

Maxiflo conversions at Nampak Corrugated have already boosted cost efficiencies and reduced carbon footprint.



Nampak Corrugated saves with Maxiflo

The latest Maxiflo steam trap conversions at Nampak Corrugated are saving costs, reducing coal consumption and significantly lowering carbon emissions, reports KAREN STRETCH.

AS part of a recent energy-saving initiative, headed by technical director Marcelo Baptista, Nampak Corrugated identified steam traps as a major source of energy loss. In search of a more efficient and reliable system, Nampak conducted tests and evaluated a number of steam trap options.

Steam traps are automatic valves which drain condensate from steam lines and process equipment, while simultaneously retaining live steam for further use.

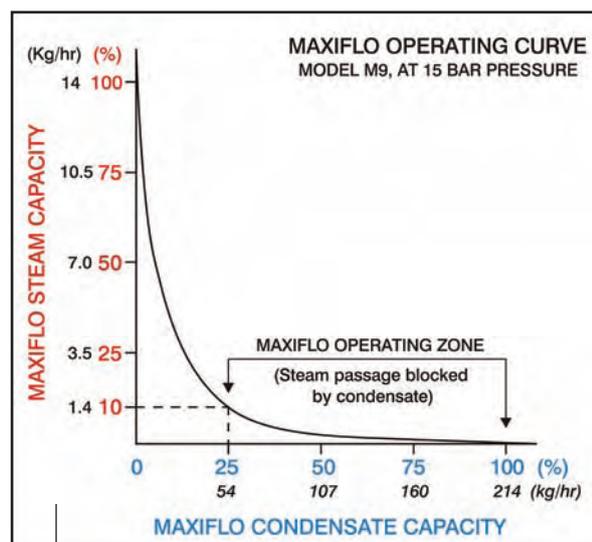
'The main problem with mechanical-type steam traps is that they need to be regularly checked and maintained in order to operate efficiently,' says Marcelo. 'With an average of 50 traps per plant this is a costly and time-consuming exercise, which is often neglected, resulting in steam loss worth millions of rands annually.'

Nampak's divisional manufacturing excellence manager, Brian Salmon, who has been researching alternate condensate removal systems, adds that the Maxiflo ejector system is an ideal solution for its application. 'All the complexity of conventional steam trapping has been removed with this system,' comments Brian.

The Maxiflo represents a complete rethink of steam trap philosophy. So says Mike Louw of Industrial Steam Products (ISP), who developed the technology. Instead of operating with millions of open and close cycles to release condensate, Maxiflo harnesses kinetic energy from the steam to continuously eject condensate from equipment faster than any other type of trap,' Mike explains.

'A thinner condensate barrier is formed on heating surfaces which improves heat transfer to the product and significantly reduces steam usage,' he adds.

Because Maxiflo ejector traps have no moving parts there is a common misconception that the units either back-up condensate or pass excessive steam during operation. However, thanks to Maxiflo's proprietary ejector technology the units actually have an efficient operating range of 75% and can handle high condensate start-up and lower running loads, with only minor steam loss.



A Maxiflo ejector model M9 sized for a roll at 15 bar will only pass from 0 to 1,4 kg/hour of steam within the operating zone.

Corrugators tend to have steady condensate loads and fall perfectly within the Maxiflo operating zone.

Manufacturers claim that steam traps pass or consume some live steam during operation; some even as much as 3 kg/hour when in working order. The problem starts when mechanical traps fail open and are not attended to immediately.

'Just one failed trap in a corrugating plant can lose as much as 150 kg/hour of steam, which amounts to a staggering loss of about R130 000/year,' says Mike.

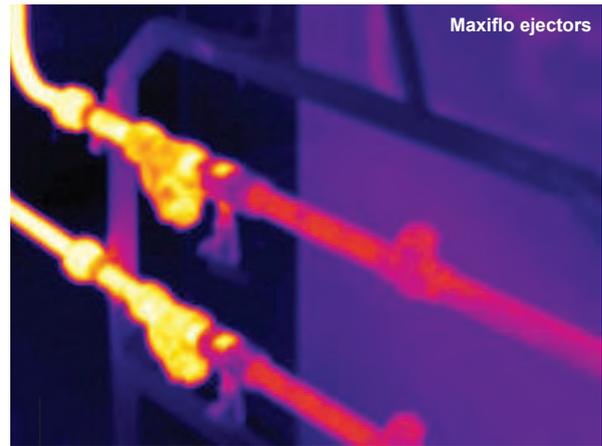
Tried and tested technology

The Maxiflo ejector system was first used by the Nampak group with the conversion of Global Wrapping in 2004. Substantial steam savings and improved heating of rolls were achieved after conversion, with an added savings in boiler make-up water of approximately 25%.

