Process Control for the Pulp and Paper Industry

Introduction

Ranking among the world's largest industries, the manufacturing of pulp, paper, and paper products produces over 400 million tons of product per year. Pulp and paper processing mills are found in more than 100 countries, with some mills only focusing on pulp or paper manufacturing, and others covering the entire production process from start to finish. Others still focus on the processing of recycling paper materials. Regardless of the type or amount of processing that occurs, moisture and ash analyses are necessary to control production time and costs. Whether it is by better calculating the amount of wood required per ton of pulp, controlling the amount of coating or binder used in finishes, or quality checks on incoming materials, these two simple test results need to be delivered quickly and accurately. CEM equipment has been trusted for almost 40 years as a source of dependable process control equipment and the new SMART 6™ Moisture/Solids Analyzer and Phoenix™ Muffle Furnace can provide precise results up to 80% faster than other techniques.

Key Benefits

- Able to test pulp, paper, black liquor, coating, and more on a single system
- Moisture results in as little as 2 minutes
- Ash data in minutes instead of hours
- AOAC, USP, and ASTM approved techniques
- Durable design allows for decades of use before replacement

SMART 6

The SMART 6 is the newest moisture analyzer from CEM Corporation. Improving upon the SMART Turbo™, which is used in pulp and paper plants around the world, the SMART 6 uses the proprietary new iPower Technology to heat samples. This breakthrough technology allows the system to now analyze any product, regardless of moisture content, faster and more accurately than ever before. Samples from the digester, washer, headbox, or coater can have results in less than 2 minutes, with results that will compare to the precision previously only obtainable by ASTM oven methods, which can take hours to perform. With a number of safety protocols, such as adjustable airflow to quickly remove hazardous volatiles or a standard flame detection and extinguishing option, the SMART 6 guarantees accurate results as well as the safety of its operators.

Plant and Lab Managers will be impressed by the intuitive user interface. While the system comes standard with training videos and step-by-step guidance to ensure proper use, results can be statistically reviewed and analyzed right on the system, producing SPC charts and even logging audit trails. Plants with LIMS networks or external storage databases can hook the system up via ethernet or USB ports for quick and easy data management. Recently named one of the top 3 new products at Pittcon by Instrument Business Outlook, the SMART 6 system is a revolutionary system that will tackle the needs of any production facility.

Phoenix

Since the Phoenix system's introduction to the market, it has revolutionized muffle furnace analysis by supplying users with a more rapid, safer technique for ashing samples. Using microwave technology to quickly and efficiently generate heat, the Phoenix can reach optimal ashing temperature in less than 20 minutes and ash samples in 10 minutes, when they typically take 1 – 2 hours or more in conventional muffle furnaces. With programmable methods that can set ramps and dwell times, the only steps the user has to take is weighing of the sample and placing it in the muffle furnace. The Phoenix will ash the sample, and calculate the results, ensuring the right result everytime. This allows for better control of fillers and binders, as well as management of TiO_2, to reduce cost and overhead. The Phoenix utilizes fully approved ASTM and USP methods, and is the premium ashing analyzer for your pulp or paper production needs.

Pulp and Paper Moisture/Solids and Ash Data

Moisture/Solids in Various Samples

Sample	Kaolin (% solids)	Black Liquor (% solids)	TiO(2) Slurry (% solids)	Maple Wood Chips (% solids)	Aspen Wood Pulp (% solids)	Paperboard (% moisture)	Paper (% moisture)
1	55.25	37.08	71.86	67.86	31.95	9.47	9.2
2	55.31	37.25	71.88	67.22	31.92	9.42	9.14
3	N/A	37.70	71.84	67.77	32.21	9.43	9.11
Average	**55.28**	**37.34**	**71.86**	**67.62**	**32.03**	**9.44**	**9.15**
Reference	**55.34**	**36.3**	**71.83**	**65**	**30**	**10.5**	**9.5**

Ash in Various Samples

Sample	Gound Wood Chips 1 (% ash)	Ground Wood Chips 2 (% ash)	Corrugated Medium (% ash)	Kraft Paper (% ash)
1	6.67	6.26	4.31	0.74
2	6.63	6.39	4.30	0.68
3	6.58	6.25	4.31	0.72
Average	**6.63**	**6.30**	**4.31**	**0.71**