



**DivgiWarner**

*the spirit of innovation*

# Innovation **TIMES**

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## SUSTAINABILITY

### Rediscovering and Harnessing the Human Purposes of Business



*“We do not inherit the world from our ancestors. We borrow it from our children.” ... Native American Proverb*

One hundred and forty years ago, on June 1, 1874, the world's most powerful business corporation, the English East India Company was dissolved by the Government of Great Britain after the British Parliament had replaced the Company with direct British rule in India. Founded on December 1, 1600, the English East India Company was an enterprise from the so-called European 'Age of Enlightenment'. The Company pioneered the shareholder model of corporate ownership and built the foundation for modern business administration. It achieved market dominance in Asia, literally ruling over large swathes of India for a profit. But it also shocked its age with its scale of untrammled executive malpractice, stock market excess, environmental devastation, and human oppression. The parallels with some of today's corporate leviathans are striking – we should remember, though, that the British EIC outstripped Wal-Mart in market power, Enron for corruption and Union Carbide for environmental and human devastation. What is instructive in the sordid saga of its bid for unbounded economic power was the way it was repeatedly challenged by eminent individuals such as Adam Smith, Edmund Burke, and the redoubtable Karl Marx to make it accountable. We, therefore, get timeless lessons on how to confront corporate excess through protest, regulation, reform, and corporate redesign. It is also a cautionary tale of why and how today's corporate sector needs to be more fully accountable to sustainability of the environment and the community in which it operates.

Ironically, around the time the EIC was being wound up, a young entrepreneur in India was taking his first steps to set up a textile mill with a bold vision to do things differently from the 'the way it was done' in industrialized Britain. Young Jamshetji Tata figured that while the modern equipment was imported from Manchester, England, the metro pole of 19th century industrialization, his new Empress Mills need not be patterned along the brutal methods of the Lancashire mills that had inspired a certain Friedrich Engels to publish his excoriating treatise on the conditions of the working class in England. Inspired by the values of his Zoroastrian religion in which he had been trained as a priest, Jamshetji pioneered the idea of entrepreneurship and wealth creation for his community, society and indeed his country at a time when business magnates around the world were commonly referred to as robber-barons. Among the several world-class innovations he implemented at the Empress Mills in Nagpur were several social firsts – the world's first 8-hour working day, medical facilities, crèche for children of employees, pension and gratuity schemes for retiring employees, and insurance and accident compensation schemes. These were introduced way before the Factory Act of

England was enacted. Contrary to the hard-nosed conventional capitalist wisdom of the time, Jamshetji made handsome profits based on the high efficiency and quality of production of the Empress Mills. In his worldview the community was not just a stakeholder in his business but, in fact, the very purpose for its existence. In a world that moved at the pace of horse carriages and steamships, Jamshetji, in a relatively short life-span, left India the enduring legacy of a nation-building business group with pioneering innovations in steel, electricity and science education and research that gave India its first genuine Nobel Prize in Physics.

Jamshetji Tata's inspiring life story resonates in the research done by Professor Haruo Funabashi of the Sirius Institute in Japan. He has researched long-living business organizations in Japan and discovered that there are 20,000 companies in Japan which are over 100 years old; 1200 that are over 200 years old; 30 over 500 years and 5 that are older than 1000 years! Prof Funabashi found several common threads in the business philosophies of these companies. They all had a clear sense of values, mission and a vision they were working to. Consequently, they were community and society oriented encompassing their customers, their own people, and their suppliers. They were conscious of and alert to change and were sensitive about continuous innovation and improvement. They were appropriately frugal and efficient with natural resources. They embodied all this in a culture that was handed down from generation to generation through clearly articulated precepts and practices.