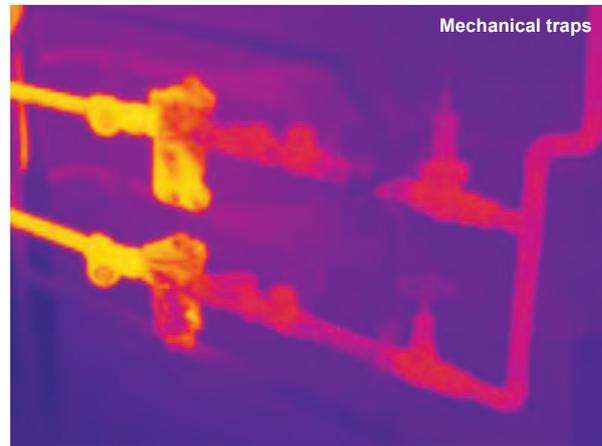
On completion of trials, ISP submitted a comprehensive proposal to Nampak Corrugated. Up front was ISP's confident 'supply now, pay later' approach, meaning payment for a conversion is only made once proposed savings are achieved.

In order to monitor savings accurately, Marcelo devised a moving average system, where monthly comparisons were based on before and after ratios of coal used per ton of input paper produced. Importantly, this method filtered out discrepancies such as rejects and therefore provided a reliable long-term savings figure.

Nzuzo Kheswa, project engineer at Nampak Corrugated in Epping (Cape Town), implemented the 'Proudly South African' accredited Maxiflo system at the plant in 2008. The plant was converted over a shutdown weekend, with only minor teething problems.



Comparative thermal images show that Maxiflo systems are functioning comfortably within their operating zones. No excessive live steam (yellow) is passing through nor is condensate (red) backing up.



PrintCity signs Copenhagen Communiqué

THE PrintCity Alliance has signed the Copenhagen Communiqué (www.copenhagencommunique.com) on Climate Change, which has been signed by 800 global companies and organisations, including power conglomerates, financial institutions, airlines and world brands.

PrintCity Alliance members are focused on promoting the value of print, at the same time as achieving high levels of printing and packaging industry efficiency in the areas of sustainability, energy and the environment.

Climate change issues have a direct coherence with the ongoing work that PrintCity is undertaking to improve the environmental understanding and efficiency of our entire industry.

In recent years, PrintCity Alliance membership has been sharing knowledge under their combined



connection of competence



www.copenhagencommunique.com

'Connection of Competence' in this area. Highlights include:

- Sustainability, Energy & Environment Special Report, 2008 (download a PDF of this important report http://www.printcity.de/index.php?site_id=538)
- Carbon Footprint & Energy Efficiency, 2010 – an initiative to analyse and give guidance on measuring carbon footprint, as a catalyst for improved process efficiency and environmental performance (a PrintCity best practice guide will be published by mid 2010)

PrintCity encourages other interested organisations to sign the Copenhagen Communiqué to assist in the process of making positive world change on climate issues.

PrintCity members with interests in South Africa include Fujifilm, manroland, Océ, Sun Chemical, Trelleborg and UPM.

'The installation of Maxiflo was swift and professionally done. Importantly, the plant was ready for start-up on the Monday morning, as promised by ISP,' Nzuzo confirms.

'Since installation, our corrugator has been running extremely well. The most noticeable improvement is the sharp drop in steam usage. ISP guaranteed us a minimum saving of 17% after the Maxiflo conversion, but our actual figure is 28%,' explains Nzuzo.

Prior to the Maxiflo conversion at Epping, boiler operators had been trained to accumulate steam before production of double board. This is no longer necessary and the operating procedure has subsequently altered. The Maxiflo conversion paid for itself in only six months, making it a worthwhile investment for Nampak Corrugated.

'Only having to do low maintenance on traps in a plant as complex as ours is paramount,' continues Nzuzo. 'Just one malfunctioning steam trap can stop the entire corrugator for hours, causing production disruption. What's more, ISP has added a special on-line blow-down valve, making it possible to maintain the Maxiflo from outside while the machine is running.

Increased efficiency and environmental benefits

A further steam trap conversion at Nampak Corrugated's Wadeville (Gauteng) plant was implemented in January 2009, with steam savings after installation recorded at 23%. 'Since the Maxiflo conversion our speeds on double board have also improved,' says engineering manager, Johann Venter.

Conversions at the Pinetown and Swaziland plants yielded similar results. Archie Johnson, GM of Nampak Corrugated Swaziland, comments that savings after the Maxiflo conversion were very obvious as fewer trucks were arriving with coal each week. There was also a major upswing in board quality, the effects of which have rippled through to the box plant.

Nampak maintenance personnel are pleased with the prospect of no longer having to worry about checking and maintaining steam traps. Although Maxiflo ejector traps have already lasted 20 years in South Africa, ISP offers an unconditional five-year guarantee against defective materials, workmanship, wear and performance.

Annual follow up tests at Nampak plants show that Maxiflo ejector traps are still operating as efficiently now as they did on day one.

And last word goes to Marcelo Baptista, who is satisfied that the Maxiflo conversions have been beneficial. The accumulated steam usage at Nampak Corrugated plants has decreased by an average of 25%, resulting in annual savings worth millions of rands.

'Because we now burn far less coal, I am satisfied that our carbon footprint has been significantly reduced in the process,' he concludes.

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Maintenance Advantage

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