

## QUICK FACTS

- CUSTOMER:** Newsprint Mill
- DATE INSTALLED:** October, 1999
- PROJECT SCOPE:** To increase the Mill's Clarifier Capacity, while reducing operational costs and increasing performance.

## PROCESS

Understanding our capabilities in the DAF Upgrade area, the mill asked us to review their present clarifiers to determine if they could be modified to handle higher throughput. This would save the mill the capital expense of having to purchase multiple new DAF units and erect a new building to house this equipment. A Dissolved Air Upgrade and solids handling changes were recommended to upgrade a Permutit Clarifier with a Pressure Tank air system. To the skepticism of many who were not directly involved, the project to upgrade the 2000 GPM Permutit clarifier to treat a minimum of 2800 GPM was initiated. The only success criteria was to increase the capacity of the DAF treating 2000-2500 ppm TSS influent while maintaining the clarified water specifications of <200 ppm TSS with a transmittance of 68-70%.

## OVERVIEW

The customer is a washing ONP newsprint drinking facility. To reduce operational costs, increase production capacity, and improve their product, the client required improved mill-wide water clarification. This would provide higher transmittance water for deink stock washing to improve pulp brightness and reduce the mill's water consumption/ discharge. Dissolved Air Flotation (DAF) technology was selected as the method of choice.

## BACKGROUND

The Mill evaluated three DAF clarifiers (World Water Works, Poseidon, and US FILTER) in head to head competition. The World Water Works' WWW/RESOURCE DAF demonstrated superior performance across the board. The WWW/Resource was more consistent and provided superior performance at significantly lower chemistry dosages. The trials included a wide array of chemical characterization, hydraulic load testing, solids loading deviations, and overnight composite testing. In every test, the World Water Work's DAF system outperformed the competition.



## RESULTS

The results were quite impressive (see table 1). The installation of the Dissolved Air System initially enabled the Mill to improve transmittance (from 70% to 80%) and improve TSS removal, while reducing coagulant polymer by 35% and flocculant polymer by 40%. The results were quite impressive (see table 1). The installation of the Dissolved Air System initially enabled the Mill to improve transmittance (from 70% to 80%) and improve TSS removal, while reducing coagulant polymer by 35% and flocculant polymer by 40%. Once the Mill increased clarifier pump capacity, the flow was successfully increased from 2000 GPM to over 3400 GPM, while maintaining the initial benefits of increased performance and lower polymer use. The Solids Removal upgrade increased the consistency of the sludge from 2.4% to 3.4%. This 1+-point gain enabled the Mill to overcome the previously experienced thickening & dewatering equipment limitations. The performance and operational savings justified the project in less than one month. Subsequently, the Mill has since upgraded one additional Permutit clarifier and installed a 2800 GPM World Water Works [www/Resource.com](http://www.Resource.com) DAF without the requirement of a new building.

## REPRINT NOTES

Since the initial publication of this Case Study, the client has upgraded their final Permutit clarifier for a total of three highly successful upgrades.

### RESULTS OF CLIENT'S PERMUTIT DAF UPGRADE

IMPROVEMENT AREA	STANDARD PERFORMANCE	AFTER DAF UPGRADES
Clarifier Capacity	200 GPM	3400 GPM
Effluent TSS	170 ppm TSS	120 ppm TSS
Transmittance	68-72%	79-82%
Polymer Costs	Substantial	Reduced 36%
Floatable Solids	1.8-2.4% Consistency	3.4 - 4.0% Consistency

