



# bioXile® restores system efficiency at large paper mill

Our customer, a large paper mill, is the UK's leading manufacturer of specialist paper for the food industry, including a new range of 100% biodegradable filter paper. They have gained high quality and innovation recognition in their industry.

Paper manufacturing is an ideal breeding ground for bacteria, as water is most often taken from river sources due to the large volume required, and only undergoes basic pre-treatment. Water is recycled through various stages of the process, increasing retention time and thereby bacteria load. Control of microbial population is done with large volume of biocides during cleaning operation, but hardly ever remove the biofilm.

## ANALYSIS

- Significant biofouling in the mill process led to full shut down every 4 to 5 weeks to perform a 24h clean with large amount of caustic and bleach. Cost to operation was ~€10k per clean in chemicals, as well as the loss of production equivalent to up to 20 Tons of paper per day.
- Each first batch of product manufactured straight after the clean had a significantly higher number of "black spots" and could only be sold as second quality, with a loss of earnings.
- Faults counts were reduced to acceptable level for the first 3 to 5 days after the clean but will gradually increase over the next few weeks to soon reach a point where shutdown was required again. Increased fault correction in the meantime added to man power cost.

## SOLUTION

- Chem-Aqua proposed to try a novel biodispersant product: bioXile. It's unique patented formulation is significantly more efficient in removing biofilm than traditional treatments.
- bioXile was added in several locations as an extra step to their normal cleaning procedure, after the caustic wash but before the bleach rinse out.
- bioXile was recirculated for 2 hours through both main lines of production, then followed by the addition of the biocide (bleach).
- Bacteria were monitored before and after the addition of bioXile, and chlorine levels were checked to ensure good control of bacteria.

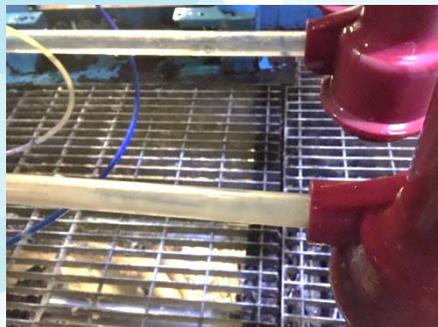
# bioeXile®

Patented cutting edge biofilm remover

## bioeXile removed large amount of biofilm

- bioeXile (1000ppm) released large amount of bacteria (including *Pseudomonas* and SRB's) that were undetected at first, hence hiding in the biofilm
- bioeXile softened deposits on pipes and surfaces and helped lifting them (system looked significantly cleaner)

Before



Opaque tubes, covered with biofilm

After



See through tubes, biofilm removed

## bioeXile's immediate results

Significant improvements could be seen after the first clean:

- ✓ First roll of paper produced after the clean did not have the black spots issue and could now be sold as 1<sup>st</sup> quality.
- ✓ System stayed clean for significantly longer time: instead of faults reappearing as soon as 3 to 5 days after the clean, it now took 10 to 14 days before the system was dirty again i.e. see an increase in faults.

## Impact of Chem-Aqua's bioeXile treatment program:

- ✓ **Improved system cleanliness**, resulting in an increased production output (less down time to cut out faulty material, etc.)
- ✓ **Reduction in faults** resulting in an overall saving of 135 tons of finished product per year (~30% reduction in faults)
- ✓ **Reduced cleaning cost** in optimising biocide amount required, including faster cleaning process and reduction in raw material costs (bleach + neutraliser)

**Overall, the customer's expectations were very much exceeded!**



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