NANSULATE®

AWARD-WINNING ENERGY SAVING & ASSET PROTECTION COATINGS

CASE STUDY - PULP & PAPER INDUSTRY

PAPER PRESENTED AT PAPERTECH 2011 BY
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DEVELOPMENT, SESHASAYEE PAPER & BOARDS, LTD.

The following case study is from a presentation given by Dr. T.G. Sundara Raman of Seshasayee Paper & Boards, Ltd, which highlights the energy saving and environmental benefits experienced as a result of using Nansulate® Translucent PT in their manufacturing facility.

NOTE: They used an application of six coats of Nansulate® Translucent PT, at a dry film thickness of 300 microns (12 mils). The cure time for this thickness is typically 45-60 days, depending upon environmental conditions. Their temperature readings were taken 30 days after application, which was prior to cure time completion. This means that once the full cure time was achieved, the temperature differentials would improve beyond what was measured in this case study.

This paper was presented the 5th annual Papertech conference for the Pulp & Paper Industry, which is organized jointly by CLL-Sohrabji Godrej Green Business Centre and the Indian Paper Manufacturers Association (IPMA).

We have included select slides from the full paper presentation to illustrate the case study details.

ENERGY CONSERVATION USING NANO-TECHNOLOGY BASED INSULATION COATING IN PAPER MACHINE DRYER AT SESHASAYEE PAPER

Dr T.G.Sundara Raman

Seshasayee Paper & Boards Ltd.

PAPER TECH 2011

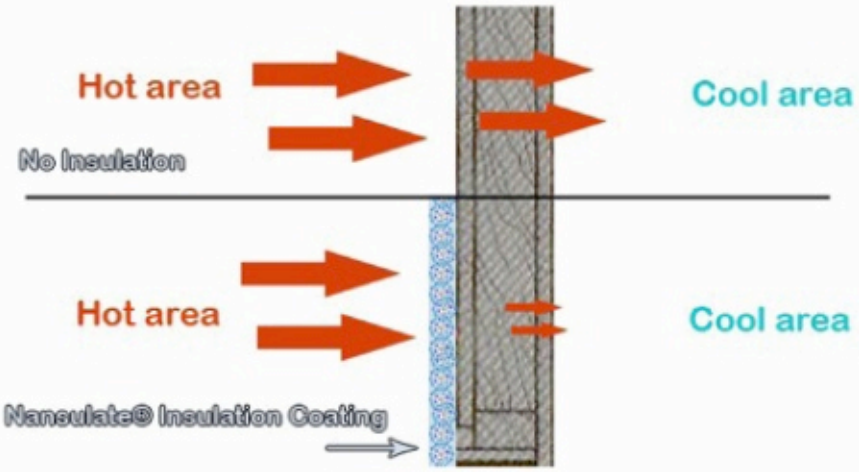
CII
Hyderabad

26 June 2011

NANSULATE PRINCIPLE

Heat always transfers to cold.

Materials with low thermal conduction do not transfer heat energy well. Which makes them excellent insulators

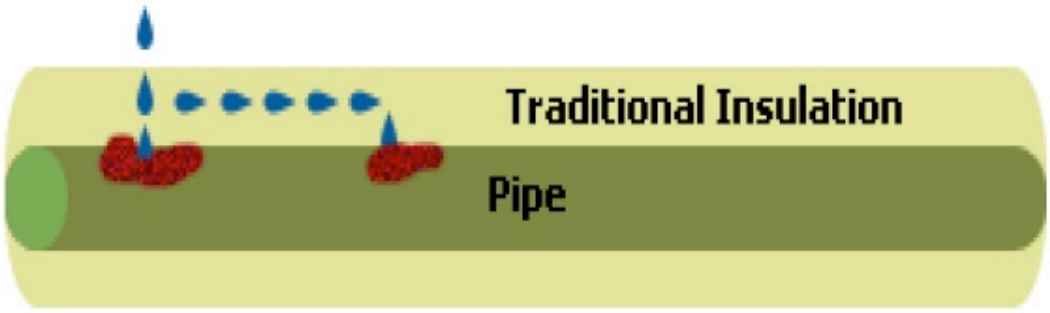


SNAP SHOT

ADVANTAGES OF NANSULATE [NI]

