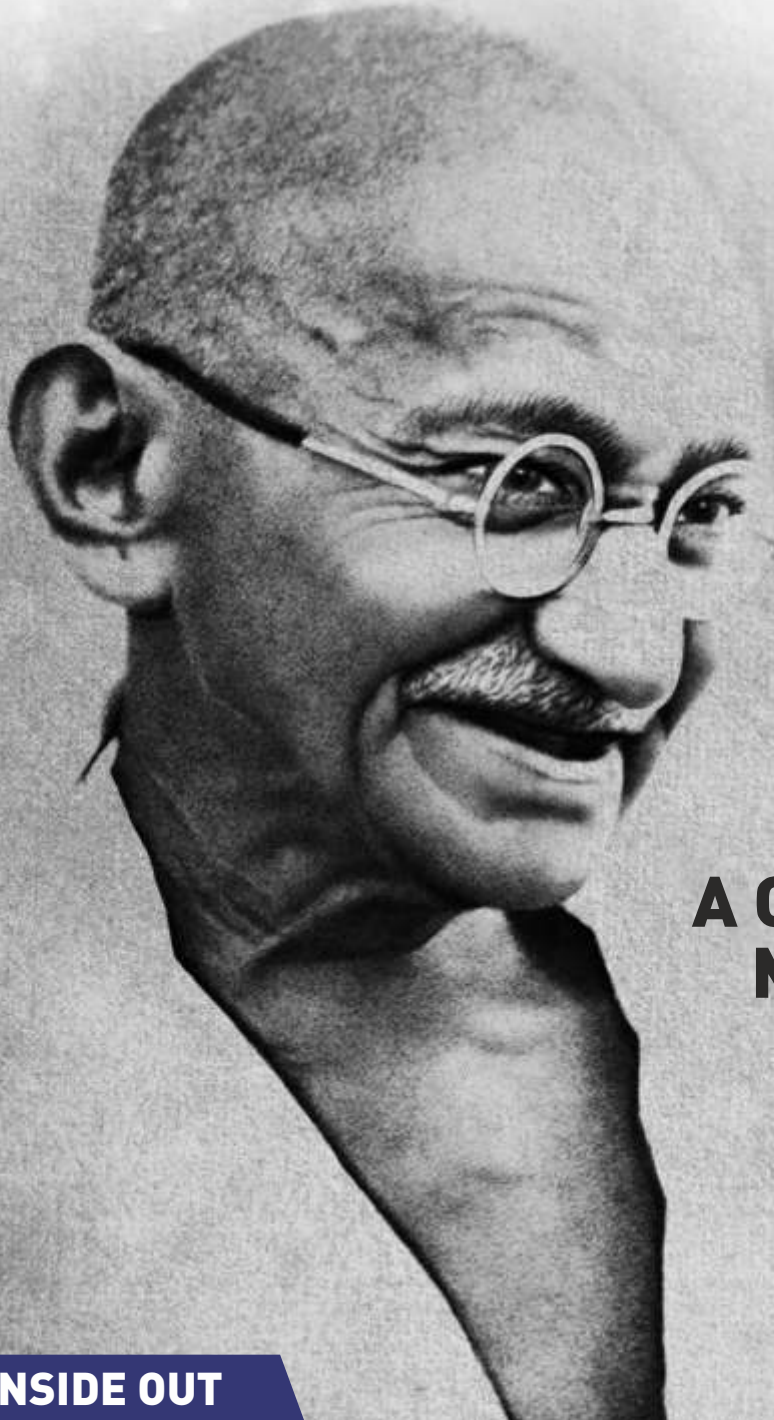




# Innovation TIMES

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**A CUSTOMER IS THE  
MOST IMPORTANT  
VISITOR ON  
OUR PREMISES**

-MAHATMA GANDHI

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## MAHATMA GANDHI AND THE TECHNOLOGICAL INDIAN



October 2, 2019 was Mahatma Gandhi's 150 birth anniversary and provided the occasion to commemorate him and his great body of work for the modern Indian nation and his profound influence on the social, political and economic aspects of India. His views on technology and economics are often seen in opposition to the more assertive views of Jawaharlal Nehru who had the advantage of living well beyond Gandhi till 1964. Nehru, and not Gandhi, is widely perceived as the founder of the modern technological India with the setting up of large scale public sector power plants, steel plants, and the face of India's technological prowess – the Indian Institutes of Technology. But it is important to study Gandhi's writings and work in promoting self reliance in a pragmatic sort of way that was not totally incongruent with the way Nehru pushed for India's technological advancement and eventual self-reliance. The insights that emerge are astonishingly different from the stereotypes that most commentaries in India portray Gandhi. The real Gandhi was a lot more nuanced, and his writings and work bring out a sharp technological and scientific temper and bent of mind essential for the genuine advancement of India.