As the global community with its ever increasing awareness levels demands greater accountability from its global corporations in the triple context of economic, social and environmental performance, it is clear that tomorrow's companies and their leadership will need a much enhanced awareness bandwidth than they have today. Tomorrow's companies will also face a world grown more complex – dynamically, generatively, and socially. Globalization means that cause and effect are far apart in space and time; the rapid pace of cultural change and fusion of trends means events are unfolding in unfamiliar and unpredictable ways. The tremendous diversity of a global community means people see things differently and so issues have a tendency to polarize and get stuck. To be effective, tomorrow's companies will need a continually evolving "niti" or system of processes backed up by a strong "niyyat" or leadership-intent driven by the conviction of values. Taking on the challenges of managing the triple bottom line will require a new and open way of talking, listening, influencing and forging new possibilities to make our businesses more sustainable. In the ultimate analysis it will be about rediscovering and harnessing the human purposes of business.

Best wishes,  
Jitendra Divgi

# SIZED UP AND SIZED DOWN

## Development of Compact Synchronizer Technology for Manual & Automated Transmissions

### FEATURE STORY



**Contributor:** Abhijeet Pingale  
Product Engineering

It seems to be becoming a habit with DivgiWarner. This year was the fifth consecutive year since 2010 that DivgiWarner has presented a technical paper at the SAE World Congress, an event organized annually by SAE International, a globally active professional association and standards organization for engineering professionals, headquartered in Warrendale, Pennsylvania. The Congress provides a forum for companies, government agencies, research institutions and consultants to devise technical standards and recommended practices for the design, construction, and characteristics of motor vehicle components.

At this year's SAE 2014 World Congress & Exhibition at Detroit, Michigan, USA, on 9th April, 2014, our Program Manager, Transmission Solutions, Mr. Abhijeet Pingale presented a Paper, "Development of Compact Synchronizer Technology for Manual and Automated Transmissions".

Abhijeet's paper was selected from a host of papers submitted by individuals across the globe after being subjected to a stringent technical qualification that involves the applicability of the technology for the development of technical standards based on best practices. The abstract of the paper is presented as under:



***Advancements in engine technology have increased overall torque rating of engine and demanded further improvement in transmissions to sustain higher input torque. Conventional brass synchronizers have proved inadequate for these torque and gear inertia. It becomes necessary to use advanced material science and enhanced technology to synchronizer capabilities.***

***Multi-cone compact synchronizer with carbon composite friction material technology has been tested successfully for these more demanding applications. This paper will focus on some of the key challenges in modern synchronized transmission, and way forward to address those. Some of the key areas delivering highest impact are being discussed.***

***A combination of various techniques has enabled a significant reduction in overall transmission length along with enhancement in shift effort, life and overall performance.***

With the presentation of this paper, Divgiwarner has displayed its commitment to being a product leader and continues to pioneer product development and innovation to drive the multitude of opportunities fundamental for a successful future.

# EVENTS

## 360° CUSTOMER VIEW

### Customer Visits



Volvo Eicher Commercial Vehicles  
to the Sirsi Plant.



Toyota Kirloskar  
to the Bhosari Plant.



Mahindra & Mahindra  
to the Bhosari Plant.

# EVENTS

## COUPLING OF A DIFFERENT KIND

### BorgWarner Named North American Transfer Case Supplier

EVENTS



**Contributor:** Extracted from a BorgWarner Press Release



(L to R) BorgWarner TorqTransfer Systems Plant Manager Chris Walsh, U.S. Senator Lindsey Graham, Senior, Vice President of Toyota Motor Engineering and Manufacturing North America (TEMA) Chris Nielsen, South Carolina Secretary of Commerce Bobby Hitt, Oconee County Council Administrator Scott Moulder, BorgWarner President and Chief Executive Officer James Verrier, and President and General Manager BorgWarner TorqTransfer Systems Dr. Stefan Demmerle.

In March of this year, BorgWarner's facility in Seneca, South Carolina, was formally named the North American supplier of two-speed, part-time four-wheel drive transfer cases for the Toyota Tundra pickup truck. This product award from Toyota is expected to create more than 150 regular full-time jobs at the BorgWarner plant, which currently employs over 650 people.

In the press release of the event, President and General Manager, BorgWarner TorqTransfer System, Dr. Stefan Demmerle said that BorgWarner has invested nearly \$60 million in the Seneca facility and created over 470 new jobs in the past five years and that this launch represents a significant milestone for BorgWarner and Toyota.

