

Innovative rod solution slashes total costs for leading packaging board producer

A tailor-made solution focused around BTG's high-performance long-life IPI Durorod coating rods is helping a major board mill dramatically drive down Total Operating Costs.

Working hand-in-hand with customers to develop creative, sustainable solutions to boost performance and cut operating overheads is a task BTG teams relish. Our specialist pulp & paper engineers get the chance to exercise their renowned problem-solving skills – and our clients are inevitably delighted with the cost savings new operating methods deliver.

A project for a leading manufacturer of paperboard packaging solutions for food, beverages and other consumer products is an excellent case in point. Faced with an operating environment in which rods and beds had to be changed at virtually every sheet break or grade change, BTG IPI was charged with finding a way of boosting rod lifetimes while maintaining or increasing output quality and production volumes.

Component lifetimes are now over five times longer– from just 5.5 days to as much as 30 days without the need for rod changes

Scoping out the project

The client's paper machine – which produces up to 750 tonnes/day of coated board – had been registering a very high rod and bed usage rate. Performance tracking began back in 2001, and, under pressure to cut costs in an increasingly competitive market, the mill turned to BTG for a solution.

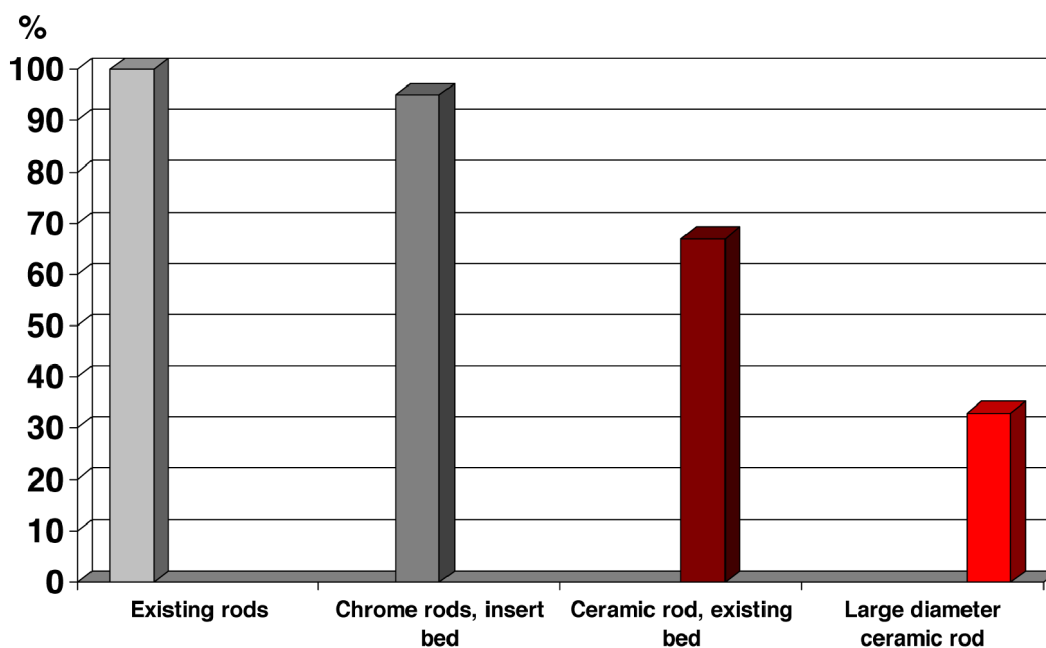
The machine has two coater stations – one to apply the base coating, and a second to apply the top or final coat. Both stations use rods to apply the coating directly onto the board. A detailed analysis revealed that average rod life was just 5.5 days.

The BTG team's first task was therefore to determine an optimum rod and bed usage rate, taking into account the machine's technical specifications, production demands and operational constraints.

Ideally, rod changes would always be made during scheduled outages, rather than during any operational mode. But since the mill's maintenance programme scheduled stops only every 40-45 days, most rod changes – two thirds for the base rods, and around 80% for the top position – were by necessity undertaken while the machine was in operation.

Any cost cutting measures thus needed to address not just the excessive consumption of rods, but the cost of production losses associated with the need to change the rods 7-8 times while the machine was running. The BTG team set about developing a plan based on a 'Total Cost' reduction strategy, factoring in production losses and different options for rod materials and beds.

