



NEW ENERQUIN YANKEE HOOD AND PROCESS AIR SYSTEMS FOR KCM, ORIZABA, MEXICO INCREASE MILL EFFICIENCY



 Kimberly-Clark de México, S.A.B. de C.V.

Kimberly Clark Mexico operates many tissue mills in Mexico; one of them, located in Orizaba.

As phase I of a major machine rebuild, KCM decided in 2009 to replace one of their Yankee steam cylinder and simultaneously install a new state of the art Yankee Hood and PAS c/w full heat recovery systems.

Enerquin was invited to submit an offer for the new Yankee Hood; in the preparation process, the Enerquin technical service team went on site shortly after to evaluate the existing Yankee hood operation. Field adjustments were made to temporarily optimize the thermal efficiency while awaiting the new equipment. The Enerquin team performed a full analysis and collected all the necessary information required to calculate the expected savings associated with the proposed new Yankee hood and heat recovery unit. Although new Yankee cylinders offers came complete with a new Yankee hood, the Enerquin proposal finally won the favours of KCM in October 2009. The Enerquin package included a complete high temperature and high velocity Yankee hood with process air systems and combustion/make-up air heat recovery equipment.

The design phase was completed at the Montreal Head Office while fabrication of the equipment (Yankee hood, combustion chamber, heat exchangers etc.) was completed at the Enerquin manufacturing plant located in Cowansville, Qc, where all Enerquin Yankee hoods have been manufactured for the last 20 years.

The new DUO process air system consisted of two complete air systems including two larger supply fans, one exhaust fan, two burners c/w combustion chambers and associated heat recovery units. One of the main challenges consisted in fitting all new equipment on the existing mezzanine originally designed for a MONO system. The Enerquin final equipment layout, although very compact, provided good access to all components both for the operation and the maintenance personnel.

The new DUO air systems were designed to initially operate as "Parallel" systems i.e. each hood half has its own independent air system; the parallel mode made it easier for the operators to start-up with the new system. Enerquin had also built-in the necessary components to switch from the "Parallel" to a "Cascading" mode of operation as soon as production would reach some stability. The "Cascading" mode further improves the thermal efficiency (TE) by diverting the dry end hood exhaust air to the inlet of the wet end circulation fan to act as make-up air while 100% of the exhaust is now bled from the wet end hood.

The installation phase was completed smoothly in August 2010 with commissioning and start-up following shortly after. Preliminary readings after start-up led to very good hood thermal efficiency values ranging from 1800 to 1900 BTU/lb. H₂O evaporated when compared to the "Good" benchmark for the industry which is 2000 BTU/lb. H₂O evaporated by the hood .

After only a few months of operation, the process air system was switched to the Cascading mode; once optimized again by the Enerquin technical service team, closely assisted by the KCM operators, this new set up led to hood thermal efficiency ranging from 1600 to 1700 BTU / lb. H₂O evaporated which exceeded expected performances.

 **RESULTS**

Consequently, the mill experience a production increase with a substantial energy savings.

Thermal efficiency

- Parallel mode: 1800-1900 BTU/lb. H₂O evaporated
- Cascading mode: 1600-1700 BTU/ lb. H₂O evaporated

 **CONCLUSION**

Operating with "State of the art equipment" will win half the battle on the way to an energy efficient operation. "Optimization" of the air systems is just as important if you want to reach the most efficient operation. This will require an initial in-depth air system study to really understand and fine-tune all the various operating parameters/settings and, just as important, it also requires good training of the operators in order to maintain the optimized operating conditions for the months to follow.



 Kimberly-Clark de México, S.A.B. de C.V.

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