Q. My dryer has dew point control. What's different about MoistureMaster™?

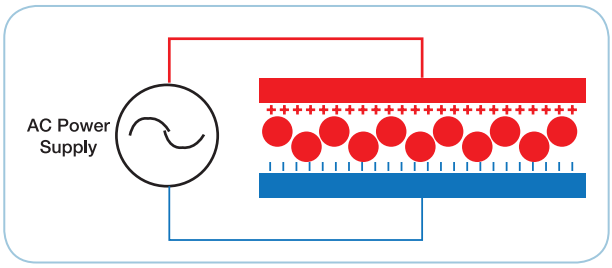
A. Dew point is basically the measurement of the humidity in the air. It has absolutely nothing to do with the amount of moisture that is actually in the pellet. Historically dryer manufacturers have generated extremely dry air (-40° F dew point) at high temperature and users have been told to circulate this ultra dry, hot air in a hopper full of pellets for a period of time from 2 to 6 hours depending on the resin. The problem with that approach is that the starting point of the resin is usually not the same. For example, was it stored in a silo? What's the humidity outside? What's the temperature of the resin? So as a result, many people over-compensate because they simply don't know if the pellet is dry until its too late. The results include wasted energy, over–dried resins and in some cases rejected parts.

Q. If I have hot air and good dew point, isn't that good enough?

A. Hot dry air is a big part of the drying puzzle, but the problem is you really don't know what moisture is left in the pellet unless you use an offline moisture analyzer–and by that time it's too late. It's just like putting a beef roast in the oven at 375° F for 2 hours and assuming it would be done. In most cases, you'd always check it out with a meat thermometer to check the internal temperature of the beef. But its impossible to check the pellet temperature this way, so the safe bet has always been to over-cook the resin because under-cooking can immediately cause process issues.

Q. How does MoistureMaster™ work

A. MoistureMaster™ sensing technology is based on capacitance. This technology has been used very successfully for nearly 50 years in the grain, pharma and food industries to measure moisture content. MoistureMaster™ uses AC current, but it is quite different from the familiar 60Hz household current. The frequency that MoistureMaster™ uses is upwards of 1,000,000 Hz giving us a significantly higher number of samples. Knowing the dielectric constant of a given resin and/or additive gives us a way to then map those readings against the known capacitance constant of water. From there using sophisticated built-in PLC controls, we can use the data to calculate the actual moisture content of the pellets as they are flowing through the MoistureMaster™ sensor (which is currently available in a 3" diameter chamber for up to 3000 lbs/hr).



Q Hasn't this been tried before?

A. As mentioned above, measuring moisture this way has been used in the food and pharma industries for years, but in those industries the allowed moisture content level was much higher than those in the plastics industry. The progression of computerized controls for fast comparative calculations has made this same concept now possible for the plastics industry. The flows of data and comparative technologies within earlier attempts just didn't have the same computing power…no different from many, many technological advances in our daily lives. In fact, its taken eight years of beta-testing in Europe and research projects through a major university in Switzerland with government backing to bring the MoistureMaster™ sensor to where it is today.

Q. So the MoistureMaster™ was developed and tested in Europe?

A. Yes, the MoistureMaster™ sensor has been developed and tested in Switzerland by BryAir Prokon as the BryScan 100 unit–and has been independently verified by a major university in Switzerland with government research backing. Novatec now integrates this sensing technology into a separate PLC touch screen controller developed with Siemens which provides a full range of Ethernet, wireless and other outputs so you can get your process back in control. BryAir Prokon has a test lab in Switzerland as does Novatec in Baltimore, Maryland (minutes from BWI Airport).

Q. Can this be integrated with existing drying hoppers even though they aren't Novatec drying hoppers?

A. Yes, MoistureMaster™ can be retrofitted to an existing drying hopper. No matter if the drying hopper is from Conair, AEC, UNA-DYN, Motan or others–the sensor can easily attach to the base of the hopper. Novatec has a host of adaptors and diverter assemblies to help you get it installed quickly and easily–***and the retrofit is available today.***

Q. Can this be integrated in material lines as well?

A. Yes, MoistureMaster™ can be installed in material lines as well–for example in a silo line to verify moisture content of incoming resin.

Q. What are the limitations today?

A. There is no minimum throughput, but the maximum throughput is currently about 3000 lb./hr based on pellets with a bulk density of 38 lb./ft ^{3}. Adaptor flanges are available to connect the MoistureMaster™ sensor to anything from a small drying hopper up to a large silo flange. The current MoistureMaster™ is not for bottle grade PET due to temperature limitations, although we expect to introduce MoistureMaster™ PET later in 2012. The MoistureMaster™ PET version will also have targeted PPM receptivity down to the 5-10 PPM range.