- ☐ Low VOC, Odour & Non-Toxic, Water based
- ☐ Excellent Chemical Resistance to acids & bases
- ☐ Corrosion under insulation minimal
- ☐ Severe Service durability
- ☐ User friendly
- ☐ Green Nano-technology

Corrosion Under Insulation [CUI]



Rockwool, fiberglass, or other traditional types of insulation promote corrosion, and also act as a carrier and spread the corrosion to other areas of the pipeline

ADVANTAGES OF NANSULATE [NI]

- Steam saving through reduction in radiation loss
- Marginal Carbonfootprint reduction
- Very Low thermal conductivity
- Can be applied in non-uniform profiles
- Space occupancy & weight addition minimal

NI in PM 5 –Case Study

- Drier end covers related to PM 5
- Size Press scanner side cover
- The application of NANSULATE was carried out during the shut of PM5 on 5th April 2011.

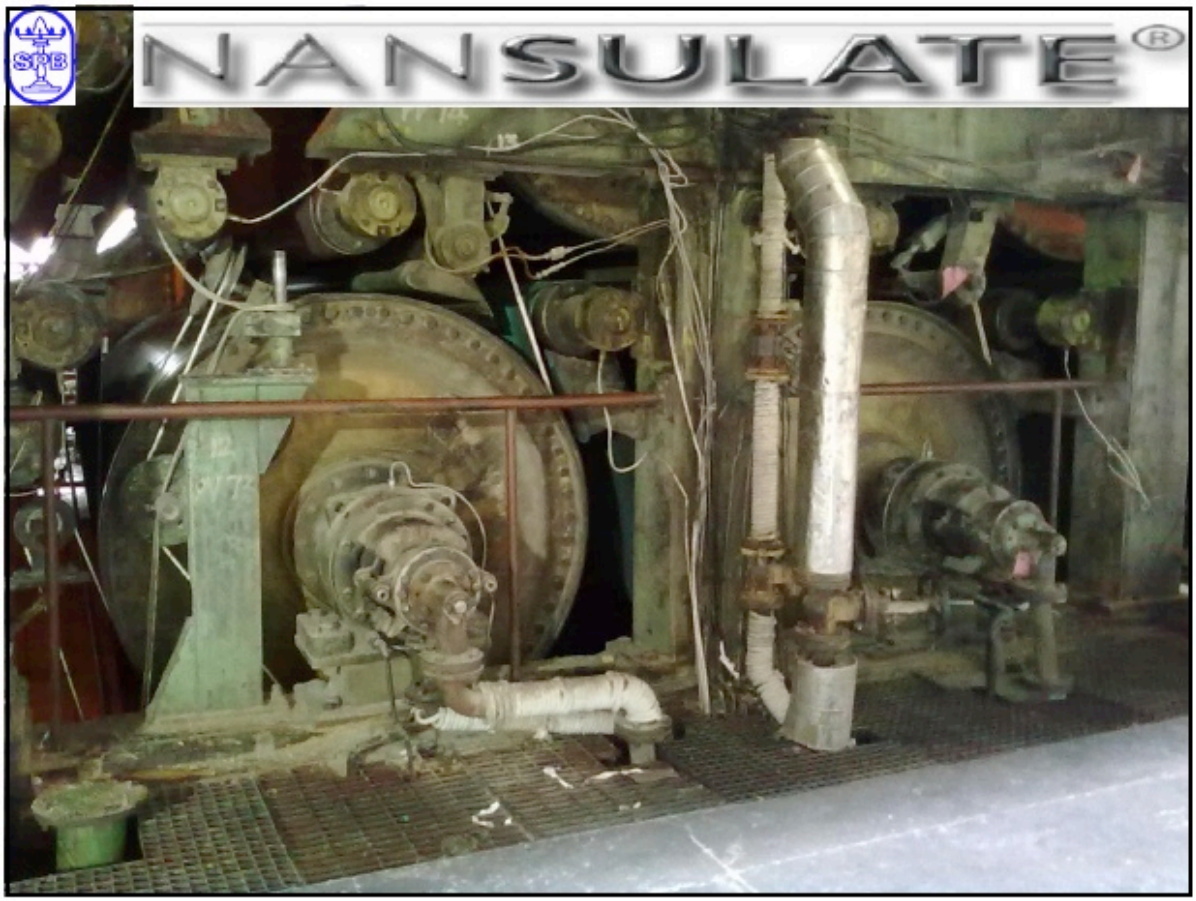
