

# Local belt clip production extended

Multotec Group company, Mato Products, has completed a R4-million refurbishment of its clip-manufacturing machine, one of three German-built machines in the world. *MechChem Africa* talks to the company's general manager, Benjamin Sibanda about Mato's history and its conveyor belt lacing and belt cleaning solutions.

**M**ATO was first established in Germany back in 1906 as manufacturer of its world-leading belt fastening systems for joining high-performance conveyor belts used for safety-critical applications. "Mato Products South Africa was started in 1987 and has seen three generations of employees carry the Mato baton," says Sibanda.

The company began trading in Southern African over 30 years ago when Ernst Holtz received an offer from Germany that he could not refuse via an old business acquaintance Ronald Tuckey from the then Rhodesia. The offer included amongst others, a year's supply of consignment stock to get the business up and running.

Then, in the 1980s, Mato installed a clip-manufacturing machine in South Africa, one of only three in the world – and the other two are in Germany. "So local manufacturing of our belt clips for the Mato belt fastening system extends back over 25 years. Today, the South African focus of the business embraces the belt fastening clips and accessories, the lacing systems and tools needed to install our clips, as well as a comprehensive range of belt cleaning solutions," Sibanda continues. "We are the only company outside of Germany



With the refurbished machine, Mato is looking forward "to another 30 years of service excellence to Southern Africa's conveyor belt industry," says Sibanda.

entrusted with the manufacturing of Mato clips, and we now also offer belt cleaners that are safe to use and fastener-friendly to guarantee smooth and efficient conveyor belt functioning."

To secure a further 30 years of trouble-free

local clip production, Mato Products South Africa sent its 'green monster' to be refurbished by its German makers. "Our machine underwent an extensive refurbishment and upgrade programme during 2016, which will now enable us to offer higher levels of service to our customers," Sibanda notes.

"The range of products that the machine can now produce, right here in Spartan, extends to clips from 5.0 mm belt thicknesses all the way up to 18 mm – and we can accommodate 20 mm thicknesses by skiving an additional 2.0 mm off the surface layer, which does not affect the joint strength," he says.

Mato clips are fully locally manufactured and the refurbished machine has increased production speeds to enable an extra two months' worth of production to Mato's annual output.

Describing Mato's belt lacing system, Sibanda says that it is an alternative to hot or cold vulcanisation for joining conveyor-belt sections. "Our system is ideal for underground conveyors transferring material to the surface and the technique is very well accepted in the coal mining industry."

In the event of a belt breakdown, the lacing system, clips and pin are taken to the broken belt for an *in situ* repair. "The belt ends are first drawn together and squared off nicely using one of our belt cutters. One side is then fitted and clamped into the lacing bed. A skiver is then used to remove the cover layer of the

belt. This allows the metal clips to sit below the belt surface so that they can run smoothly over pulleys and past cleaners and scrapers," Sibanda explains.

A row of clips is then inserted into the mating row of grooves on the lacing bed with the belt end positioned between the clip jaws. The belt is then tensioned in place by the lacing bed tensioning beam, then a steel chord is inserted over the top surface of the belt and tensioned across the belt such that it replicates a welding wire connecting the clip. "This is called the Wave Master system and it reduces edge stresses and ripples that are typical when fasteners are mechanically attached to conveyor belts, especially rubber belts," he adds.

A manual lacing machine is then used to make the mechanical splice. Using the recommended two-stage lacing methodology, the machine pushes the staples through the belt. At the same time, the top of the clip is bent flush onto the belt and the staples are pushed through mating holes on the top surface of the clips before being bent backwards into matching grooves called staple guards.

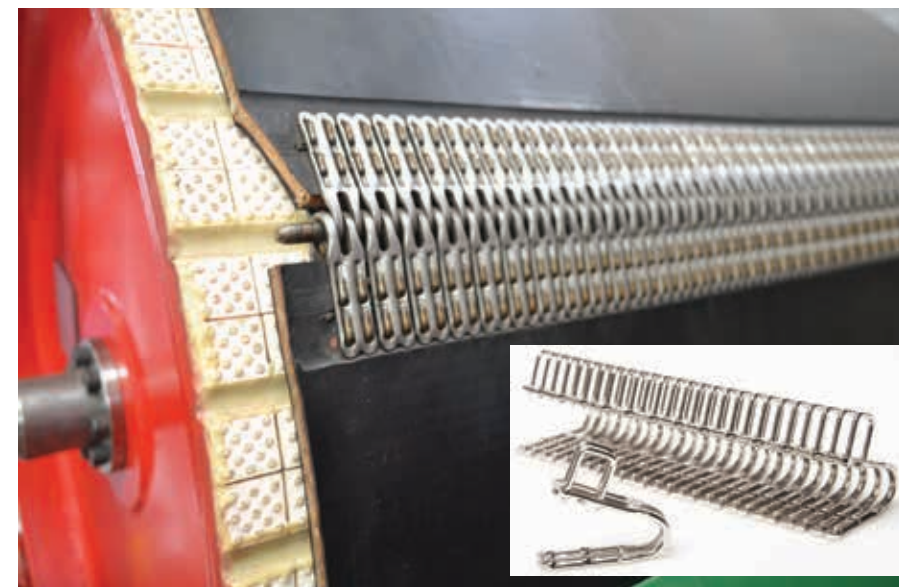
"Exactly the same is then done to the other end of the belt. The two ends are then drawn together so that the clipped-ends mesh and the lacing pin is inserted to complete the joint – and as soon as tension is applied to the belt, this pin is locked into place," Sibanda tells *MechChem Africa*.