In his address to the invitees of the event, Chris Nielsen, Senior Vice President, Toyota Motor Engineering and Manufacturing North America, Inc. mentioned that BorgWarner's transfer case as being the global benchmark

and that strong suppliers, such as BorgWarner, will continue to be critically important to Toyota.

You may recall that we had covered the DivgiWarner "Toyota Tundra Project" as the feature story in our December, 2014 issue of Innovation Times. The Toyota Tundra Project involves the manufacture of Flange and Sprocket Driven components installed in BorgWarner's Transfer Case mounted on the Toyota Tundra world-wide. Since commencement of shipment to the warehouse at Charleston in April 2013, the project continues to fulfill BorgWarner's minimum monthly requirement of inventory at the Charleston warehouse to sustain its production capacity of 4500 Transfer cases per month with no disruptions to BorgWarner's Production Line as of date.

Albeit a very small contribution to the success of the above award, we take pride in having contributed to the above award.

## The Power<sup>2</sup> of Two

In May, 2014, Divgi Metalwares Pvt. Ltd. (DML), the Indian parent company of the DivgiWarner joint venture and Cattini & Figlio, Italy, world-players in high-performance synchronizers resolved to strength their partnership and complement each other's individual technical competencies – DML's formidable force as a supplier of transmission parts to light trucks, utility and agricultural tractors in India since 1964 and Cattini & Figlio's 50+ years of manufacturing experience in all types of gears, from cylindrical gears to spiral bevel gears, from planetary ring gears to synchronizers, from wet clutch assemblies to differential bevel gears – to supply top-class precision components across a varied classification of vehicles to top Indian auto OEMs.





### Vijay Janardan Warade

Management Representative for Quality Systems

<b>Education:</b>	Diploma in Mechanical engineering.
<b>Total Experience:</b>	16 Years
<b>With Divgi Warner:</b>	14 years
<b>Career Goals:</b>	To lead operations
<b>Hobbies:</b>	Internet surfing, Watching Television shows, Travel and Social Work
<b>Family Details:</b>	Married to Barkha, two daughters - Bhargavi & Sharayu

#### What is your current role in DivgiWarner?

I am working as a Management Representative for Quality Systems. My job profile covers implementation and monitoring of quality, environment and production systems management across the organization in all departments of the company as also liaising with external parties including customers and certification bodies.

#### What has been your experience with DivgiWarner?

My 14 years of work experience with DivgiWarner has presented several opportunities to enhance my practical knowledge in areas of Manufacturing, Assembly, Planning and Quality Systems. In Quality, Environment Safety and Production Management Systems, the implementation of TS 16949, ISO 14001 and Borg Warner Production System (BWPS) was a unique experience. It has helped me develop my skills and my ability in auditing, problem solving and in other management skills that help in driving numerous quality enhancement programs and overall process improvement.

On the shopfloor, I have been the Trainer for the implementation of Operating Methods and Systems and Operator Training. In 2013, I got the opportunity to write and present a Technical Paper, "Project Saraswati: Operator Training & Evaluation (Licensing) for World-Class Operational Excellence" at the SAE Congress in Chicago.

#### What has been your contribution to DivgiWarner's Product Leadership Initiatives?

Productivity Enhancement and Quality Improvement efforts such as Zero PPM, on-time delivery for the BWPS implementation, and Monitoring and Guiding critical process cross-functional meetings like FMEA, SQIG, APQP, etc. at both plants in Bhosari and Sirsi. These are some of the areas where I have been able to display my leadership strengths.

#### What do you believe are some of your notable achievements at DivgiWarner?

I think some of the achievements are in the areas of:

- Productivity improvement through BWPS tools like, SMED, VSM
- Quality Management System and Environment management System sustain
- Operator Licensing System Implementation and
- SAE Paper presentation at the COMVAC, Chicago

# Ground and Honed to Perfection

## NVH improvement through improvised Internal Gear Honing

**Contributor:** Suresh Deshmukh  
Head - Product Manufacturing



With an ever-increasing clientele of cost conscious customers demanding the best of quality for the most competitive of prices and with competition keeping a hawk-like watch over each other's market space, both OEMs and their suppliers find themselves compelled to perennially don their thinking caps and devise innovative ways to beat the other at the game.