CONDUCT OF TESTS

Readings were taken on

Uncoated (Reference) &

Coated (Project) Surfaces–

- After 1 day of NANSULATE PT application [Curing commenced]
- After 30 days of NANSULATE PT application [Curing completion]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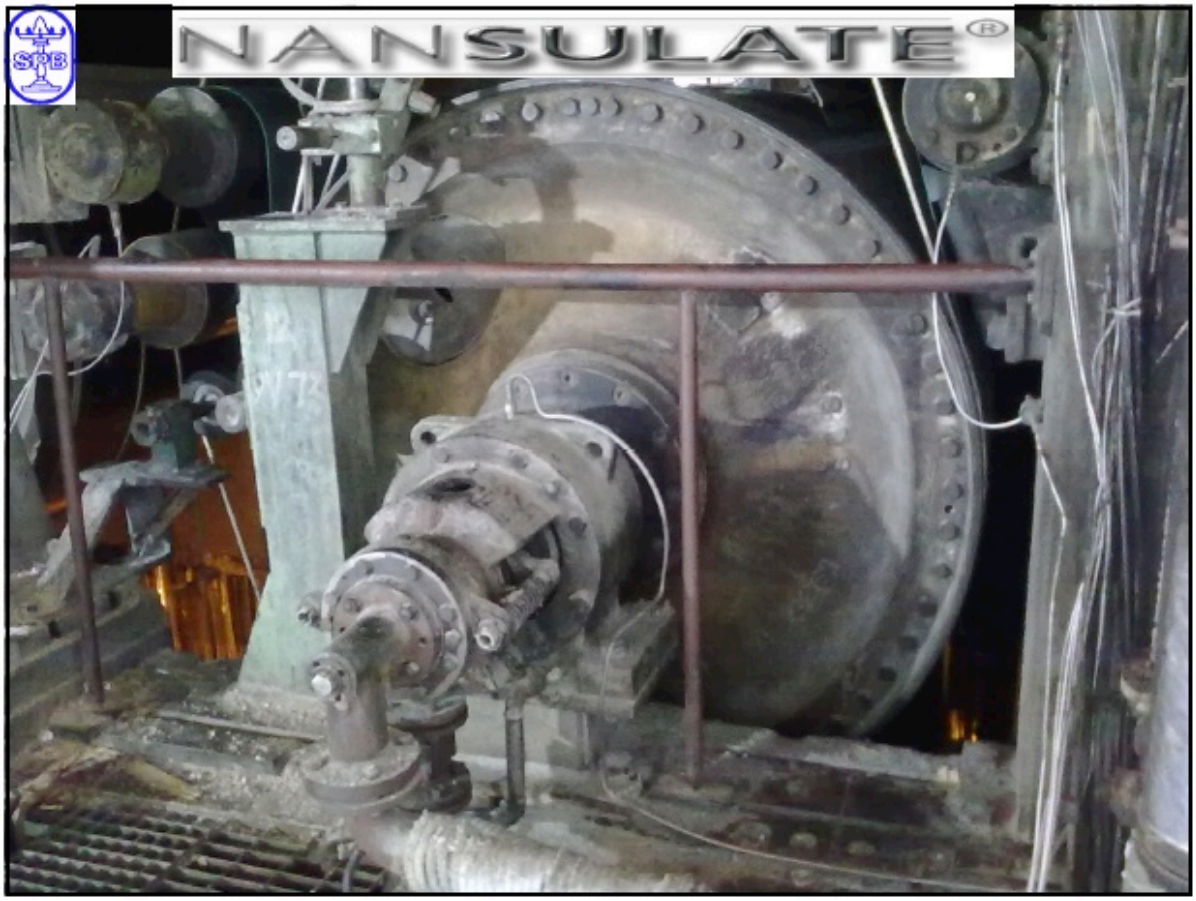
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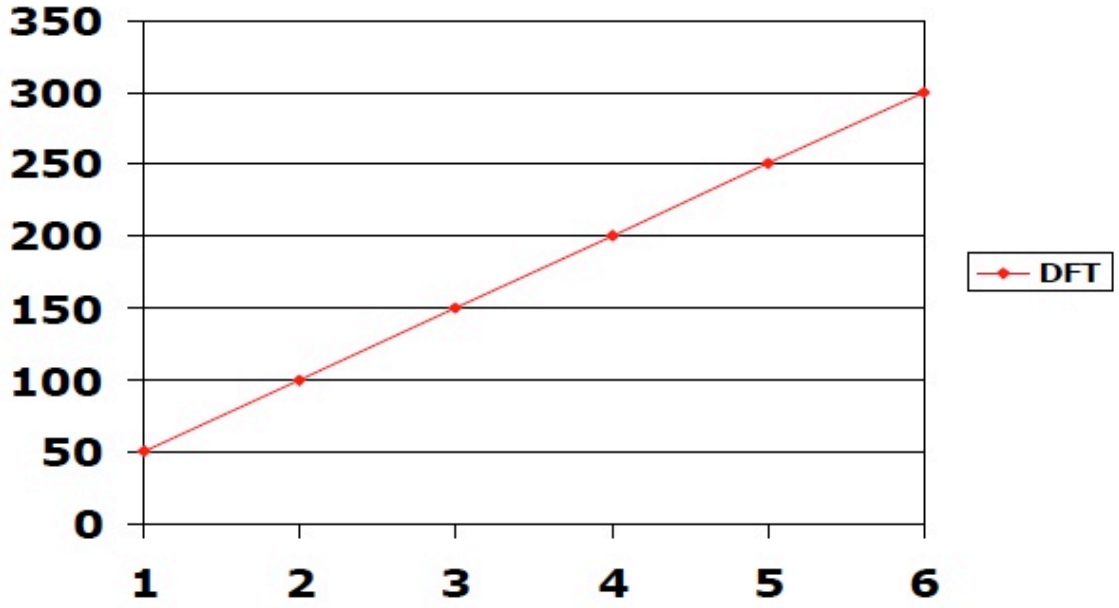
NI –DFT[Microns] vs. No.of Coats

