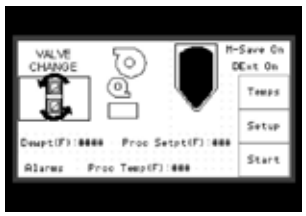
Optional Controls

FN-MH Microprocessor Controller: DHD (Electric)

The FN-MH display and keypad offers a 4 character, segment LED display with a LED alarm indicator.

- Over Temperature and Under Temperature Alarms
- Service Mode allows controller options, such as display options for Fahrenheit or Celsius
- ***"Hopper Low/Material Level"*** when hopper is equipped w/ sensor
- Supports SPI Communication with optional communication card

Allen Bradley PLC Controller: DHD & PCT2 (Gas or Electric)



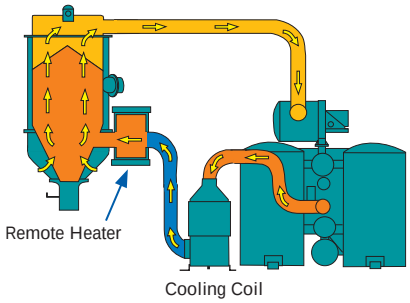
The Allen Bradley PLC Control features a black and white touch screen display (4.75" x 2.38") with an easy to use program that guides the user through the entire drying system setup and operation.

- ***Graphic display*** of system conditions for alarms, blower and heater operation, valve changeover, hopper level and filter condition
- ***Material Saver and Dewpoint Extend*** Modes
- Operational Data available with processor's communications port
- Larger displays and color screen options also available.

Gas Process Air Heater - DHD, PCT²

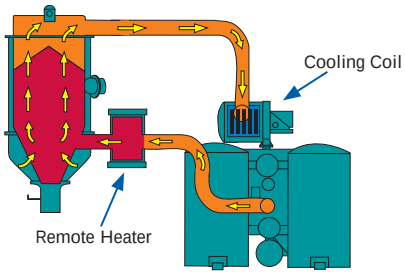
Retrofit any electric dryer or crystallizer with our Gas Pack to convert from electric heat to natural gas heat. Depending on electrical energy cost, natural gas or propane may be an economically better energy source in many regions of the country. The gas pack is a heat exchanger that utilizes natural gas or propane to indirectly heat the process air of your drying system.

Low Temperature Drying Package - DHD



Many resins are dried at temperatures below 180ºF. For this application a water cooled heat exchanger, or cooling coil, is used to lower the process air temperature, protecting the material being dried from exposure to excessive process air temperatures. The romote heater is generally hopper mounted for maximum energy efficiency.

High Temperature Drying Package - DHD



Many resins are dried at temperatures above 250ºF. For this application a water cooled coil is installed in the return air line between the filter and the dehumidifier to lower the return air temperature. Ideally the return air temperature should be 130ºF to permit better absorption of water molecules by the desiccant. The romote heater is generally mounted to the inlet of the drying hopper for more efficient heat transfer and minimal heat loss.

Plasticizer Cooler and Filter - DHD, PCT²

During the drying process of certain types of resins, vaporized volatiles and plasticizers are present in the process air loop. When these vaporized agents come into contact with the desiccant they can penetrate the desiccant beads, solidify, and cause irreversible damage to the desiccant by clogging its pores and greatly reducing the capacity to absorb moisture. The Plasticizer Filter is positioned between the outlet of the drying hopper and the inlet to lower the temperature of the return air which condenses out and captures any volitiles before they reach the desiccant beds. This process improves dryer efficiency, protects the life of your desiccant and helps reduce downtime.

Dryer Options & Accessories - *continued*

Cyclone Floor Pre Filter - DHD, PCT²

Mechanical cyclonic style dust collector, when placed ahead of the dryer's process filter, protects the desiccant from contamination of air born particles. The cyclonic action causes heavier dust particles to fall out of the air stream and collect in the removable dust container located at the throat of the cyclone. The collector reduces maintenance on the primary filter by removing a significant percentage of gross dust particles in the return air stream.

DataLogger Enhanced Dryer Monitoring System - DHD, PCT²

(See Page 24)

Kahn Dewpoint Meter with Panel Display - DHD, PCT²

Permits monitoring of dewpoint levels down to -100ºF.

Alarm Bell/ Light - DHD, PCT²

Audible and/or Visual notification of an alarm condition. Used as an audible or visual plant-wide alarm when a process falls outside established operational parameters.

Insulated Desiccant Bed - DHD

Optional desiccant bed insulation package will improve the efficiency of bed regeneration and help reduce energy consumption in for desiccant regeneration by up to 20%.

