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Humidity Measurement for Paper Dryer Control

Introduction

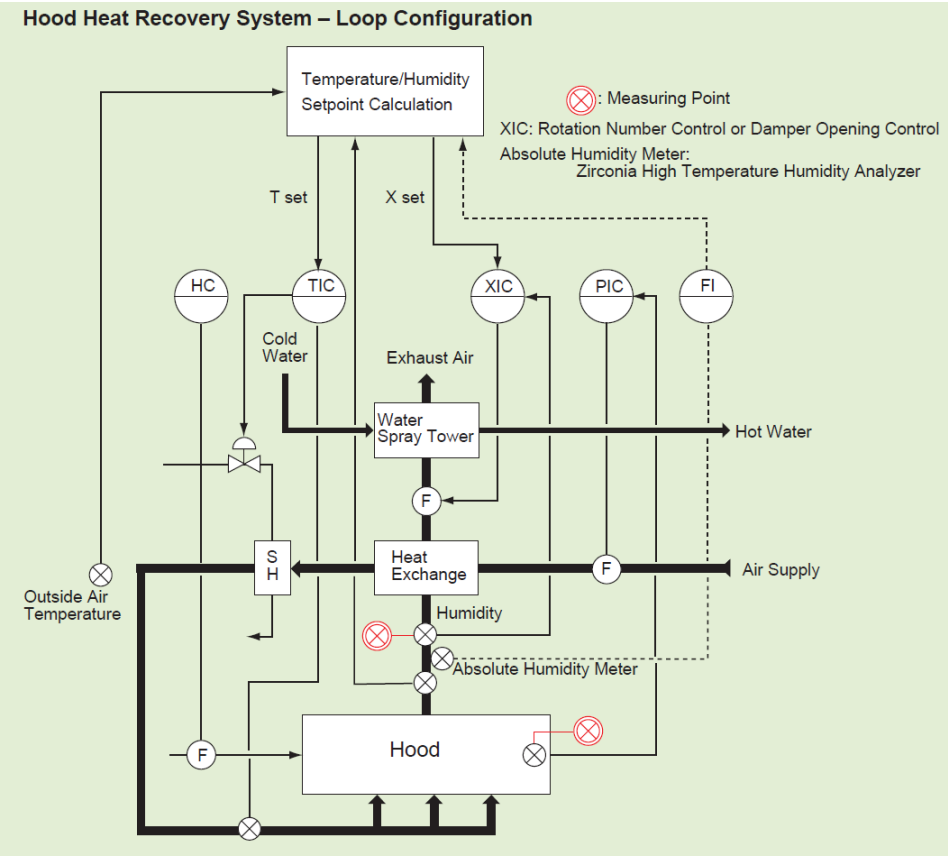
Drying is an important part of the papermaking process that evaporates the remaining water in the wet paper web. This is performed with a dryer, and the humidity control in this dryer is essential to maintaining high paper quality (e.g., strength, paper surface) and high heat energy efficiency.
The ZR802G Zirconia High Temperature Humidity Analyzer requires no sampling system and operates stably in high-temperature environments. It has been well received in the marketplace.

Expected Benefits

- Increases the heat energy efficiency of the dryer in the papermaking process
- Ensures high paper quality
- Reduces operating costs

Process Overview

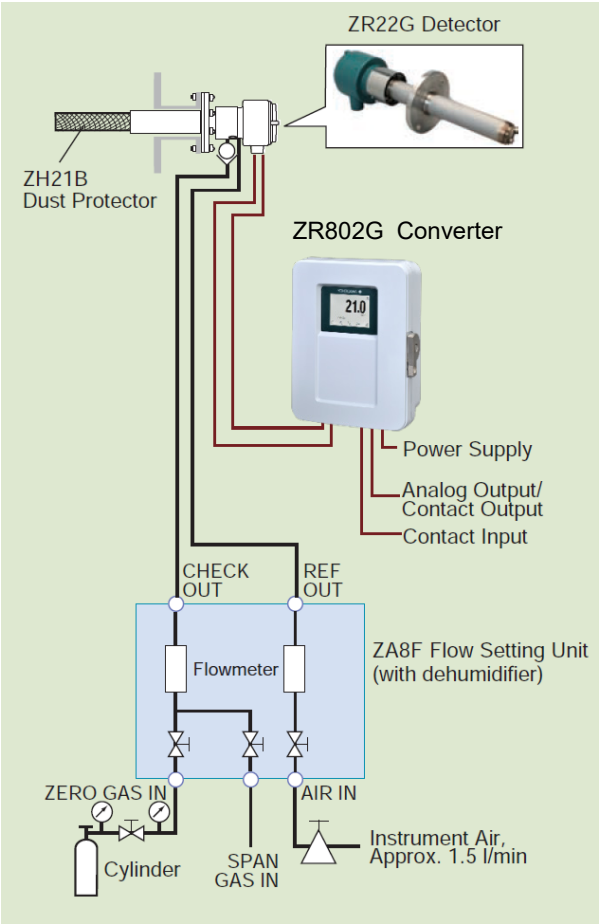
The pulp suspension is dispersed uniformly, dewatered, and pressed to produce wet paper, the moisture content of which is approximately 20 to 50%. The remaining water is removed by evaporation. This is achieved by passing the sheet through a steam-heated roll in a closed dryer. The water is evaporated by recirculating hot (50 to 120 °C), low-humidity air through the dryer. To maintain the specified humidity, humidity meters are installed at several locations in the dryer.



Solution Details

Process conditions

Measurement point: Closed (semi-closed) hood or exhaust duct of hood with humidistat control
Temperature: 50 to 120°C
Pressure: Negative
Dust: Trace amounts (paper dust)



Measurement system

Detector: ZR22G-040-S-C-E-☐-☐-E-A /☐
Dust protector: ZH21B-040-A*B
Converter: ZR802G-☐-☐-N-N /☐
Flow setting unit: ZA8F-A*C/Z
/Z: with dehumidifier (when needed)
Pressure regulator: G7013XF or G7014XF
Case for calibration gas cylinder: E7044KF

Note: the calibration gas cylinder must be purchased locally

Utilities

Rated voltage: 100 to 240 V AC
Rated frequency: 50/60 Hz
Power consumption: 330 VA (Max. 800 VA)
Instrument air (reference gas): pressure: 300 to 700 kPa

Notes

- The humidity measurement system introduced here can also be used in dryers in the flour and starch making processes.

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