Ready Reckoner



Case –Study -1

- Paper Machine [PM5] DRYER Unit

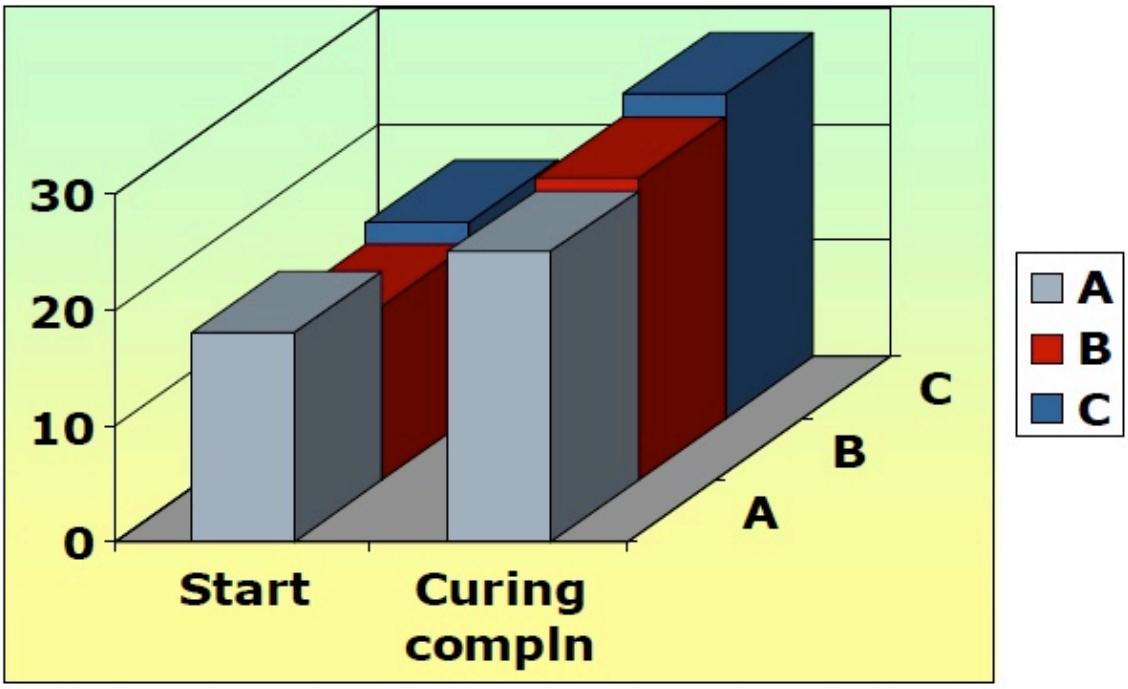
DRYER #12-End Covers [Temp°C]

Location	Uncoated surface	Coated surface	• T	Date
A	125 145	107 120	18 25	6th Apr 5th May
B	126 143	111 117	15 26	6th Apr 5th May
C	126 145	109 115	17 28	6th Apr 5th May

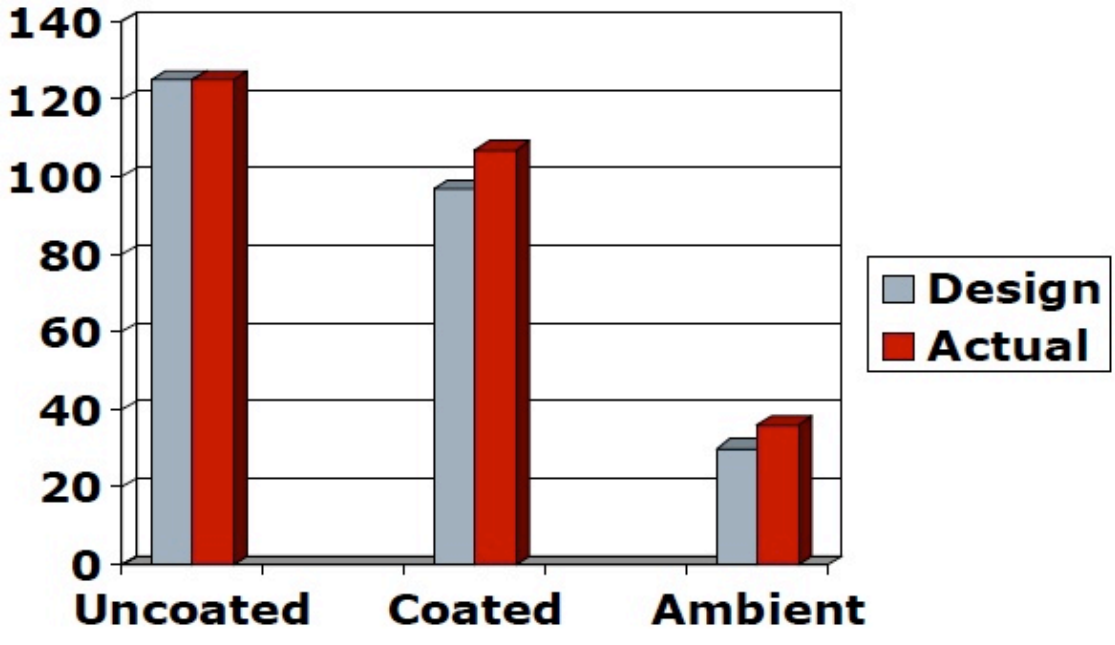
DRYER # 14–End Covers [Temp°C]