13X Desiccant - DHD

Grade 13X desiccant has a larger pore size than standard Grade 4A desiccant. The larger pore openings allow 13X desiccant to trap certain undesirable air born contaminates along with moisture vapor being removed from the process air loop. These trapped contaminates are purged, along with the moisture vapor, during the desiccant bed's regeneration cycle.

Special Voltages - DHD, PCT²

Voltages other than 230 or 460/3/60 volts to accomodate voltage requirements outside of the United States are available.

Support Frame with Casters - DHD

Available on the DHD-4, DHD-6 and DHD-8 sizes of electric dryers to permit easy movement of these dryers in the manufacturing facility.

UL 508 Certified Electrical Panel - DHD, PCT²

Electrical panel manufactured and tested to meet a higher level of safety interlocks and qualaity standards.

Hard Ducting - DHD, PCT²

Required for DHD-25 and larger dryers to interconnect the dryer and hopper system. Custom airtight metallic ductwork packages are available upon request.

TSC, USC & EF Series

Hoppers

Drying Hoppers

UnaDyn's Drying Hoppers are designed to promote the mass flow of a wide variety of materials from virgin pellet to thin flake and other difficult-to handle regrinds. These hoppers incorporate the use of a solid cone in the hopper transition zone. The solid cone design result in better air distribution, efficient and fast material drying, improved mass flow, and a hopper that is easy to clean.

Standard drying hoppers up to 343 cubic feet capacity are available for use with DHD and PCT^2 series dryers. Standard features for all hoppers include the following:

- Solid Mass Flow Inlet Cone
- Laser Cut Access Doors
- Heavy Duty Lid and Door Clamps
- Insulated Side Walls and Access Door
- Clear Sight Glasses
- Material Drain-Out Port w/Slide Gate
- Slide Gate Material Shut-Off on discharge
- Mezzanine or Stand Mounted
- Designed for Easy and Quick Cleaning & Maintenance

TSC Hopper

The TSC Drying hopper is a solid cone all stainless steel hopper. The interior has a smooth finish with no pellet retaining lip or ledges. The hopper has excellent air distribution and material mass flow characteristics. For use with DHD dryer model 4, 6 and 8.

Model	Cubic Foot*	Diameter	Height**
TSC 200	6.7	22.0"	55.0"
TSC 300	8.6	22.0"	63.0"
TSC 400	13.5	28.0"	66.0"
TSC 600	17.5	28.0"	77.0"
TSC 800	23.5	28.0"	95.0"

** Capacity in Cubic Feet with Loader*
*** Overall Height is measured from the hopper lid to the bottom hopper flange.*

TSC Hopper

USC Hopper

Standard construction for the USC Hopper incorporates a split ring design allowing the upper two-thirds of the chamber to be completely removed from the lower section. The two sections are permanently assembled with bolts during installation. Stainless steel construction is optionally available on all sizes. USC Hoppers are ideal for applications utilizing virgin pellets, free flowing regrinds or blends of these materials.

USC Hopper - *Continued*

Model	Cubic Foot*	Diameter	Height**
USC-1100	32	36.25”	93”
USC-1500	43	38.25”	107”
USC-2000	58	44.25”	112”
USC-2500	72	46.25”	123”
USC-3000	86	48.25”	133”
USC-4000	115	50.25”	154”
USC-5000	143	60.25”	150”
USC-6000	172	60.25”	168”
USC-8000	230	66.25”	185”
USC-10000	286	72.25”	198”
USC-12000	343	78.25”	207”

** Capacity in Cubic Feet with Loader*
*** Overall Height is measured from the hopper lid to the hopper bottom flange.*

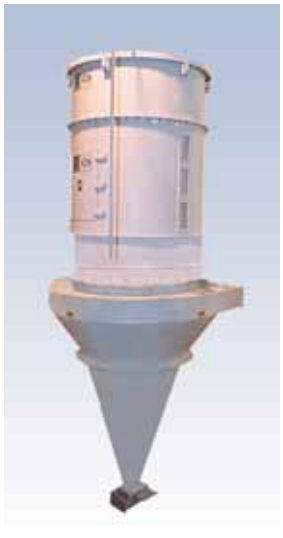
USC Hopper

EF Hopper

Designed to handle hard to flow materials, features 70ºF mass-flow solid cones; the chamber is split allowing lower section to be removed completely from main body section allowing easier cleaning and maintenance.

