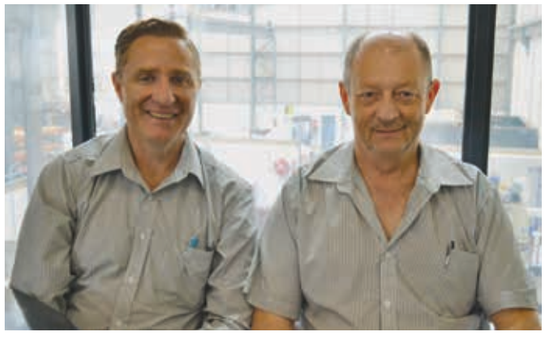
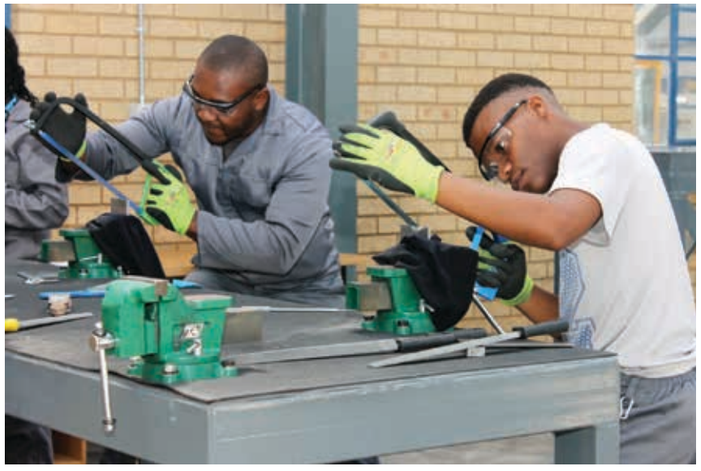
The tkIS Training Academy: towards transferable skills

On November 8, 2018 thyssenkrupp Industrial Solutions (tkIS) officially opened its Training Academy on the site of its Chlookop Service Centre. *MechChem Africa* talks to training manager Chris Bouwer and the manager of the newly implemented apprentice programme, Willie Potgieter.





During their first year, apprentices practice the manual skills of their trade: measuring, marking, sawing, filing and drilling.

Standing upstairs in the customer training area Chris Bouwer notes that when thyssenkrupp customers come to The Academy for training on their operational equipment, they will have a clear view of apprentices below going about their daily business.

On the left, he points out the basic training area where the first year apprentices practice the manual skills of their trade: measuring, marking, sawing, filing and drilling. "The right hand side of the workshop below is the conventional machining section. We have one small lathe and a small milling machine that is dedicated to training, but most machines are being used by second and third year apprentices, under the guidance of our full time Journeyman, Jose dos Santos – and they do production work for the Service Centre.

"We believe in starting to transfer skills very early. Jose is the specialist artisan in this area and he is physically helping the apprentices to do work directly related to the needs of the Service Centre," Bouwer reveals. "By successfully completing real production work, apprentices are forced to follow proper procedures to get the exact results required. You will see Jose constantly checking to see that they are reading the drawings correctly, choosing the correct tools, tool cutting angles and cutting speeds and then precisely setting up the machine's reference points and measurement axes.

"So one skilled Journeyman is busy transferring his skills to 10 apprentices who have already been here for a year," he tells *MechChem Africa*.

In the far corner of workshop there is a CNC machining area with four machines – "and in the production area we have two CNC machines with 100 t bed capacities," Bouwer adds.

"In their third year, apprentices will spend some months on the CNC machines to develop additional skills, but they will come back to the conventional lathes and milling machines just before the trade test, because it is their conventional machining skills they will be tested on," says Bouwer.

Relating his past experience of taking on partly trained apprentices, he says that the most recently qualified apprentices began their training before the global merger of tkIS into one company. "When I arrived at the company, this group had to be completely retrained. They had simply not had any meaningful practical experience and so the basic skills were missing.

