

PULP & PAPER – LEVELLING CHEST

PROJECT DESCRIPTION

In a recycled facility, bales of fiber are re-pulped through a drum or batch pulping system. This re-pulped fiber then needs to be screened and washed to remove debris and contaminants. To feed the screening/washing system, the re-pulper feeds into a Leveling Chest which tempers a continuous rate of flow of stock to the process. It is paramount that the flow exiting the Leveling Chest is of a uniform nature to maximize the performance of the cleaning system and maintain control of the furnish consistency. The absence of a shaft seal reduced costly maintenance and eliminated any flush water requirements for a sealing arrangement.

MIXPRO® CHALLENGE

The customer was expanding their operations but had limited space for the construction of a Levelling Chest. This forced the tower to be narrow and tall (2:1 height to diameter ratio). This, in turn, meant that the stock level within the chest would vary from 10' to 60' several times a day and produce huge bending moment loads on the 77' long shaft. Additionally, energy costs in this region are high, so a more energy-efficient installation was preferred.



RECOMMENDED SOLUTION

MIXPRO® weighed the benefits of a multiple side-entry agitator installation versus a single top entry agitator installation. After numerous discussions with the client and our engineering team, the top-entry installation was recommended by MIXPRO®.

The installation included our unique VG style combination belt-gear drive design. This unique design enabled the engineering of a large bearing housing assembly, which can absorb and transfer the dynamic loads produced by the wet end to the support structure. Unlike traditional all gear drive designs, the reducer does not need to be sized to handle these loads but is required to simply handle the belt pull only. The large hydraulic forces caused by the varying stock level were managed by an 11.8" diameter output shaft and 22" diameter seamless pipe shaft.

The triple 180" diameter impeller system allowed the customer to realize energy savings as the stock level decreased in the Levelling Chest and ensured furnish uniformity at pump suction through all stock levels in the Chest.

PROJECT SUCCESS

Although the side entry installation would have been a lower capital expenditure, it would have required a total installed power of 500 hp. Conversely, the top entry installation only required 125 hp to perform the same task, an operating/maintenance payback which is still being realized today. The absence of a shaft seal reduced costly maintenance and eliminated any flush water requirements for a sealing arrangement.

Exact consistency control had been achieved which has greatly reduced potential downstream headaches on the cleaning system. Other than routine scheduled maintenance outages, the mixer has been performing tremendously since 2005.

FOR MORE INFORMATION CONTACT:

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