Model	Cubic Foot*	Diameter	Height**
EF-1100	32	36.25”	117”
EF-1500	43	38.25”	134”
EF-2000	58	44.25”	142”
EF-2500	72	46.25”	154”f
EF-3000	86	48.25”	166”
EF-4000	115	50.25”	188”
EF-5000	143	60.25”	191”
EF-6000	172	60.25”	208”
EF-8000	230	66.25”	229”
EF-10000	286	72.25”	246”
EF-12000	343	78.25”	258”

** Capacity in Cubic Feet with Loader*
*** Overall Height is measured from the hopper lid to the bottom hopper flange.*



Easy Flow Hopper

HOPPER FEATURE COMPARISON

FEATURE	TSC	USC	EF
Solid Cone - No perforated metal	N/A	●	●
Air Tube Solid Cone - No Perforated Metal	●	N/A	N/A
Stainless Steel Internal Surfaces	●	○	○
Polished Stainless Steel Outer Wrap	●	N/A	N/A
Drain-Out with Slide Gate	●	●	●
Hopper Bottom Slide Gate	●	●	●
Double Wall with Insulation	●	●	●
Additional Insulation 4”	N/A	○	○
Sight Glass	●	●	●
Extended Sight Glass	○	○	○
Adjustable Level Sensor	○	○	○
Laser Cut Access Door	●	●	●
Double Insulated Access Door	●	●	●
Hinged Access Door	●	●	●
Bolt on Access Door	N/A	●	●
Adjustable Orientation	N/A	●	●
Air Operated Orfice Gate Valve	○	○	●

●	Standard
○	Optional

DRYING HOPPER SPECIFICATION CHART

DHD Model	TSC	USC/EF	Min Hopper Model	Min Hopper *cuft.	Max Hopper Model	Max Hopper *cuft.
4	x		200	6.8	800	23.5
6	x	x	400	13.5	1100	32.0
8	x	x	600	17.5	1500	43.0
15		x	1100	32.0	2000	58.0
25		x	2000	58.0	4000	115.0
30		x	2500	72.0	8000	230.0
40		x	3000	86.0	8000	230.0
60		x	3000	86.0	10,000	286.0
100		x	6000	172.0	Per Application	
120		x	8000	230.0	Per Application	

** Capacity in cubic foot with lid mounted loader.*

Formula for Sizing Hoppers:

Minimum Hopper Cubic Foot = Pounds per Hour (PPH) x Residence Time (RT) ÷ Minimum Bulk Density (MBD)

$$MCF = \frac{PPH \times RT}{MBD}$$

Example:

100 pph throughput rate, 3 hour residence time, 30 pound per cubic foot bulk density

$$10 = \frac{100 \times 3}{30}$$

Hopper to select would be the Model TSC400

Elongated Sight Glass with Adjustable Lever Sensor

Permits the user to set the limit of material being loaded into the drying hopper or it may also be used for low material level alarm. At no time should the material level in the hopper be set to less than 50% of the capacity of the drying hopper.

Vacuum Take Off Adaptors:

Drop Tube Style Vacuum Take Off

Discharge assembly attached to the bottom of the drying hopper that permits the user to connect a loader to convey the material from the drying hopper to the extruder or injection molding machine. Available with one or two outlets.

Convertible Vacuum Tray Adapter (VTA)

Discharge assembly attached to the bottom of the drying hopper which permits the user to connect a loader to convey dried material from the drying hopper to the processing machine. Available with one or two outlet ports.

Box Style (VTA)

Discharge assemble attached to the bottom of the drying hopper that permits the user to connect a loading system to convey dried material from the drying hopper to the processing machine(s). Available with 3 or more outlet ports.

Bunting Drawer Magnet with Slide Gate

Powerful magnet assembly used to reduce the possibility of ferrous material being introduced into the extruder or injection molding machine. The assembly comes with manual material shutoff slide gate. Available in standard and high temperature designs to suit the application.

Vortex Shutoff Valve

Pneumatic Slide Valve used primarily as a positive, airtight, sealing device. Most common usage is to seal the discharge throat of large, high pressure drop, drying hoppers and on the discharge throat of vacuum chambers when an air tight throat seal is needed to support the operational parameters of the vacuum conveying application.

Drying Hopper Options & Accessories - *Continued*

Remote Mounted Heater

For applications over 250ºF for when minimizing process air heat loss between the dryer and drying hopper is critical and for applications below 150ºF when controlling low process air temperature is critical to the application. Also used for central drying systems with several individual drying hoppers needing different drying temperature settings.

Duct Y's with Dampers

Split the air flow between two drying hoppers. Used when drying resin in two different drying hoppers. The damper valve is used to manually adjust the air flow to each drying hopper, balancing the air flow to compensate for higher or lower pressure drops in dual drying hopper configurations. Individual hopper pressure is affected by type of material, fill level of the hopper and any operational irregularities. *Never open damper valves to an empty hopper.*

Drying Hopper Options & Accessories:

Hopper Support Stands:

Frame and Beam Design - TSC Hoppers

Simple construction and easy to expand into a multiple drying hopper configuration. Ruggedly built with a strong beam between two end frames. Accommodates a wide range of hopper sizes. May be of fixed or portable design. Configured to support single or multiple hoppers. Available with minimum clearance, drum clearance and gaylord clearance.