Location	Uncoated surface	Coated surface	• T	Date
A	126 139	108 117	18 22	6th Apr 5th May
B	124 139	105 119	19 20	6th Apr 5th May
C	128 142	109 118	19 24	6th Apr 5th May

Impact of NI coat on surface temp drop [°C]

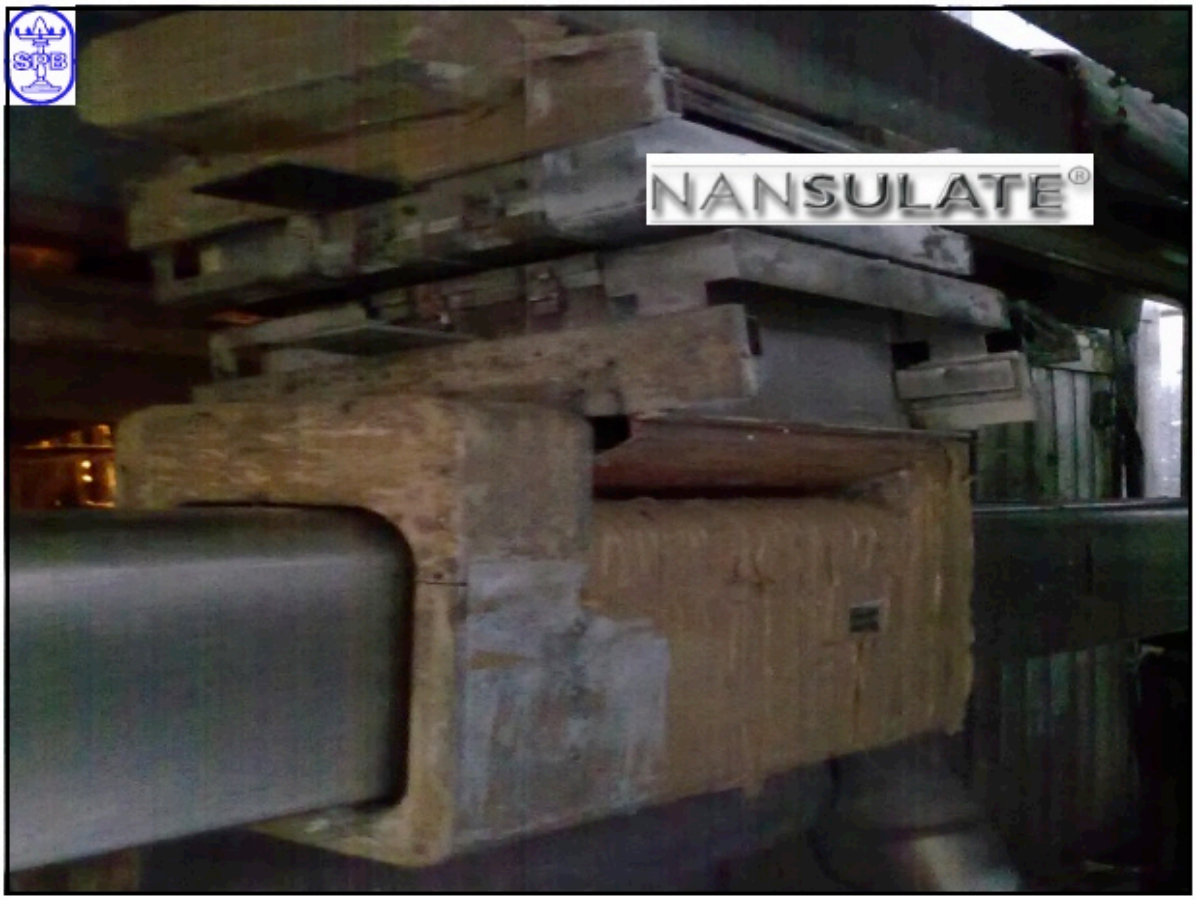


Graphic Representation of Dryer End Cover Temperature [°C] of Dryer Section – Comparison of Actual vs Design



