

TeraSpin

gives quality a new 'Spin'

By Arun Rao

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TeraSpin is a business unit of A.T.E., an 80-year-old diversified engineering group with expertise in textile engineering, cooling, solar heating, wastewater treatment, flow technology, IoT for industry, print and packaging equipment, and value enhancing systems. TeraSpin was formed in 2011, after A.T.E.'s acquisition of the textile spinning components business of SKF India. TeraSpin has built its reputation by manufacturing and delivering cutting-edge textile spinning components of the highest quality. This focus on quality has led to the company also being an OEM supplier to reputed spinning machinery companies in the world.

The company's state-of-the-art manufacturing facility near Ahmedabad produces drafting system components like weighting arms, top rollers and cradles for roving and ring spinning frames. It is also into the production of high-speed ring spinning spindles for all makes and models of ring spinning machines. The company's



K.P. Singh, Director, TeraSpin and HMX

annual production capacity includes 0.6 million weighting arms, one million top rollers, one million spindle bearing units, and 0.3 million of complete spindles, with plans to expand its spindle manufacturing capacity from 0.3 million to 0.5 million.

Driven by quality

Additionally, the TeraSpin plant, located on the outskirts of Ahmedabad is a LEED Gold-certified facility. The facility is also certified for ISO 9001:2015 quality

management system, ISO 14001:2015 environment system, and OHSAS 18001:2007 occupational health and safety system. In order to provide textile spinning components of the highest quality, TeraSpin has been improving the precision of its components, pursuing excellence in quality and constantly improving its accuracy – thereby 'reinventing precision'. It has been working continuously towards Six Sigma quality, which is a

very high quality level allowing only 3.4 defects per million opportunities.

This requires limiting the process variability to such an extent that most components are produced to exact specifications or as close to the nominal specifications as possible. To add weight to its quality initiatives, the company has also implemented some of the best practices and tools like DMAIC, SPC, MSA, Kaizen, TPM, FMEA and DOE, etc. 'Zero Defect' and 'Zero



Customer Complaint' have become watch words in the company, which is also practicing 'Lean' to reduce costs for its customers.

The right leadership

At the centre of all this is K.P. Singh, Director, TeraSpin and HMX, who himself is a certified Lean Six Sigma green belt with extensive knowledge and experience in Six Sigma projects. Singh is an engineering graduate from IIT-Roorkee, and also an MBA from Manchester Business School, UK, and has 38 years of rich working experience in precision engineering units, including Xerox India and the A.T.E. Group. "TeraSpin products are built on the deep foundation of SKF knowledge and expertise, ensuring high product performance and reliability. Further, in order to achieve our goal of 'zero defects' and 'zero customer complaints', we hired shopfloor workers

and staff one year before the start of TeraSpin's production," Singh informs.

"This helped us to arrange for them extensive on-the-job and class room training in advance at KF India's manufacturing facility in Pune. The idea was to start production at TeraSpin with a skilled and trained workforce. Secondly, we also decided to purchase our raw materials and components only from SKF-approved suppliers, although since most of them being from Maharashtra and far away from our TeraSpin manufacturing facility near Ahmedabad, it meant extra packing and freight costs for us," he adds. In order to eliminate quality defects from all manufacturing processes, the TeraSpin team has been working continuously to 'fail safe' all processes with a common goal to get 'right the first time', thereby producing zero defect

products," he adds.

Singh is of the strong opinion that quality has to be built in the manufacturing process rather than controlling it through inspection. All manufacturers provide components within a tolerance range, but TeraSpin is striving to produce its components near the centreline of the tolerance range, thereby reducing variability and improving precision in the product quality. These efforts help TeraSpin in increasing reliability and life of its components. According to Singh, all these efforts help TeraSpin offer the highest quality products at competitive prices.

Leading with innovations

TeraSpin has also been focusing on product innovation with significant investment in research and development efforts. As a part of these efforts, the company has introduced

'Smart' cradles, which help to maintain uniform yarn tension and help to reduce yarn imperfections by 10-15% over the existing solutions. The company has also introduced an under-winding clamping device (patent applied) called Smart Yarn Catcher for auto-doff spindles. This device avoids residual yarn accumulation on the spindle, thereby reducing cleaning requirement of spindles. This saves cleaning time and efforts, thereby improving spinning productivity. In addition, the company has recently introduced 'Premium' spindles developed specifically to provide multiple benefits of lower vibrations, lower noise, and lower energy consumption. These spindles are available with wharve diameter as low as 18 mm.

As per initial customer feedback, these spindles reduce the spindle drive



system's energy consumption by 8-10% over standard spindles, as compared to TeraSpin's European competitors. This translates into significant cost-savings for the spinning mill, since ring frames consume a major part of the spinning mill energy bill. In the near future, the company has planned to launch new weighting arms, called 'Flexi' weighting arm, for ring spinning machines, which allow maximum flexibility to customers in terms of ring frame settings, as well as in the usage of their existing spinning components.

Hence, if a customer wants to replace its pneumatic drafting system with a spring-loaded drafting system to improve the yarn quality, it would be able to do it without replacing existing components, including arm bars, arm bar brackets, cradles and

top rollers, etc., thereby reducing cost of modernisation. The company plans to launch these new weighting arms sometime in the first quarter of fiscal 2020-2021 after completing in-mill trials. Currently, the company exports to over 20 countries including Bangladesh, Nepal, Pakistan, Indonesia, Vietnam, Mexico, Egypt, Turkey, Thailand, Uzbekistan, South Africa, Iran, the UAE, Kenya, Nigeria, Taiwan, Korea, China, Canada and Japan.

Going green

As a part of its environment, health and safety initiatives, the company is striving for zero pollution, zero waste, zero liquid discharge and zero injuries apart from its passion for zero defects. It is also trying to become a paperless company by promoting digital communication and records in all operations.

The company has also invested into Navision ERP and latest IT systems to streamline, integrate, and improve its business processes. The certified green plant has a built-up area of about 4,000 sq. metres, apart from a huge office space, and employs about 150 people. The company's green initiatives include the building design and construction as per LEED specifications.

This includes use of natural light, energy conservation, rainwater harvesting, solid waste reduction, zero liquid discharge, etc. For energy conservation in the plant, the company has introduced many initiatives like a green wall of creepers around the plant building, from floor to the roof, to reduce heat penetration into the building structure. The inner building area is cooled through a network of water pipes embedded

in the building structure including flooring, walls, and roofing.

An energy-efficient and environment-friendly HMX cooling system also provides 100% fresh and cool air, with energy consumption being only about half of the conventional air-conditioning system. To keep on improving the manufacturing precision, the company also needs to upgrade its manufacturing toolings on an ongoing basis. For this reason, the company has also invested into tool design and development capabilities along with a full-fledged tool room. With its drive towards attaining excellence in manufacturing and product innovation, Singh is confident that TeraSpin will be able to significantly expand its market share in India and other countries.