Structural Design - USC & EF Hoppers

Simple Heavy duty structural angle construction. Available with minimum clearance, drum clearance and gaylord clearance.

The Industry's First Microprocessor Controlled Internal Event Recorder and Data Monitoring System

The DataLogger is the industry's first microprocessor controlled data monitoring system that records event information for enhanced dryer monitoring. The system monitors 12 temperature points and 3 pressure points to help trouble shoot processing problems.

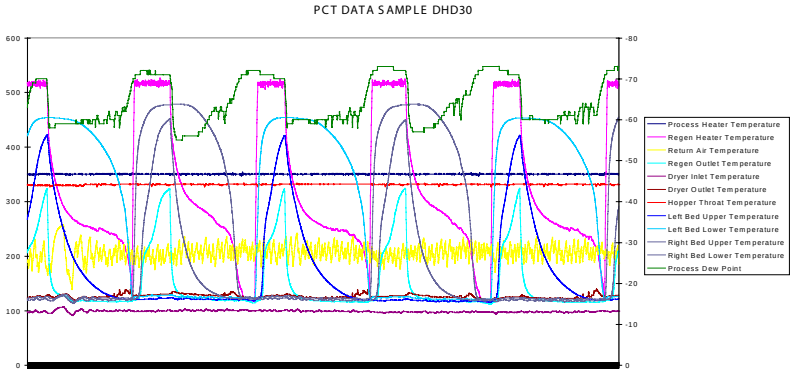
Features

- Sampling rate adjustable from 3 seconds to 3 minutes
- Data is time and date stamped
- Sample up to 48 Hour duration
- Enables critical function analysis
- Downloads to PC for database analysis
- Uses MS Excel or similar applications
- 72 hour history sampling
- E-mail compatible
- Excel spreadsheet file format
- Hopper ready monitor- Green light

Benefits

- Verifies proper equipment operation
- Allows pro-active preventative maintenance
- Easy troubleshooting
- Preventative maintenance
- On-line troubleshooting support

Verify proper equipment operation with sample testing done at adjustable rates of 3 seconds to 3 minutes. Samplings are time and date stamped with sample duration of the 48 hours and a 72 hour history of equipment function. Download to a PC for database analysis in an excel spreadsheet file format. With on-line troubleshooting support, troubleshooting is easy and allows for pro-active preventative maintenance so problems are stopped before they start.



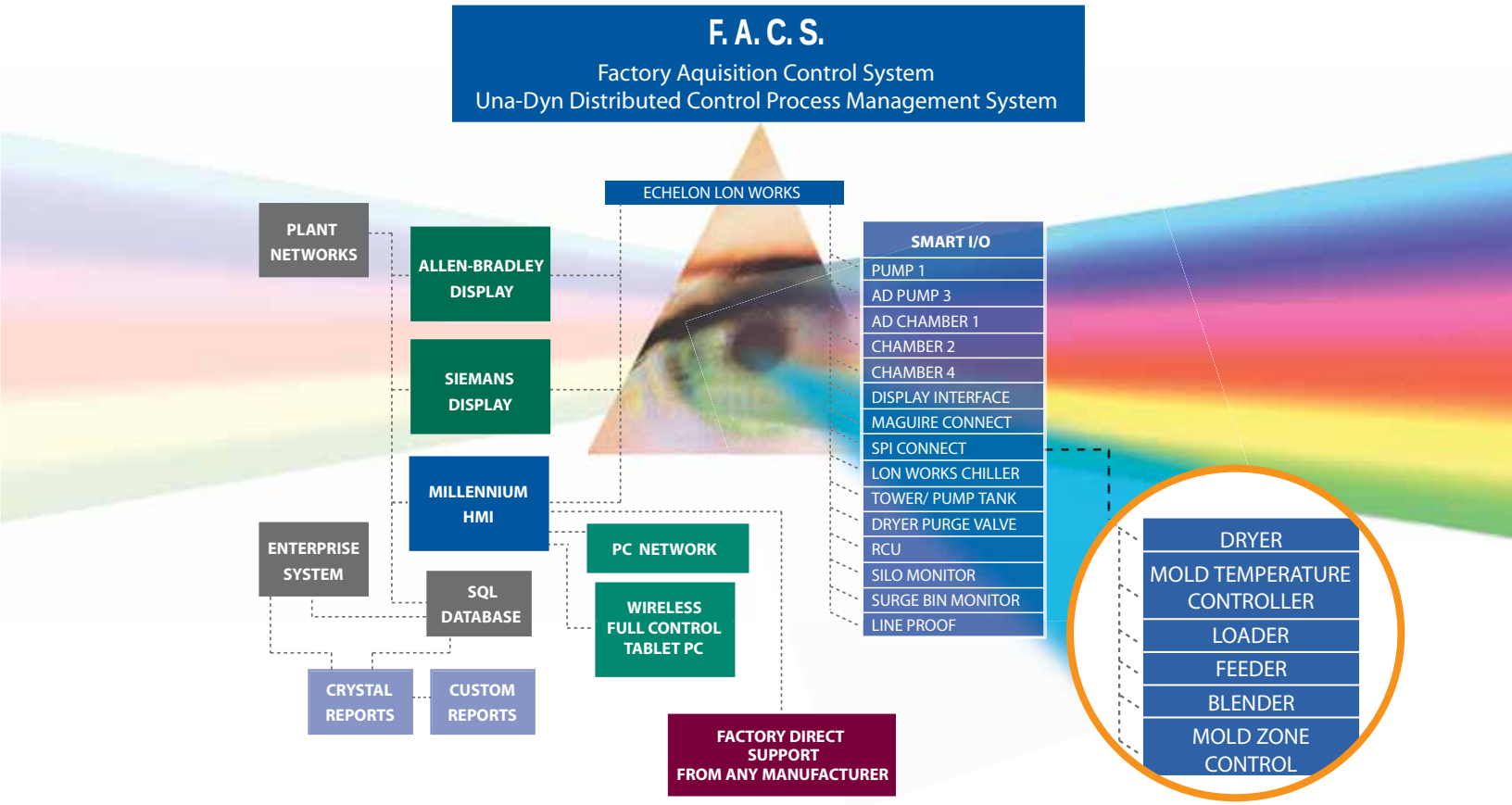
A sample graph of return air temperature, prior to the filter and cooling coil, that fluctuates as material is delivered and cools the air. It reflects the average return temperature and the number of loading cycles.