"On discussing their previous college-based training, we were told that the training officer would demonstrate the working of equipment, but apprentices themselves never got the opportunity to develop their skills as their group was too large to afford them individual time on the machines. They were never given access to the conventional machines to develop their own abilities into skills. As a skills training methodology, this is completely ineffective. Apprentices can only develop a skill if they are allowed to practise, make mistakes under supervision, and retry until they get it right. Practise makes perfect!" Bouwer believes.

This group became the test group for the development of a more effective artisan-training programme that would develop genuinely transferable skills. "We sent them all back to the CTC (Colliery Training College) in Emalahleni (Witbank) – which we believe is one of the best skills training centres – for a six-week refresher course. Then they were here for a year doing hands-on work, before going back to CTC for artisan training. And while we had to spend a lot more time on them, all but two students eventually qualified successfully, which reinforces our work-focused approached," he tells *MechChem Africa*.

Fully aligned with the Mechanical Fitter and Machinist trades as defined by Sector Education and Training Authority (SETA) and the Quality Council for Trades and Occupations (QCTO), tkIS has adopted a full 36-month apprenticeship programme consisting of skills training for the first 12 months followed by a move towards increasingly complex Service Centre work. "After the three years, apprentices take the Red Seal trade test at a reputable testing centre such as the Artisan Training Institute (ATI) in Roodepoort or at CTC. By that time we can be sure they are shaped to become properly skilled artisans," continues Potgieter.

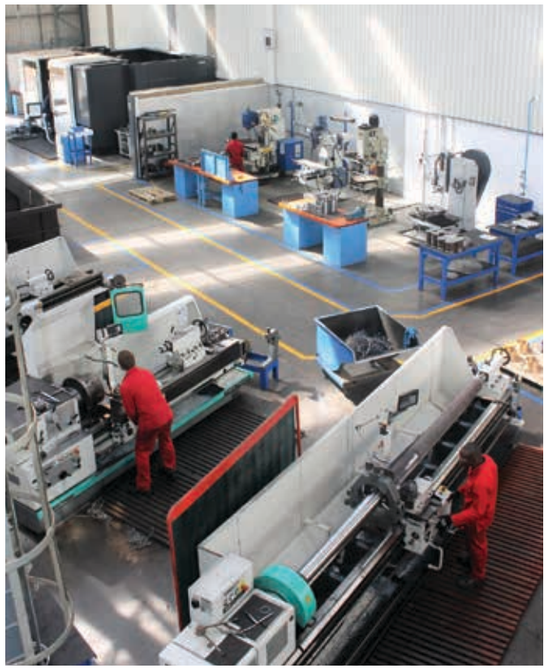
While tkIS has several apprentices currently advancing through the process, 16 new apprentices were taken on in October, eight on Mechanical Fitter and eight on Metal Machinist (milling and turning) apprenticeships. "Eventually we hope that some of the Mechanical Fitters will become Mechanical and Electrical Fitters or Millwrights, but this will take at least an additional year to fully satisfy the electrical requirements of the programme," he adds.

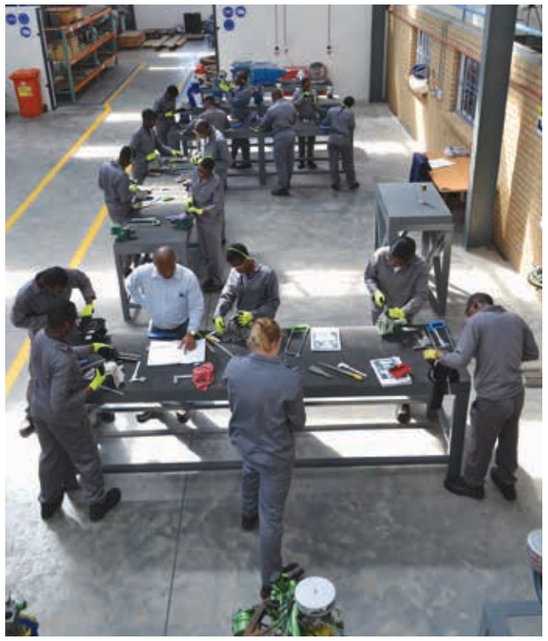
Describing the selection process Potgieter says that the new intake was first invited to submit CVs with a minimum entry criteria of grade 12 with maths and science or N3 with maths and science. Those that met all the criteria were put through a Dover battery test to determine their aptitude with regards to the mechanical trades. The top 30 students were invited to participate in a six-weeks evaluation and selection programme. "It is critical to select people with the practical potential and aptitude to function in the workshop environment," Potgieter explains.

