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# A Pulp Manufacturer Solves its Bleach Cost Crisis

## Client:

A leading provider of market pulp, paper, and pulp-based consumer products with mills in the U.S. and Canada, and sales and distributions operations across the globe.

## Challenge:

When overcoming any obstacle, a tool, even an objectively valuable one, can take you only so far. What matters more is learning how to use the tool effectively, as well as correcting past errors in judgment. So when our client came to us with high chemical costs in need of mitigation, we knew there would be no simple fix or one-size-fits-all cure.

As further investigation revealed, the culprit was widespread variance in the client's bleach application process. Unfortunately, chemical overuse was already ingrained in how machine operators carried out their day-to-day duties. To truly stop our client from hemorrhaging its supply and overpaying as a result, we would need to first help staff members rethink the standard operating procedure for applying bleach to wood fiber.

## Process:

**Solution #1 - Enhancing employee engagement**

We knew no change would stick without approval and acceptance from equipment operators and supervisors. Before restructuring the bleach application process, our client would need to show us exactly how their current process worked, what mattered most to turning out a superior product and how any necessary adjustments proposed would impact workers and productivity.

Through cross-functional collaboration, process mapping and exercises that identified aspects of wood fiber bleaching critical to quality, we observed exactly where our client's struggles led to profligate bleach use. Furthermore, we and our client agreed to implement a new change log initiative across all its plants that documented disruptions in the bleaching process in detail, as well as regular review meetings following every shift to discuss immediate problems in a timely manner.

Armed with input from operators, shift managers and supervisors alike, we not only discovered the root cause of our client chemical woes but also united all parties around a common cause.

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**Solution #2 - Reducing variability through statistical process control (SPC)**
Process variance wasn't the only issue in need of rectification. Our client also had to sort our variance in the volume of bleaching additives.

Bleach machine operators measure and adjust the Kappa number of the pulp, or the amount of lignin within, to achieve the perfect color for paper production. Our client's wood fiber bleaching process involved alternating chlorine dioxide and peroxide baths. But if, for instance, if an operator added too much chlorine dioxide at the first stage, he or she could create a domino effect of waste down the bleaching line.

First, we directed our client to improve wash cycles between bleach stages and instituted regular filter changes to ensure chemicals were fully drained from the stock before moving ahead in the process. Next, we added upper-level brightness controls that complemented the change logs. When a machine operator exceeded the prescribed threshold for additives, he or she had to input the amount added and a reason for doing so. Thus everyone was held accountable for variance.

## Performance Results:

- $2 Million in savings on bleach process
- $450,000 in increased wood fiber yield

## Conclusion:

At just one of our client's many mills, we achieved an annualized savings of $2 million through changes to its bleaching process and $450,000 in increased wood fiber yield through reduced Kappa variability.