

CASE STUDY

How important is Paper Machine Building Ventilation?

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ABSTRACT

Paper machine building hall ventilation is often considered of lower priority by many mills. In discussing ventilation, the following statements are often made: it does not directly make paper; it is only for personnel comfort; it requires added equipment to operate and maintain; it increases energy consumption and increased exhaust did not improve conditions. However, severe consequences such as condensation, fog, uncontrolled air flow, building corrosion and structural failure are encountered for a poorly-designed building ventilation system. Just like steam and water, ventilation air is another utility needed to produce paper. In designing paper machine building ventilation, a rigorous approach should ideally be adopted, based on system heat load and the minimum process exhaust required at a maximum production rate, in line with

Tappi guidelines (TIP 0404-50). In an undertaken case study, the ventilation system of buildings housing two paper machines was poor due to negligence at the design stage. This was reflected in severe building wall corrosion, uncomfortable working conditions on the machine floor in summer months, fog and water vapour condensation in winter months. The main cause of poor building ventilation was due to grossly inadequate make-up air and poor building air balance. Use of re-circulated air as a mancooler or comfort air made the machine floor working conditions seriously uncomfortable. Evidence of a grossly inadequate building ventilation system, quantified by a number of performance indices, suggests these problems could not be solved without a major upgrade of the ventilation systems of both machines.