F.A.C.S. *- Factory Acquisition Control System*

UnaDyn Distributed Control Process Management System

FACS permits plant-wide control of material conveying systems as well as monitoring of most SPI compatible equipment such as mold temperature control units, chillers, dryers and blenders. The two-wire power and communications network, in conjunction with the Windows platform, makes this system economical to install, easy to setup and operate, simple to expand and reconfigure. Through a PC or the compatible Allen Bradley or Sieman PLCs with touchscreen displays, the user can control or monitor system performance from the plant floor or from remote locations. Users can import drawings and pictures to show system configurations or location of equipment. With process chain analysis and verification you can set up, monitor and record setpoints, equipment performance, define material flow paths and equipment selection with a single command. FACS has full graphing capabilities and a built in SQL Database to process all your information and store it with a complete set of reports for immediate or future use.

FACS may be connected to a wired or wireless network and has Factory Direct Support and Factory Direct E-mail to any auxiliary equipment manufacturer with a full set of reports.



RECOMMENDED DRYING CONDITIONS AND EQUIPMENT SPECIFICATIONS

Recommended Drying Conditions

This listing of recommended drying conditions are intended for quick sizing of UnaDyn drying systems. The list is as complete as possible, but one should always be guided by the customer's experience and/or the material supplier's recommendations.

Two known variables are necessary to size a system: MATERIAL and THROUGHPUT, without one, the other is insufficient. There is no such thing as a "nylon dryer", for example, and when someone specifies a "250 lb/hr dryer", the question is: "250 bl/hr of what material"?

MATERIAL: The chart lists many common hygroscopic and non-hygroscopic plastic materials by their acronym or common name, chemical or general description, and some (but not all) trade names and their suppliers. This is the starting point in sizing a system. Remember that the air in the drying hopper must be able to flow through the material, and the more air space between the plastic particles, the more efficient the drying. Most ground scrap is acceptable, if mixed with at least 50% virgin pellets. If the regrind is dusty, a pre-filter cyclone should be used to keep the dust out of the desiccant beds, and to ensure optimum air flow through the system.

THROUGHPUT: Careful determination of the system's throughput, in terms of the capacity of the processing machine(s), is most important. Sizing for too low a throughput will result in poor drying; sizing too high can make the system too expensive. When several materials will be used in the same system, use the material with the longest drying time as the criterion, but be sure to adjust the processing machine's capacity accordingly. If the machine throughput is not known, use the following as guide lines only (all through puts are MAXIMUM):

Extruders (in ABS)

SCREW	1"	1 1/2"	2"	2 1/2"	3"	3 1/3"	4"	4 1/2"	6"	8"
LB/HR	100	150	200	300	500	750	1000	13000	2150	3000

Blow Molders: Use 50% of the capacity of the extruder, from the chart above.

