CASE STUDY ENESSCO

- **ENESSCO VIRTUALLY ELIMINATES STICKIES PROBLEMS**
- **SOLVENT USE REDUCED 98%**
- **4% INCREMENTAL PRODUCTION GAIN**

Operation: **Mid-Western – Integrated Tissue Operation (180 Tons/Day)**
Customer:

Machines - **Twin Wire Former**
Grades - **100% Recycled Lt. Wt. Tissue**

Problem:

Mill was experiencing stickies deposition on the forming fabrics causing holes in the tissue sheet. The unacceptable appearance resulted in downgraded & culled production. Press felt filling (stickies/inorganic) also resulted in poor sheet transfer and required significant felt cleaning.

The advanced Deink Stock Preparation system (.008 slot fine screens and extensive lightweight cleaning capacity) was being pushed for maximum production. The system produced highly variable quality stock for the machine. Mill's goal was to maintain high stock preparation production, while improving stickies removal.

Solution:

ENESSCO Technology was initiated as a Contaminants "Modification" Treatment. ENESSCO is fed to the pulper. The ENESSCO promotes the contaminants to "independently" release from the fiber substrate. The larger contaminants are chemically stabilized and more efficiently removed by the stock preparation equipment.

ENESSCO also modifies the micro-stickies contaminants that are typically present in the furnish. Testing before & after ENESSCO addition showed substantially greater contaminants are being rejected by the fine screens & lightweight cleaners. ENESSCO improved stock quality and minimized variation.

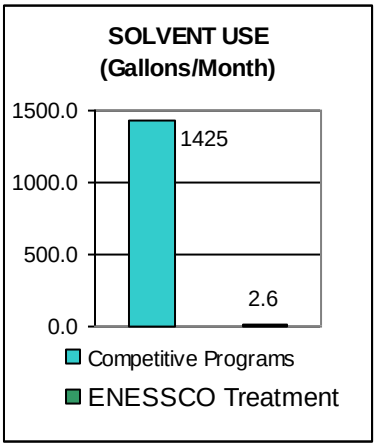
ENESSCO product is fed to the pulper (7 pH @ 115 degrees F).

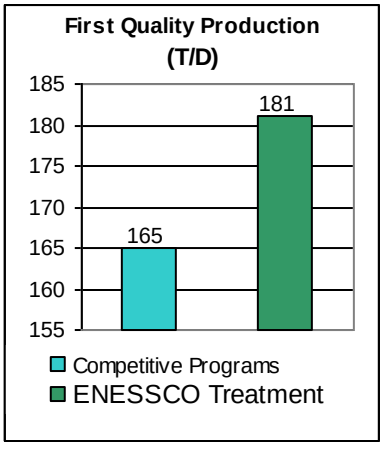
Results:

The results documented pulp quality improved because of ENESSCO's ability to assist the mechanical equipment to remove stickies. ENESSCO treatment resulted in a dramatic positive impact on machine efficiency. As outlined in the graphs below: The mill's major justification criteria outlined an 11 T/D increase in "First Quality Production". Four (4) tons were due to reduced off quality tons, while the additional 7 tons represents a 4% gain in incremental production (above budgeted goals). Downtime due to stickies was reduced substantially. "Solvent Use" was reduced by 98%. These results emphasize a 3 to 1 R.O.I. that easily justifies the ENESSCO program.

Additional areas of value attributed to ENESSCO include improved tissue softness/stretch characteristics and improved rewinder & converting performance.

NOTE: Results collected over a 6 month period (3 months ENESSCO are compared to 3 months with competitive treatments).





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