The Indian auto components industry has been witnessing a robust growth over the last few decades. The future growth of bearings industry is expected to be led by industrial production as well as demand from automobile sector. Looking from the perspective that India is one of the fastest growing global economies and is the third largest country in the world in terms of purchasing power parity, there is a tremendous opportunity for the Indian automotive industry to rise to the occasion. According to the Automotive Component Manufacturers Association of India (ACMA), the Indian auto components industry is expected to register a turnover of $100 billion by 2020, backed by strong exports ranging between $80-100 billion by 2026.

MEETING THE CHALLENGES

Riding on the expected growth, the opportunities are tremendous, however, each opportunity comes with challenges and the foremost challenge is to deliver a better quality and technology product. The need of the hour is to stress on innovation because today automobiles are focusing on hi-tech devices to support the driver and ensure safety. Auto companies are continuously experimenting with new technologies and vehicle concepts which makes it further important for auto components manufacturer to innovate in order to meet the expectations. Indian manufacturers are taking multiple steps to overcome the challenges and are entering into technical alliances with foreign manufacturers to improve the technology being used.

With an aim to achieve a higher level of precision in designing, manufacturers are using techniques such as ‘process guazing’ to improve the smoothness of the bearings. Keeping fuel consumption and environmental factors in mind, the demand for low friction bearings or low torque bearings command a tremendous priority. A greater level of importance is now being laid on the testing of the bearings and companies are increasing investments in research and development (R&D) to transform the bearings design with techniques. To meet growing customer expectations, companies are investing in modern manufacturing technology as bearings market in India is very dynamic and competitive where machine and manpower play an integral role. In manufacturing, the rise in the use of robotics for the assembly line, and the use of hi-tech materials and nanotechnology to aid making lighter but stronger and safer parts are other offshoots of R&D.

MANUFACTURING PRACTICES

Industrial applications like machine tools and precision automobile systems demand for superior bearing performance. Higher speed capability, a high degree of running accuracy, higher level system stiffness, lower heat generation and faster heat dissipation combined with low NVH levels are just some of the key challenges bearing industry need to overcome. In order to overcome some of these new challenges, bearings need to be produced with tighter tolerances consistently. Tighter tolerance bearings requires the highest level of accuracy, backed by production capability, extensive manufacturing specialisation and rigorous quality control system. In addition to application requirements, tighter tolerance bearings provide consistent performance in the field.

Bearing rings, roller and balls are usually manufactured from high-carbon chromium steels. The bearing steel must have high wear resistance, toughness, dimensional stability and excellent fatigue resistance. The key goal of the bearing industry is to produce zero defect...
products. Such kind of manufacturing requires superior manufacturing capabilities. It is critical to design and develop products that are the best solutions to customers’ requirements.

Bearing industry is continuously striving to evolve new materials which are specific to application requirements in addition to traditional bearing steel materials. Special heat treatments and coatings are being deployed to make more robust bearings for ‘power dense’ applications and to enhance the bearing life. In addition to traditional steel material, hybrid materials (ceramics, polymers) are also being applied as appropriate for application. Demanding applications such as contaminated environment, corrosive conditions, bearings with special coating and stainless steel materials are being recommended.

TECHNOLOGY ADOPTION

With markets worldwide moving towards cost-effective products and solutions, manufacturing technology has also grown exponentially as auto components industry segments have adopted methods aimed at reducing labour and material costs while increasing productivity, efficiency and component quality. Automation also holds tremendous significance however, precision in automation and machine accuracy with entire automated operation are major challenges the Indian industry is still grappling with. In order to sustain the current growth trajectory and prepare for the increasing competition, the Indian auto components industry needs to create a set of competitive advantages based on value-capture to stay ahead in the global and domestic markets. Adoption of advanced technology solutions will be a key enabler to achieve the required goals as it will provide the necessary productivity benefits. The technological advancements can further open doors for newer designs; cleaner, lighter, and safer products, within shorter lead times and lower costs.

OPPORTUNITIES FOR BEARINGS

Technology has the potential to act as a force multiplier for the Indian auto component industry. Hence, the need for technology adoption has become more crucial now than ever before, helping auto component firms meet productivity benchmarks. As Indian automobile industry develops and modernises, there are tremendous opportunities opening up for the bearings industry. The market for automotive components is expected to increase, nevertheless, Indian manufacturers will have to broaden their horizons and innovate in terms of technology and design to grow. The future will witness technologies which help in efficient ways to create, transfer and control power. These technologies can have endless societal impact, from improved energy efficiency that saves businesses and consumers’ money to reduced emissions that help sustain our environment.

The author is President and CEO, National Engineering Industries (NEI).

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