Injection Molders (in ABS)

TON CLAMP	75	125	150	200	300	400	500	750	1000	1500	2000
SHOT	2-3	3-4	4-6	6-8	12-14	20-30	36-48	80-120	150-225	250-300	325-400
LB/HR	20	30	45	55	90	140	250	400	500	600	750

RECOMMENDED DRYING CONDITIONS

HYGRO-SCOPIC	ACRONYM OR COMMON NAME	RECOM-MENDED (HRS)	DEG. In F	NOTES	CHEMICAL DESCRIPTION	TRADE NAME (MANUFAC-TURER)
YES	ABS (molding grade)	2-3	190-200	1,2	Acrylonitrile-Butadiene-Styrene Terpolymer	Cycolac Lustran
YES	ABS (extrusion grade)	3-4	180-200	1,4	Acrylonitrile-Butadiene-Styrene Terpolymer	Cycolac Lustran
YES	ABS/PC	4-5	220-230	1,2	ABS/Polycarbonate alloy	Cycolac Lustrain
YES	ABS/PVC	2-3	160-170	1,2	ABS/PVC alloy	Cycolac Lustrain
YES	Acrylic	2-3	170-190	1	(also Methyl Methacrylate)	Lucite Plexiglas
YES	EVOH	2-3	195-225	1	Ethylene-Vinyl Alcohol copolymer	EVAL
NO	HDPE	1-2	160-180	1,2	High Density (linear) Polyethylene	-various-
YES	HDPE w/max. 3% black	3-4	160-180	1,2	High Density (linear) Polyethylene	-various-
YES	HDPE w/max. 40% black	4-5	160-180	1,2	High Density (linear) Polyethylene	-various-

Recommended Drying Conditions - *Continued*

HYGRO-SCOPIC	ACRONYM OR COMMON NAME	RECOM-MENDED (HRS)	DEG. In F	NOTES	CHEMICAL DESCRIPTION	TRADE NAME (MANUFAC-TURER)
YES	HDPE w/black (cable extr.)	5-6	140-150	3	High Density (linear) Polyethyl-ene (special UCC grade)	UCC
YES	Ionomer	7-8	150-160	1,2,3	Ionomer resin	Surlyn
NO	LDPE	1-2	160-180	1,2	Low Density (conventional) Polyethylene	-various-
YES	LDPE w/max. 3% black	3-4	160-180	1,2	Low Density (conventional) Polyethylene	-various-
YES	LDPE w/max. 40% black	4-5	160-180	1,2	Low Density (conventional) Polyethylene	-various-
YES	Nylon 6, 6/6, 612	5-6	160-180	1,2,7	Crystalline Nylon (Caprolactan)	Zytel Vydene Capron
YES	Nylon (amorphous)	4-5	170-180	1,2,7	Super Tough Nylon	ZytelST
YES	Nylon (transparent)	4-5	180-190	1,7	Transparent Nylon	Zytel330
YES	OSA	2-3	180-190	1	Olefin-modified Styrene-Acryloni-trile copolymer	OSA)
YES	PBT	2-3	250-270	1,2	Polybutylene-Terephthalate	Celanex Valox420
YES	PBT/PLA	4-5	350-370	1,2	PBT/PLA alloy	Valox815
YES	PC	3-4	250-270	1,2	Polycarbonate	Lexan Merlon
YES	PC/PBT/E	3-4	250-270	1	Polycarbonate/PBT/Elastomer alloy	Xenoy
YES	PCS	2-3	220-230	1	Polycarbonate-Styrene copoly-mer	Arloy Cycoloy
YES	PCTA	3-4	160-180	1	Cyclohexane-Terephthalate copolymer	Kodapak
YES	PEEK	3-4	300-320	1,2	Polyetheretherketone	PEEK
YES	PEM	4-5	300-320	1,2	Polyerhermide	Ultem
YES	PES	3-4	300-320	1,2	Polyethersulfone	PES
YES	PLA	4-5	320-350	1,2	Polyethylene-Terephthalate (Thermoplastic Polyester)	Valox 700,800 Cleartuf, Vicuf
YES	PLA (Rynite)	3-4	270-280	1,2	Polyethylene-Terephthalate (Thermoplastic Polyester)	Rynite
YES	PLA (beverage bottles)	5-6	340-350	1,3	Polyethylene-Terephthalate (Thermoplastic Polyester)	Kodapak
YES	PLAG	3-4	140-150	1,3	Amorphous PLA copolymer	Kodar
YES	Polyarylate	5-6	250-260	1,2	Amorphous Aromatic Polyester	Occidental
YES	Polysulfone	4-5	250-260	1,2	(also Polyether, Polyarylsulfone)	Silane Astrel Udel
YES	Polyurethane	2-3	180-200	1	Polyurethane Elastomer	Isonate Estane
NO	PP	1-2	170-190	1,2	Polypropylene	-various-
YES	PPC	3-4	260-270	1	Polyphthalate carbonate	Lexan
YES	PPO	2-3	200-220	1,2	Polyphenylene Oxide	Nory
YES	PPS	2-3	270-280	1,2	Polyphenylene Sulfide	Ryton
NO	PS (styrene)	1-2	180-190	1	Polystrene	-various-
YES	SAN (modified)	3-6	185-160	1	Styrene-Acrlonitrike (with olefin elastomey)	Rovel
YES	SMA	2-3	200-210	1	Styrene-Maleic Anhydride	Dylark
YES	TPE	2-3	210-220	1,2	Thermoplastic Polyester	Hytrel
YES	TPR	2-3	150-170	1,2,3	Thermoplastic Rubber	Santoprene
YES	XLPE	3-4	120		Crosslink PE	
YES	XT	3-4	170-190	1,2	Impact-modified Acrylic Resin	Cyro