There are four sources of strength for these mechanical joints: high compression in the belt when the clips are installed giving a vice like effect; the staples are fitted with an interference fit and secured in staple guards; the spring steel staples used are extremely strong; and the material going through the 360 t press ensures a cold-forged loop giving a strengthening effect of the clip," he says.

"A minimum of 3.0 t of pressure is exerted by the lacer on each clip and plate as it is inserted into the conveyor belt, pressing the plates into the surface of the belt and pushing the staples through the carcass. Also, with a two-stage bending system, this pressure causes an interference fit between clip and plate ensuring that the fasteners have considerable pull-out strength and resistance to being ripped out of the belt," Sibanda adds.

"Our solution is much quicker to implement than a vulcanised joint – a belt can be mechanically spliced within 30 minutes," Sibanda notes. "With the refurbished clip machine, we can now make 35, 36, 37 and 38 clip sizes, mostly from locally produced 409 Grade stainless steel flat sheet with a thickness between 1.8 and 2.2 mm.

"Local manufacture enables us to pack boxes to specification for exact belt widths and thicknesses. There is no need for custom-



The metal clips to sit below the belt surface so that they can run smoothly over pulleys and past cleaners and scrapers. Inset: Strip of Mato Conveyor Belt Fasteners are locally manufactured in South Africa.



Mato's belt lacing system is an alternative to hot or cold vulcanisation for joining conveyor-belt sections.

ers to order unnecessary additional clips and the whole range is locally available. We also keep customer-specific kits in stock, so that delivery times are immediate. In addition to the clips, we supply the lacing and cleaning systems to best suit the specified belt," Sibanda says.

"With the refurbished machine, we are looking forward to another 30 years of service excellence to Southern Africa's conveyor belt industry," he says.

## Belt cleaning solutions

"Primary and secondary cleaners are used to clean and keep conveyor belts clean," Sibanda continues.

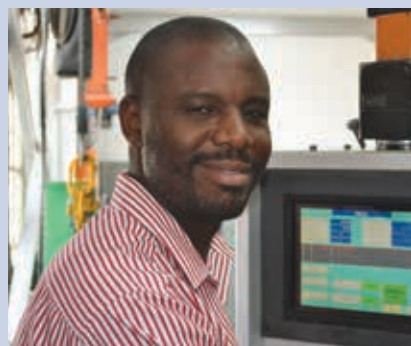
Mato's spring-loaded primary cleaner sits underneath the head-pulley and reduces carry-back to less than 15%. "By adding a sec-

ondary cleaner in contact with the underside of the belt, this can be reduced to virtually zero," he says.

"The primary blade is made from polyurethane and comes with a spring tensioning system. The secondary cleaner blades are made from tungsten carbide, as it needs to be in closer contact with the metal clip," he says, adding: "Correct positioning and tensioning is critical for optimum results in order to enable cleaning of clinging material and to remove fines."

To protect the tail pulley, a third cleaner, called a Diagonal or Tail cleaner, is incorporated to remove spillage associated with transfer points that may end up in the inside surface of the belt. These feature a no-maintenance self-tensioning system and stop limits to prevent metal scraping the belt cover. □

## Benjamin Sibanda: GM of Mato Products SA



Benjamin Sibanda's career has taken the experience route. "Before coming to Mato, I was sitting in class doing my N4 in electrical engineering. But I decided that engineering in such a field was not for me, so I started studying management. I joined Mato in 2005 as a sales administrator, taking orders and producing quotations.

"Then, during that same year, we were audited for our ISO 9001 2008 certifi-

cate and one of the findings was a need to separate the functions of inventory & procurement and internal sales. So I was promoted to inventory clerk responsible for the stock and MATO stores. From there, I became inventory controller, then materials manager. I was promoted to operations manager in 2012 and, most recently, to general manager.

"I knew a lot more about our customers than I did about splicing belts, so after I was appointed to the GM position in March 2015, I started to go out with our sales engineers and training teams to learn how the product was being used and what it was actually doing," he relates.

"As with any 30-year old technology, the people with the in-depth knowledge and experience are approaching retirement and we need to find ways of transferring this wealth of knowledge to younger people before they leave," he says. □