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01/01/08

M501 Programmable Fluid Bed Dryer

The New Sherwood Scientific microprocessor FBD can be programmed via a computer interface to step through an unlimited number of drying stages having the following parameters defined controlled and monitored:

- Inlet air temperature
- Blower motor speed
- Pulse flow function (for difficult to fluidise samples)

Without a computer interface the Programmable Dryer can run one stored programme of up to 16 steps, or can be used as a conventional Dryer.

Additional features of this advanced in-lab dryer technology include: Precise air flow control and Membrane sealed controls to prevent ingress of particles into the instrument.

The following items are required to achieve programmable drying:

- The dryer
- Software
- Tub Assembly

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- Computer Interface cable
- Computer

The addition of a humidity/outlet temperature probe to the Programmable Dryer upgrades the instrument to an Analytical Dryer.

The following data is captured and stored:

- Air flow rate
- Inlet temperature
- Pulse flow condition
- Outlet temperature
- Relative humidity

Each drying step can be programmed to terminate either on duration of step, humidity level achieved or outlet temperature reached.

The analytical dryer can be used to monitor both manual as well as programmed operations. The captured data can be transferred to an Excel worksheet which allow drying curves and moisture calculations to be performed.

The Classifier Assembly allows you to take a sample, remove fines, and classify your product by the Stokes' parameters of size, shape, and density (moisture).

With vigorous mixing by air flow, opening the valve on the sampler takes a representative sample in seconds without interrupting the drying process. By gradually increasing the air flow rate, the operator can selectively remove fines or the sample which is the first to dry out, since it is less dense.

The Sampler serves as an effective classifier with samples having a broad range of particle size or bi-modal distribution. It is best to dry the sample before trying to classify.

Mini-Glass Tubs made to fit our Multi-Tub Assembly holds 250 millilitres of sample and uses a conventional mini-filter bag.

A Multi-Tub Assembly holds four Mini-tubs which are dried simultaneously on the Fluid Bed Dryer. This is particularly useful for drying 4 samples for further analysis of particle size, chemical constituents, or for evaluation by tasting or olfactory panels. Choice of filter bags include:

- Nylon - resistant to alkali vapours.

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- Terylene - resistant to acidic vapours
- Polypropylene - chemically resistant to both vapours, but is designed for prolonged use only, at drying temperatures under 100°C.

Sealed Tub Assemblies are now available in 5 Ltr and 250 millilitre Glass-Tubs.

Samples having a wide (or bi-modal) distribution of particles are difficult to fluidise without getting some overflow of sample into the filter bag.
Using a Sealed Tub Assembly, the top filter plate seals on a silicon 'O' ring, retaining the sample in the tub. By selecting 5 micron inlet and outlet filters, we are now able to fluidise and dry down to 5 micron size particles. The filter size must be specified on ordering to ensure maximum drying capacity.

A Pulse Flow Device can be added to the M501 Fluid Bed Dryer as an optional extra.

With a PFD you are able to pulse air into the sample and adjust the frequency of pulsing as well as the duration of alternating between pulsed and normal continuous flow. Pulsing the flow has been found analogous to providing external shaking and mixing. Samples which are difficult to fluidise, like long wet strands of irregular shaped leaves of tobacco or tea are 'blown apart' and mixed by pulsing the flow.

The Sieve Drying Assembly is made to fit the analogue or digital Fluid Bed Dryer. Single or multiple stacked sieves having a diameter of 8 inches (or 200 mm) can be placed on the dryer and dried within 15 minutes.

Specials ..... Routine 'Specials' include putting inlets for thermocouples into 5 litre glass tubs or inlets to accommodate a spray head for coating samples. We are always receptive to solving problems presented by new applications.