Application notes

Moisture in paper

The CHINO IM series is an on-line multi wavelength liquid analyzer utilizing infrared absorption technology to measure percent water in paper production. The standard moisture range of the unit is 2.0% to 12.0% with a 0.2% resolution or 0.0% to 30.0% with a 0.8% resolution. Moisture values of paper in the paper making process and humidification process must be suppressed to be within several % H2O with the reference value for the purpose of attaining the uniform quality and energy-saving. After winding, the moisture value is normally controlled by a sample test. With CHINO IM series, it will be measured in on-line mode and the dryer temperature is controlled to set the moisture value to conform to its aimed specified value as increasing examples in recent years.

Signal processing capabilities are built into the compact designed detector unit for easy installation and operation. A maximum of 99 calibration curves can be stored into the detector memory for numerous measurement applications. The detector can be used by itself or connected to a PC or DCS plant control system. Both analog (4 to 20mA DC) and digital (RS-485 or LAN Ethernet) outputs are provided. A remote setting display unit, which connects up to 9 detector units, can be used to set various detector functions and also displays measured values.
### Moisture in paper

<table>
<thead>
<tr>
<th>Products / Location</th>
<th>Parameter</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper</td>
<td>Moisture</td>
<td>2 to 12%</td>
</tr>
<tr>
<td>Paper</td>
<td>Moisture</td>
<td>0 to 30%</td>
</tr>
</tbody>
</table>

#### Recommended model / Item

* General moisture unit
  - Model: IRMA1100S  Qty: 1
* Air purge hood
  - Model: IR-WEA    Qty: 1
* Calibration checker plate
  - Model: IR-WEB    Qty: 1

#### Installation

There are many points the moisture level needs to be monitored and controlled in order to create certain type of paper, such as after press, before initial dry or after several dryers. Some customers may need a traversing mechanism in order to have moisture profiling.

#### Absorption characteristic

Above chart indicated coalition between infrared spectrum and substance transmission.

#### Calibration curve

Calibration curve is a correlation between moisture determined by customer's reference instrument and IR absorption measured by IRMA.

1. Prepare samples with various moisture content
2. Show each sample to IRMA and record absorption level
3. As conducting step-2, determine moisture level with your reference instrument
4. Put all data points on a X/Y graph and see if there’s a correlation

Note: Reference instrument may vary depending on the method (by volume or weight).

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