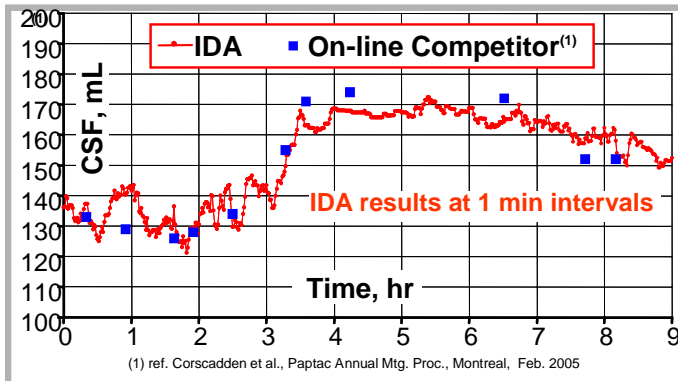




OpTest Equipment Inc.

Intelligent Drainage Analyzer (IDA)

The IDA provides a rapid, on-line measurement of pulp Freeness. Using state-of-the-art engineering, it provides exceptional availability and minimum maintenance costs, including outstanding ease of believable calibration. IDA's fast response is ideal for automatic and manual control of chip and pulp refining, groundwood production, screening and blending as well as analysis and reduction of sources of variability.



Typical IDA results

ADVANTAGES:

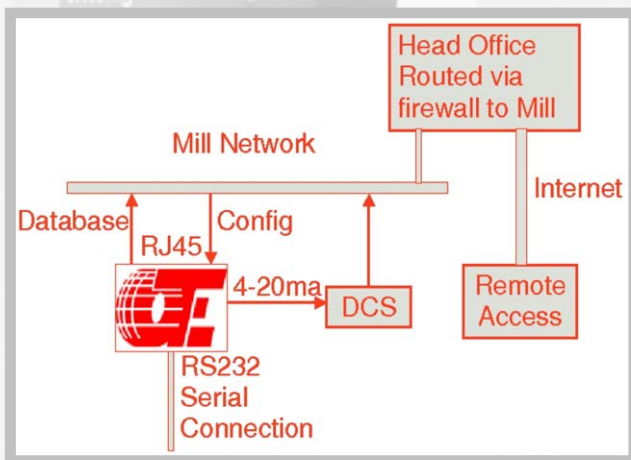
- Accurate, frequent (samples/min) on-line measurement of Freeness (CSF, S.R., Williams)
- Measure short term Freeness variations
- Constant cycle time for optimum control effectiveness
- Economical, believable, automatic calibration and monitoring with laboratory tests
- Automatic standardization of internal sensors
- Monitors and corrects for screen resistance: Warns for cleaning action
- Internet connectivity
- High reliability; on-line diagnostics; local & remote support

IDA

Intelligent Drainage Analyzer

PRINCIPLE OF OPERATION

- IDA uses state-of-the-art computer hardware, software, mathematical models and sensors to control and measure the high-speed dynamics of its batch pulp filtration.
- Automatic standardization monitors and eliminates internal sensor drift. IDA determines the resistance of the screen, which increases over the longer term due to fouling and is a well-known cause of error and maintenance expense for traditional on-line Freeness sensors.



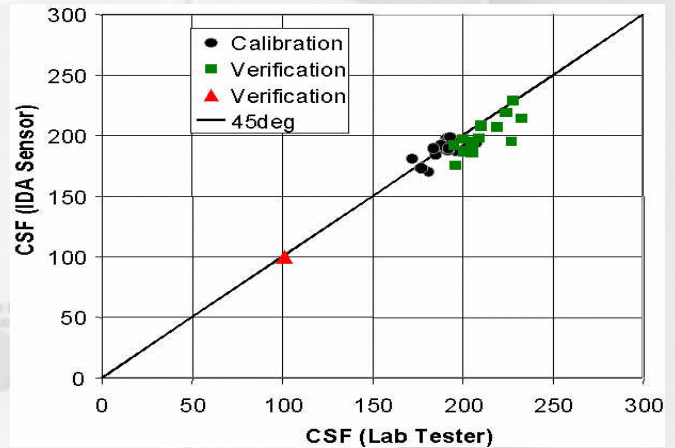
IDA communication pathways

- The filtration resistance of the pulp is measured and normalized for temperature, consistency and pressure head. These measurements are used by IDA's *Fascal* function to determine the value of standard tests such as Freeness, S.R. etc.

EFFECTIVE, ECONOMICAL, BELIEVABLE CALIBRATION

Calibration is critical for any on-line sensor. This objective has been met in full! The procedure is automated using routine laboratory sample/test data. The fully extrapolatable models used by IDA mean that no special "bump" tests are necessary. Neither is it necessary to collect data over the full range of expected operation. This greatly reduces the effort involved.

Equally important, the single parameter IDA calibration method allows the Freeness target to be changed up or down, beyond the range of the calibration data, with IDA retaining its calibration.



IDA calibration (black circles) and verification (green squares & red triangle)

Internet connectivity permits automatic, routine monitoring of the IDA calibration, versus laboratory tests. In the rare event that a drift is detected, IDA automatically recalibrates itself, notifies the operator and creates and archives a re-calibration record

SPECIFICATIONS

- Freeness Range: 25 to 800 mL CSF
- Pulp Consistency Range: 1.5% to 6%
- Computer (NEMA 4) Cabinet:
 - 60cm x 60cm x 35cm (24"x24"x14")
- Valve Panel: 46 cm x 46 cm x15 cm (18"x18"x6")
- Constant Head Sampler: 70cm x84 cm x180 cm (27"x33"x70")
- Freeness Output: Via network and/or 4-20 mA
- Dirty Screen Alarm: (D.O.) and/or network
- Calibration record: Network

SERVICES REQUIRED

- 120V/240V 60Hz/50Hz, 2kW
- 4-20 mA pulp consistency signal
- Instrument air: 350kPa (50 psi), intermittent demand at 30 L/s (30 cfm)
- Water (<40C): air:350kPa (50 psi), intermittent demand at 0.01 L/s (0.01USG/min)



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