"As we are a German company, once we get QCTO accreditation, we aim to couple the apprenticeship with the German qualifications," Bouwer continues. "Through TUV, our apprentices will receive an additional German equivalent qualification – and the two curricula have already been aligned," he says.

"We are using the standard German workpieces, which are more complex and better represent real work requirements than those typically used here. We have also adopted a project from the Brazilian programme: every apprentice will be required to build a 30-component model of a manually operated cement mixer that is fabricated from parts built during every stage of the programme, from basic to advanced levels," says Potgieter.

From a work related practical perspective, Bouwer notes a host of typical products manufactured by the thyssenkrupp Industrial Solutions Service Centre in Chloorkop: "Over there is a bogey wheel for the stackers we have sold to one of our mining customers," he points out. "We are locally manufacturing all the bogies for the stackers sold to this company.





Above: *16 new apprentices were taken on in October, eight on Mechanical Fitter and eight on Metal Machinist (milling and turning) apprenticeships.*

Left: *"Apprentices can only develop a skill if they are allowed to practise, make mistakes under supervision and retry until they get it right. Practise makes perfect!" Bouwer believes.*

"And while we have long been doing manufacturing and refurbishment work for our HPGR (high pressure grind roll) crushers here: disassembling and remanufacturing the studded grind rollers, for example, the materials handling side of the business is relatively new to us. With the merger, though, localisation has increased significantly and a lot of the parts that used to be imported from overseas service providers and manufacturers are now manufactured at this service centre," he says

He cites slipper pads for the very big grinding mills as an example. "These are actually white metal bearing pads that run on an oil film. An oil port in the centre of the pad forces oil into and between the pad and the rotating mill bearing surfaces. Under pressure, the oil lifts the mill and creates a film of oil over which the mill can rotate," Bouwer explains, adding that learning how to mill highly accurate components such as these gives Metal Machinist apprentices the necessary skills needed for long and fruitful careers.

In addition to apprenticeship training, the thyssenkrupp Training Academy also offers customer training on best maintenance and repair practises for all of its equipment: stackers, reclaimers and drum reclaimer, HPGRs, conveyors, crushers, ship loaders and much more.

"We have established a schedule of courses across the year, each specific to a machine, which helps maintenance professionals to optimise site operations that use thyssenkrupp equipment," says Bouwer.

Generally limited to four to five days, as soon as possible after the training customers are taken onsite to unpack the knowledge gained and to make it real. "We strive to help operators and maintenance personnel to understand changeout and maintenance procedures and to develop a feel for the diagnostic side. You will be amazed at how much a walk around our equipment with a specialist can reveal about how well or badly maintenance practices are being applied," he notes.

"This new training academy strives to offer good quality training that results in transferable skills. We want to make 100% sure that when an artisan or customer leaves one of our courses or apprenticeships, they take with them the essential skills needed for their trade.

"For people to become artisans, they must start with a natural feel for mechanics. But most critically, they need knowledge and real work experience so they can develop the transferable skills that are desperately needed on all of our industrial sites.

"By teaching them how to use their natural talent properly, they will develop skills sets that can be used for a lifetime on a host of different applications," Bouwer concludes. ❑