Case Study -2

SCANNER SENSOR UNIT

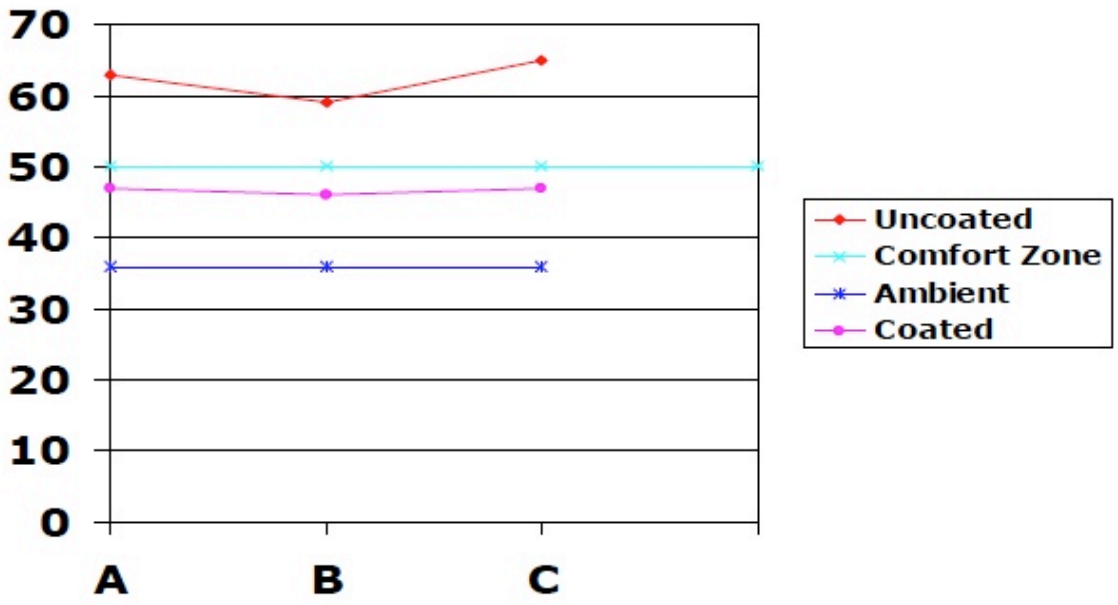


SCANNER PROXIMITY [Temp. °C]

