

Centralized Refining System: A Step Towards The Energy Conservation

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ABSTRACT

The pulp and paper industry is an energy-intensive process industry. The energy cost may be as high as 25-30% of the variable cost of paper. Due to shortage of conventional resources to produce energy and the ever increasing energy cost, energy conservation has become a necessity in the paper industry. For the development of required pulp properties, refining process consumes substantial energy. It is, therefore, very important to study the performance of individual refiners and the system as a whole particularly in those mills which have multiple machines and employ number of refiners. An idea of centralized refining system was implemented to reduce power consumption in refining operation while maintaining the refining degree to achieve desired paper properties. A study was carried out on the operating parameters of existing refiners and its impact on pulp and final paper properties. Three refiners (DDR for PM-1 and DDR & TDR for PM-2) were in use for two paper machines having pulp draw of 3.0-4.0 MT/hr while maintaining the desired pulp freeness of 28°SR. with the existing refiners, the specific edge loads was 1.14 Ws/m in case of DDRs and 1.17 Ws/m in case of TDR with the total power consumption of 138 kWh/MT of paper. A new TDR of 24 inches with different refiner plate pattern yielding specific edge load of about 0.79 Ws/m was installed in place of three refiners for both the machines. The power consumption reduced by about 14-31 kWh/MT of paper while maintaining same degree of freeness. This also resulted in ash increase of about 1.5% without any affect on paper quality. There was consistency in wax pick value, which helped lower rejection of paper due to consistent operation in respect of refining operation.

Key words: Refiner, Specific edge load, Power consumption, Plate pattern, Fiber classification Ash content and Wax pick

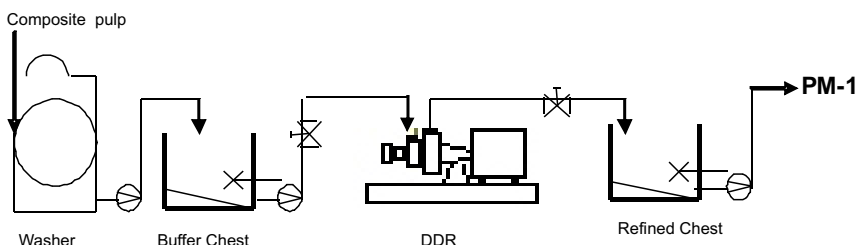


Fig. 1. Refining process at PM-1