DHD ELECTRIC AND GAS DIMENSIONS, CFM AND VOLTAGE

MODEL	DIMENSIONS	CFM	VOLTAGE
DHD-4 *	63"H X 60"W X 42"D	125	230 or 460
DHD-6	68"H X 60"W X 65"D	250	"
DHD-8	73"H X 60"W X 45"D	350	"
DHD-11	84"H X 86"W X 56"D	450	460
DHD-15	92"H X 96"W X 59"D	600	"
DHD-25	97"H X 129"W X 71"D	900	"
DHD-30	100"H X 139"W X 78"D	1250	"
DHD-40	103"H X 139"W X 79"D	1500	"
DHD-60	104"H X 153"W X 83"D	1800	"
DHD-100	108"H X 123"W X 80"D	2500	"
DHD-120	123"H X 154"W X 87"D	3000	"
DHD-150	144"H X 200"W X 94"D	3500	"
DHD-180	150"H X 223"W X 112"D	4500	"

** DHD-4 Available in Electric Only.*

Additional Voltages Available

DRYING HOPPER SPECIFICATION CHART

DHD Model	TSC	USC/EF	Min Hopper Model	Min Hopper *cuft.	Max Hopper Model	Max Hopper *cuft.
4	x		200	6.8	800	23.5
6	x	x	400	13.5	1100	32.0
8	x	x	600	17.5	1500	43.0
15		x	1100	32.0	2000	58.0
25		x	2000	58.0	4000	115.0
30		x	2500	72.0	8000	230.0
40		x	3000	86.0	8000	230.0
60		x	3000	86.0	10,000	286.0
100		x	6000	172.0	Per Application	
120		x	8000	230.0	Per Application	

** Capacity in cubic foot with loader.*

DHD ELECTRIC DRYER SPECIFICATIONS

	DHD-4	DHD-6	DHD-8	DHD-11	DHD-15	DHD-25	DHD-30	DHD-40	DHD-60	DHD-100	DHD-120	DHD-150	DHD-180
PROCESS AIRFLOW (cfm free flow)	125	250	350	450	600	900	1250	1500	1800	2500	3000	3500	4500
PROCESS LINE SIZE (dia.-in)	3 7/8	3 7/8	5 7/8	5 7/8	7 7/8	7 7/8	7 7/8	7 7/8	7 7/8	9 7/8	9 7/8	16	18
WEIGHT (lb)	940	1,000	1,100	1,400	1,800	2,200	3,000	3,500	4,000	6,000	8,000	16,000	18,000
POWER REQUIRED (kva)(std. temp.)	17	19	33	41	43	75	101	141	156	204	291	368	470
POWER REQUIRED (kva)(high temp.)	17	26	43	48	58	98	131	179	201	279	359	428	650
COOLING COIL WATER FLOW (gpm)	4 to 6	4 to 6	8 to 12	8 to 12	12 to 18	18 to 24	18 to 24	24 to 28	24 to 28	48 to 54	48 to 54	54 to 60	54 to 60

DHD GAS DRYER SPECIFICATIONS

	DHD-6GF	DHD-8GF	DHD-11GF	DHD-15GF	DHD-25GF	DHD-30GF	DHD-40GF	DHD-60GF	DHD-100GF	DHD-120GF	DHD-150GF	DHD-180GF
* PROCESS AIRFLOW (cfm free f.)	250	350	450	600	900	1250	1500	1800	2500	3000	3500	4500
PROCESS LINE SIZE (dia.-in)	3 7/8	5 7/8	5 7/8	7 7/8	7 7/8	7 7/8	7 7/8	7 7/8	9 7/8	9 7/8	16	18
WEIGHT (lb)	1,000	1,100	1,400	1,800	2,200	3,000	3,500	4,000	6,000	8,000	16,000	18,000
POWER REQUIRED (kva)	8	8	8	10	13	16	28	28	38	48	57	69
GAS CONSUMPTION (cfh) (1-5 psi pressure req'd)	30	46	61	69	105	138	172	207	207	331	441	661
COOLING COIL WATER FLOW (gpm)	4 to 6	8 to 12	8 to 12	12 to 18	18 to 24	18 to 24	24 to 28	24 to 28	48 to 54	48 to 54	54 to 60	54 to 60

* Process air flow is based on free flow in the hopper. When calculating the actual air flow in a process with material in the hopper, DERATE the free flow by 20%.