Q. What is the sample size? How often does MoistureMaster™ take a measurement?

A. The sampling zone has a volume that encompasses about 1 lb. of material. Nearly one million measurements are taken every second *(something that couldn't be done with earlier control technology)*. The mean average for the this time frame is then recorded. This gives the user a nearly continuous online reading of the moisture of the pellets passing through the chamber. With the separate Novatec MoistureMaster™ controller, you can then monitor and trend your pellet moisture online and automatically. The controller can also broadcast the trending to your in-house QC system. Offline measurements should be a thing of the past–and your employees can get your process under control.

Q. How do we verify that the measurement system is working correctly? How do you calibrate the device? What level of maintenance is required?

A. MoistureMaster™ has a built-in self calibrating function that should be sequenced about once a month. It can also be calibrated using a moisture specific offline analyzer or Novatec can check samples on a regular maintenance basis. Since there are no moving parts, there isn't a preventative schedule involved here.

Q. What is the lowest level of moisture capable of being measured?

A. The sensor can maintain its accuracy of ±10 ppm down to a value of about 50-100 ppm. The upcoming MoistureMaster™ PET will be targeted at 5-10 PPM levels for PET bottle production.

Q. Does MoistureMaster™ need to be calibrated for each resin type?

A. MoistureMaster™ needs to be set for the resin family (ABS, PC, etc.) that is being measured. At present, there is a list of over one-hundred resin families that have been pre-calibrated in the PLC controller which should satisfy the vast majority of applications. If you have a new resin that's not on the menu, Novatec can test it for you and send you the special codes to upgrade your PLC.

Q. Can MoistureMaster™ measure the moisture in regrind flake or granules?

A. The shape and particle size doesn't affect the ability to accurately measure the moisture content. The value displayed from the sensor will be the average moisture of the virgin/regrind mix that is currently in the measurement chamber (prox 1 lb.) If the moisture is varying, the output will show what the average value is for all the material in the sensor at that time. If the mixture has been blended, the blend should also reflect a consistent average.

However, off line testing is typically more inconsistent because the sample size is so much smaller (typically about 10 grams).

Q. I have a recent Novatec wheel dryer. Can you integrate the MoistureMaster™ controller into the dryer itself?

A. Novatec and Siemens have developed programs to upgrade the PLC units of almost all Novatec wheel dryers produced during the last five years so that the dryer PLC units can actually be used for the MoistureMaster™ as well–making for a more economic installation. The MoistureMaster™ Plus drying option, which takes the moisture data and actually controls the dryer accordingly, can also be retrofitted on Novatec's PowerGuard™ and IntelliPET™ wheel dryers.

Q. I am considering a new dryer. What's the best way to specify so that MoistureMaster™ is inside?

A. New Novatec dryers can be integrated with MoistureMaster™ in two ways. The line of MoistureMaster™ dryers automatically include the MoistureMaster™ software in the dryer panel for moisture monitoring. The MoistureMaster™ Plus dryers using our proprietary PowerGuard™ technology not only displays the moisture on the dryer screen, but also regulates the dryer for increased or lessened drying, dependent on moisture levels for optimum drying and process performance. It also includes diverter and slide-gate options.

Q. How do you correct an over-dried moisture level such as with Nylons?

A. With many nylon products, over-drying is commonplace causing rejected parts–especially in automotive applications. For those applications, MoistureMaster™ Plus dryers will be able to regulate drying performance to avoid over-drying and if there is over-drying, a separate option can remoisturize the polymer so that it can be properly processed.

Q. Can the sensor be mounted on a machine throat supporting a drying hopper or blender?

A. Yes, special adaptor packages from Novatec are available to support the additional weight. The sensor comes with a 15 ft. extension cable and can operate up to 100 feet from the controller. Additional cables are optional. The controller has wireless and Ethernet options for broadcast to your PC quality control network and for automatic alerts.

Q. Since this is a pass-through sensor, if the resin isn't dry yet, where does it go?

A. As one of the leading conveying and drying companies in North America, we have several control interlock options available to suspend pneumatic conveying or use an automatic isolation gate to stop material flow when conditions are out of a specification range. The PLC control system can also facilitate automatic return of the material to the hopper inlet as well for additional drying. The MoistureMaster™ Plus dryers with Powerguard™ feedback control would also change the dryer performance through temperature and airflow to avoid this situation.

Q. What is the cost of MoistureMaster™ ?

A. The cost for MoistureMaster™ retrofits or the MoistureMaster™ units integrated into dryers is typically less than ordinary offline moisture measurement tools. We've designed this technology to be affordable so that processors can *get quick paybacks* and get their processes under control. Call us today for our user price list.

Q. What is the availability of MoistureMaster™ retrofit and MoistureMaster™ dryers?

A. The retrofit units are available ***NOW…*** only from Novatec. Novatec is also taking orders for normal lead-time deliveries on the MoistureMaster™dryers.

Q. What is the warranty for MoistureMaster™?

A. Novatec offers a no-nonsense complete money back program on MoistureMaster™ should you not be satisfied during the first 90 days. In addition, Novatec offers a ***5 year warranty*** on both the controller and the sensor itself. Available now… Only from Novatec.