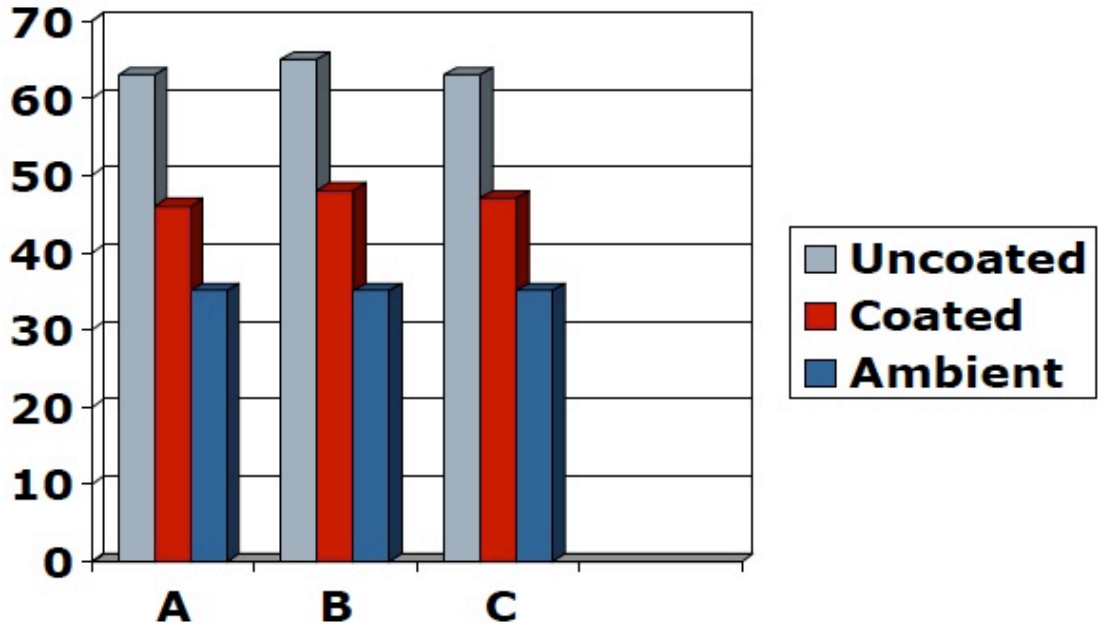
Date of Trials : 5th May 2011

Location	Uncoated surface	Coated surface	• T	Ambient temperature
A	63	46	17	36
B	59	46	13	36
C	65	48	17	36

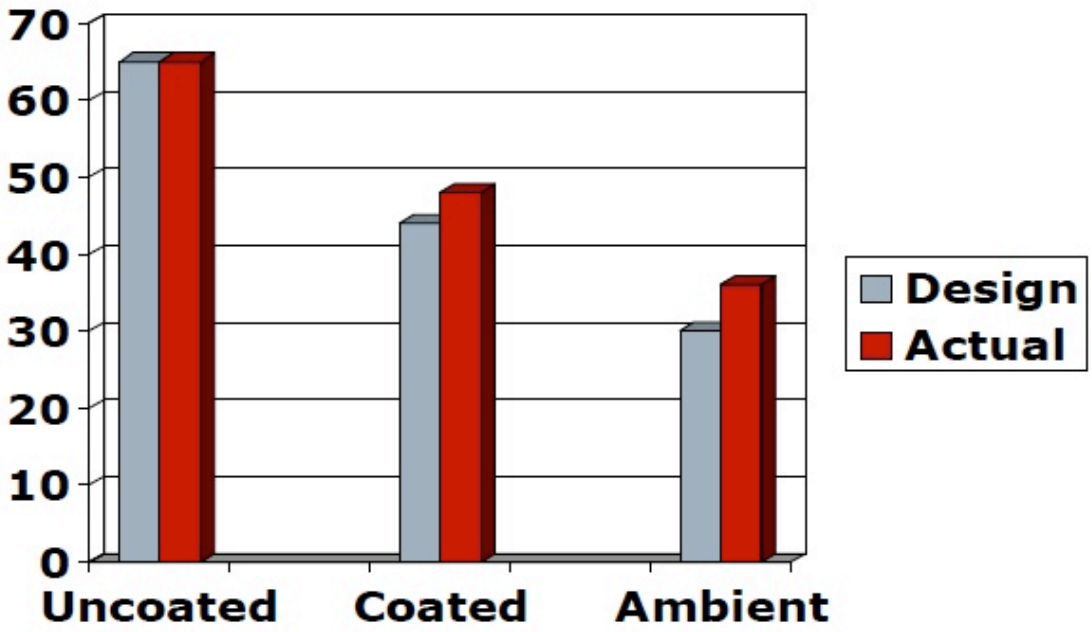
Scanner Temperature [°C] profile



Graphic Representation of NI –Sensor Proximity Temperature [°C] of Dryer Section



Graphic Representation of NI –Sensor Proximity Temperature [°C] of Dryer Section – Comparison of Actual vs Design



GAINS

- Effective Sensor functioning through lowered temperature
- Comfort for approaching and operating the unit
- Increased Longevity of the scanner unit

Application Areas of NI in Paper Mill

- Paper Machine Dryer Unit →
- Hot & Warm Condensate,Boiler Feed water & Process Fluid Lines
- LP Steam Pipelines & Accessories
- Heat Carrying Valves & Fittings
- Satellite Cooler annulus exterior of Lime kiln
- Heated HFO lines & storage tanks
- Chiller lines in ClO2 unit
- CPU-PHE & EOP Head Covers

NI on Feed line valve to Deaerator

Way Forward for

Nano Green Technology