• Standard Temperature range is 180ºF - 250ºF

PCT² ELECTRIC AND GAS DIMENSIONS, HARD DUCTING HEIGHT AND VOLTAGE

MODEL	DIMENSIONS	+ height for hard ducting	VOLTS
PCT²-300	82”H X 34.5”W X 65.5”D	6”	460/3/60
PCT²-600	82”H X 34.5”W X 65.5”D	10”	“
PCT²-1000	96.25”H X 48”W X 108”D	15.75”	“
PCT²-1250	96.25”H X 48”W X 108”D	15.75”	“
PCT²-1500	96.25”H X 48”W X 108”D	15.75”	“
PCT²-2000	103.13”H X 60”W X 138”D	19”	“
PCT²-2500	103.13”H X 60”W X 138”D	19”	“
PCT²-3000	103.13”H X 60”W X 138”D	19”	“

Additional Voltages Available

PCT² ELECTRIC DRYER SPECIFICATIONS

	300	600	1000	1250	1500	2000	2500	3000
AIR FREE FLOW	300 CFM / 500 m3/h	600 CFM / 1000 m3/h	1000 CFM / 1700 m3/h	1250 CFM / 2100 m3/h	1500 CFM / 2500 m3/h	2000 CFM / 3400 m3/h	2000 CFM / 4200 m3/h	3000 CFM / 5000 m3/h
WEIGHT	3000 lbs / 1400 kg	3500 lbs / 1600 kg	5000 lbs / 2300 kg	5500 lbs / 2500 kg	6000 lbs / 2700 kg	8500 lbs / 3900 kg	9000 lbs / 4082 kg	9500 lbs / 4309 kg
PROCESS DUCT SIZE	6”/150 mm	6”/150 mm	8”/200 mm	8”/200 mm	8”/200 mm	10”/250 mm	10”/250 mm	10”/250 mm
TOTAL LOAD	44.4 kva	61.8 kva	103.7 kva	139.1 kva	187.5 kva	199 kva	250 kva	287 kva
COOLING WATER REQUIREMENT	8 - 12 gpm	12 - 18 gpm	18 - 24 gpm	18 - 24 gpm	24 - 28 gpm	24 - 28 gpm	48 - 54 gpm	48 - 54 gpm

PCT² GAS DRYER SPECIFICATIONS

	300	600	1000	1250	1500	2000	2500	3000
AIR FREE FLOW	300 CFM / 500 m3/h	600 CFM / 1000 m3/h	1000 CFM / 1700 m3/h	1250 CFM / 2100 m3/h	1500 CFM / 2500 m3/h	2000 CFM / 3400 m3/h	2500 CFM / 4200 m3/h	3000 CFM / 5000 m3/h
WEIGHT	3000 lbs / 1400 kg	3500 lbs / 1600 kg	5000 lbs / 2300 kg	5500 lbs / 2500 kg	6000 lbs / 2700 kg	8500 lbs / 3900 kg	8500 lbs / 3900 kg	8500 lbs / 3900 kg
PROCESS DUCT SIZE	6”/150 mm	6”/150 mm	8”/200 mm	8”/200 mm	8”/200 mm	10”/250 mm	10”/250 mm	10”/250 mm
TOTAL LOAD	6.2 kva	7.6 kva	11.0 kva	13.3 kva	23.0 kva	38 kva	38 kva	43 kva
COOLING WATER REQUIREMENT	8 - 12 gpm	12 - 18 gpm	18 - 24 gpm	18 - 24 gpm	24 - 28 gpm	24 - 28 gpm	48 - 54 gpm	48 - 54 gpm
TOTAL GAS CON-SUMPTION	12 CFH	266 CFRH	378 CFH	530 CFH	621 CFH	800 CFH	900 CFH	1100 CFH

System designed for operation up to 3000ft/1000m above sea level - Other elevations must be specified at time of purchase!
460/3/60 Voltage is standard - other voltages available, consult factory for details Compressed Air: 80-120 psig/5-8 bar
Standard Temperature Range: 160º - 375º Fahrenheit (71º - 191º Celsius)
***GAS ONLY*:** Gas Pressure Required - 0.5 psig to 1/5 psig - 34.5 mbar to 103 mbar overpressure

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