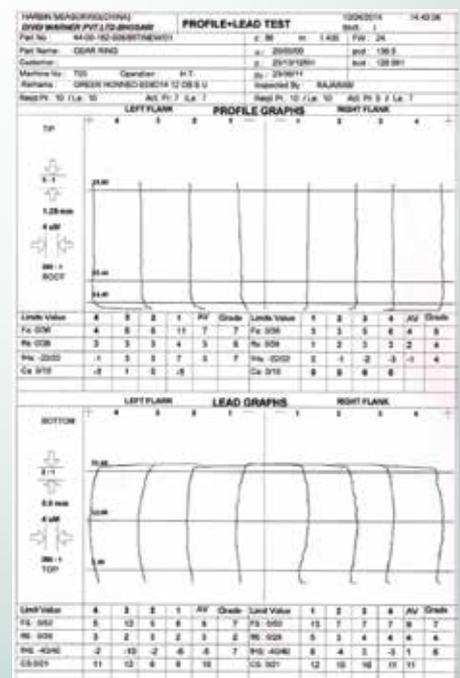
In January, 2013, DivgiWarner did just that. In their continual efforts to enhance quality with a view to contributing to NVH improvement to the automotive industry, it gave the honing operations of the Ring Gear, one of the components of their flagship product, the Transfer Case, a novel twist. The improvisation significantly improved quality, control on profile form error, roundness and cumulative pitch error.

This was no mean innovation. After all, the radical idea was an unprecedented and significant deviation from the industry-standard process of honing. What it required was a thorough understanding of the fundamentals of ring gear geometry, a complete grasp of existing quality benchmark of broached and induction hardened ring gears and a capability to define a new design process while, at the same time, meet customer target cost expectations.

DivgiWarner, in March, 2013, adopted the improvised Internal Gear Honing operation for the manufacture of the Ring Gear. The accuracy in tooth lead and Surface finish of the Internal Gear translated to great NVH improvement on the Transfer Case.

Moreover, the improvisation also led to acquiring an excellent grasp on an alternate solution to the broaching process for low volume manufacturing, reducing delivery lead times and most importantly, significantly lowering investments on machines and gauges and localization of all consumable tooling to the tune of around 10% compared to the cost of importation of the component. The exercise has helped DivgiWarner save costs significantly.

With the extent of authority that it wields in the area of precision automotive gear manufacturing since the late 1950s, DivgiWarner may well be just one of the very few suppliers who can provide such customer-centric value to OEMs.



**U**nlimited **F**reak **O**ut – "Jalosh" in the local lingo – unfolded itself over the weekend of 1st March, 2013. At this annual cultural event of DivgiWarner, Jnana Prabhodini Hall at Nigdi was vibrant with creative expressions from employees and their families of Divgi Warner in the form of music, dance, childrens' fancy dress and skits. The climax of the show was the group instrumental "performed" by the Heads of Departments.

**Contributor:** Gopal Dalvi  
Human Resources



Operations Team performing an "operation" to remove the addiction of alcohol and smoking from a patient.



Graduate Trainee Engineers Team performing "Lazy Dance"



Vibha Talwar as "Rani Chennamma of Kittur"



Shri Umesh Kotwal, along with wife receiving the Long Service Award from Shri Suresh Deshmukh, Head – Manufacturing



Shri P. P. Thankachan( R) receiving the Long Service Award from Shri Ashwin Koppikar, Head – Commercials



The Cultural Team



Chief Guest, Shri Pundalik Kudwa, Director Divgi Metalwares appreciating the excellence in academics and stage performances of NexGen DivgiWarnerians



Kids in "Lungi Dance"



Heads of Departments rendering a fine group instrumental



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