TLT MechCaL Becomes Global Composites Centre of Excellence

Pretoria, 1 February 2018: *Historically known for their highly innovative use of composites in manufacturing mining and industrial ventilation fans, TLT MechCaL has been named as the Composites Centre of Excellence for the global TLT brand by TLT-Turbo GmbH – a move that has the potential to put South Africa's composites expertise on the world map by creating jobs and further developing skills in this field.*

TLT MechCaL, who have POWERCHINA owned German company TLT-Turbo as their majority shareholder, have been researching and implementing the use of various Carbon Fibre Reinforced Plastics (CFRP) – generally referred to as composite materials – in their fan designs for over a decade. The use of these materials and knowledge of aerodynamic principles with the majority of the TLT MechCaL team having their background in the aircraft industry, have allowed TLT MechCaL to design and manufacture fans with significant improvements in performance and increased in efficiency. The result is lower energy consumption, lower mean time between failures, and less demanding maintenance.

This specialised expertise in the use of composites is becoming invaluable in the innovation and design of new and improved fans for the mining, power and industrial sectors around the world. As a result TLT-Turbo and its parent company, POWERCHINA – number 190 on the 2017 Fortune 500 list – recognised the need to establish a global competency centre at TLT MechCaL in South Africa.

POWERCHINA had three centres of excellence around the world in the engineering sector and TLT MechCaL became the fourth. According to TLT MechCaL's Managing Director, Luther Erasmus, there has been a lot of interest from POWERCHINA in the composite products that TLT MechCaL is able to produce and that POWERCHINA envisions possible expansion of the use of composites beyond ventilation into vapor recompression, evaporation, desalination and other solutions as well.

"Becoming the global competency centre in composites positions us to expand our leadership in the industry both in Africa and worldwide," said Erasmus. "We will accelerate the execution of POWERCHINA and TLT-Turbo's strategic vision by further leveraging the innovations in using composites in state-of-the-art ventilation related solutions."

The Composites Centre of Excellence initiative will be implemented under the TLT group with the intellectual property remaining within the new MechCaL Composites Centre of Excellence. The expertise and experience of TLT MechCaL's key engineers have been the driving force behind the innovation and technological advances in TLT MechCaL's fans and ventilation systems. Now, within a Centre of Excellence framework, they will be responsible for driving the company's product and intellectual property portfolios, identifying strategic technology capabilities and exploring new business opportunities.
According to Erasmus, TLT MechCaL has more than doubled its composites capacity over the past year in terms of additional staff and in terms of increased capital expenditure to upgrade its design, testing and manufacturing facility as well as R&D capabilities. Funding for the competency centre will be due, in part, to a research and development grant from POWERCHINA. TLT MechCaL will be utilising the grant to further expand their research

facility which will allow for the examination of possible advancements in the design and manufacture of ultra-light weight composite ventilation fan blades for large and complex fans.
Establishing the competency centre involves setting up a full design capability for designing composite products, testing them and developing the production processes to manufacture them. TLT MechCaL's capabilities will now include advanced composite stress analysis software, draping software, a ply-cutting machine, robots and CNC machines, large autoclaves, ovens and high tolerance assembly tables. The test facility will also include testing equipment such as a laser measuring arm, tensile and impact testers, a large blade static and fatigue test bench and some non-destructive testing (NTD) capability with ultrasound and a dedicated Infra-Red thermography setup.

The types of products that will be produced by the competency centre will include light weight composite fan blades, full composite fans (both axial flow and centrifugal fans), and fan components alongside the development of equipment and production processes for producing the fan components. These include components that are currently manufactured in steel such as the nose cones and aerodynamic fairings that can be made with composites as well.

TLT MechCaL will also be focusing on studying and determining the wear and corrosion, fatigue and impact properties of the composite materials being developed. Says Erasmus: "This type of analysis and research is being done by a number of firms globally but the intellectual property and results gleaned from these are protected by the developers. We feel that it is important for us to build up knowledge in this area. Our on-going research would also include the testing of performance of our blades and fans in various types of environments – for example, analysing fans operating in corrosive and acidic applications such those that evaporators are exposed to."

Looking at the expertise in this field that lies in South Africa, Erasmus notes that local firms have a lot to offer on an international scale. "It is a little known fact that there is excellent work being done by several South African firms in the field of using composites and many of these firms do in fact supply products to international clients. We feel confident that this is the right location for a global competency centre as it will give us the opportunity to build up and enhance the local expertise that already exists here. Developing the local industry with additional training and creating artisans is something that we are very keen for our competency centre to be involved in going forward." Erasmus goes on to explain that there is a skills shortage in this industry with most people who work with composites being trained on the job without avenues to further enhance their skills.

"The most successful companies in the world maintain an entrepreneurial spirit as they scale," Erasmus notes. "TLT MechCaL is a proven technology leader and innovator that has developed new technology that in the next few years is set to redefine the industrial ventilation industry. We believe that now the MechCaL Composites Centre of Excellence will continue to lead the industry while solving the problems that matter the most to our customers."