

## EV Survey™

Team's extensive research is the way towards better PM runnability and more efficient paper making process.

EV Group's EV Survey Team has done a major survey project at PM 4 of Sappi Tugela in South-Africa. Survey research was also made at PM 2 of Sappi Tugela.

The survey project at PM 4 included sheet moisture profile- and machine hall ventilation and dryer section survey.

Complete measurements were beneficial as it was noticed that changes must be made to improve PM process efficiency at PM 4.



**The aim of the survey** was to evaluate the operation of the dryer section including ventilation, cylinder temperatures, pocket humidity and energy consumption. Machine hall ventilation system was also monitored. Sheet moisture profile was measured after press section against cylinder # 4.



### The EV Survey Team's work included

- Hood exhaust and supply airflow rates, temperatures and humidity levels
  - Pressure drop over different air equipment (*steam coils, heat recovery etc.*)
  - Surface temperature of all dryers and several profiles.
  - Pocket temperatures and humidity levels of all cylinder pockets
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- Several cylinder pocket temperature and humidity profiles
  - Hood zero level (0-level)
  - Machine hall supply air measurement
  - Machine hall humidity levels
  - Sheet moisture profile measurement against cylinder # 4



**After the measurements, EV Survey is able to resolve many factors that are limiting paper making process.** The results and suggestions given by EV Survey Team are very useful as they help to improve the whole PM process.

### **EV Survey's recommendations to improve PM process, runnability and ventilation at PM4 in Sappi Tugela:**

EV Survey suggested raising average level of steam box pressure to make steam box function more efficient.

It was noticed that a couple of drying cylinders had cold surfaces. This worsens the drying efficiency.

Problems in hood ventilation can cause bad paper quality and runnability problems like sheet fluttering; The airflows in hood must be adjusted to optimal levels. Conditions in machine hall worsen when humid air is leaking to machine hall. Repairing and upgrading pre hood exhaust fans will improve situation in the machine hall.



To improve drying section runnability and energy usage, EV Survey Team recommended installing **EV Pocket Ventilators** to keep pocket humidity levels more even. Single felt section runnability would improve by installing **EVsf Web Stabilizers** to support sheet. EV Survey Team also suggested **group gap modifications** to improve PM runnability.

The mill decided to install EV Web Stabilizers to PM 4 of Sappi Tugela based on recommendations of EV Group.

### **EV Survey Team is able to measure several parameters:**

#### **1. DRYING SECTION SURVEY:**

##### **- Air duct measurements**

Measurements of air flows and pressure help to define hood air balance

##### **- Measurements of hood exhaust ducts**

Air temperature and humidity level measurements at hood exhaust ducts help to evaluate hood air balance and for example adjust production's energy factors.

##### **- Measurements of cylinder pocket humidity**

Single point measurements of hood cylinder pockets give information on for example the operation of pocket ventilators and evaporation.

#### **2. MACHINE HALL SURVEY**

##### **- Air balance measurements**

#### **3. WEB MOISTURE PROFILE MEASUREMENTS**

Measurements right after the press section help to optimize runnability at the wet end, eg. forming section vacuum levels. Measurements are made during production with infrared sensors attached to steel cables.

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