Total cost improvement plan

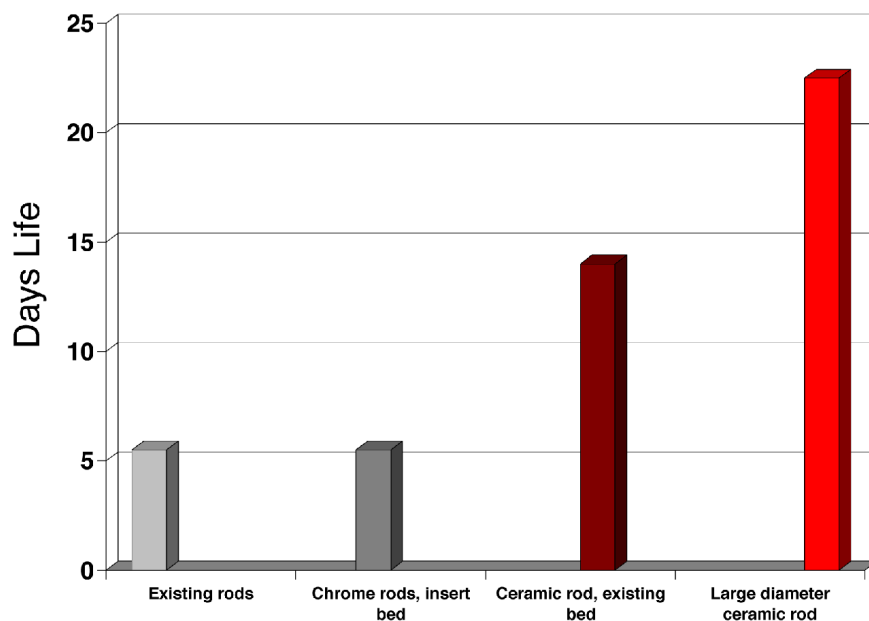


Trials and testing

Despite the desirability of confining rod changes to scheduled machine downtime, the team decided boosting rod life from 5.5 days right up to 45 days was an unrealistic target. Instead, an achievable goal of 20-22 days average rod life was set.

Options for prolonging operating lifetimes through more wear-resistant materials were evaluated, and a hard ceramic Durorod was chosen as the best option. However, while 12mm ceramic Durorods would boost longevity from 5.5 days to around 14 days, they could not meet the 22-day target set by the team. To overcome this, the upgrade plan also incorporated a planned move to larger diameter ceramic rods over time.

Rod life projections



To avoid disruptions to paper quality and to give machine operators time to get used to the new rods and replacement schedule, BTG's plan was built around a 'phased-in' approach involving small step changes.

As a first measure, BTG developed an Insert Bed that reduced ongoing bed costs by only necessitating the changing of the wear item supporting the rod. The system was trialed using the mill's regular chrome rods, but while money was saved on bed replacement costs, mill staff found the effort and time needed to make the change a major disincentive.

The second phase of the trial involved moving from chrome rods to ceramic long-life Durorods of the same diameter. Results were immediate, with rod lifetimes increasing to up to 15 days. Relieved at not having to implement frequent rod changes, the mill's operators began actively pushing for the planned move to larger diameter rods that would further reduce the need to constantly replace worn components.

Trials and testing

While the move to larger rods was the project's ultimate goal, some ground needed to be prepared before the transition – particularly through changes to the coating mix, and to operator routines.

Since larger-diameter rods would have the effect of applying more coating, the mill's technical team had to work on creating new coating formulations that would match rod performance, to ensure consistency of the finished product and keep coating costs stable.

In addition, the mill's operators had been in the habit of changing rods anytime there was a performance issue on the machine – a costly practice that would need to be abandoned if larger diameter rods were not to be routinely removed long before they had achieved their full lifetimes.

The mill set about developing a suitable formulation, and a few months later trials of the larger-format Durorods were ready to start. Rod diameter was increased from 12mm to 15.8mm, and dramatic improvements were apparent right away. Not only did rod lifetimes easily meet or surpass the 22-day target, but the stiffer rod delivered a better coat weight profile.

Today, the mill is easily achieving its rod consumption target, and has even managed some runs of 30 days without changing rods. Most importantly, the significant ongoing cost savings the mill is now enjoying has prompted management to evaluate the implementation of similar strategies at the company's other facilities around the world.

Key benefits:

- Cost savings on rods
- Cost savings on beds
- Cost savings through less lost production time
- Better coat weight profiles on finished products
- Automatic cleaning with 50°C warm water for drastically prolonged manual cleaning intervals.
- Improved productivity and better team morale

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