While researching the history of India's educational system in engineering and technology, American historian of science and technology, Ross Bassett, from North Carolina State University, NCSU, in Raleigh, North Carolina, discovered facets of Gandhi's work that provide evidence of his technological bent of mind. Gandhi's management of time, his pursuit of efficiency in work, his relentless drive to achieve flawless quality in whatever he did are all indicative of his personal

disposition towards technology. We have records of Gandhiji writing to the Naidu family in Coimbatore requesting internship for his nephew Maganlal to systematically learn the technique of spinning and weaving so that the technique of the charkha could be improved. Gandhiji's detailed planning of space, time and public hygiene for the annual Congress conferences with pin-pointed and lucid instructions to his volunteer taskforce is a remarkable insight into his analytical and systemic approach to large scale planning and execution – a necessary prerequisite for technology development and deployment.

Gandhi's open mindedness to taking advantage of the best technology education available in the world was at its most evident in the case of my uncle Balkrishna Kalelkar who grew up as his disciple and protégé at Sabarmati where his father, Kakasaheb Kalelkar, helped Gandhiji run the education program at the ashram.



Bal Kalelkar graduated at the top of his class with a Bachelor's Degree in Mechanical Engineering from the NED College of Engineering in Karachi in 1940. Gandhiji encouraged him to pursue a graduate program in the US and personally wrote his recommendation letter to the Massachusetts Institute of Technology in Cambridge, Massachusetts. Further, he persuaded G.D. Birla to fund Bal Kalelkar's study in the US at MIT.

Bal Kalelkar went on to study at MIT and Cornell between 1940 and 1946, finishing his PhD from Cornell University in Ithaca, New York in 1946. His PhD thesis was on the structural analysis of the connecting rod of a 5000 hp high performance radial piston engine of the type used in America's war winning fighter and bomber aircraft.

It is very significant that Gandhi did not send Bal Kalelkar to the best of British engineering colleges in the UK like Imperial College or Cambridge University but, instead, preferred MIT in the USA. It is a matter of historical fact that many of Bal Kalelkar's contemporaries from Gujarat at MIT were members of the Sarkar Committee of the first 5-Year Plan that drew up the blueprint for the first IIT's in independent India. Gandhi appears to have anticipated that America was indeed the right place to power and drive India's development in the future and sent promising youngsters like Bal Kalelkar to the US for a contemporary education in technology and a global exposure to a world increasingly dominated by the US. The eclectic approach of the founders of the IIT system led them to adopt the best of technology education from the USA, the Soviet Union, UK, and Germany, but the pedagogical system and evaluation methodology that eventually prevailed at the IIT's was the system pioneered and developed by MIT.



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THIS STORY IS FROM JANUARY 6, 2011

## Supporting Gandhi and going to MIT were part of building India

Vijayesh Perera | TNN | Jan 6, 2011, 23:13 IST

**TOI**

**BHAVNAGAR:** Spinning khadi on charke, going to jail in British India and to MIT for higher education - it was a simultaneous process for many close associates of Mahatma Gandhi during the freedom struggle.

Three families associated with Gandhi sent a total of nine sons to the MIT during the nationalist movement. For these families, following Gandhi and sending their sons to MIT were not contradictory actions; both were part of the nationalist movement, says historian Ross Basett.

Bal Kalelkar, son of Kaka Kalelkar who had joined Gandhi at his newly established Satyagraha Ashram in Ahmedabad, also went to MIT. Kalelkar earned a master's degree in mechanical engineering from MIT in 1941. Kalelkar's younger son Bal grew up sharing his father's and Gandhi's work. At the age of 18, Bal became one of a select group chosen to participate with Gandhi on the Salt March.

When Bal went to MIT, Gandhi wrote a letter to take to America, "This is to introduce young Kalelkar to all my friends in America. He was brought up under my hands. He is one of the most promising among the boys brought up in Satyagraha Ashram. Any help rendered him will be appreciated."

Bassett finds that the only reasonable conclusion to be drawn from the case of the Pareekhs, T.M.Shah, and Bal Kalelkar is that they saw no contradiction in their support for Gandhi and going to MIT: "both were an integral part of building the Indian nation".

Extracted from Vijayesh Perera's article, TOI Rajkot, 6 Jan, 2011.

Gandhi, very presciently, appears to have anticipated today's guiding principle of customer focus when he famously said in a speech in South Africa in the early 1890's, "A customer is the most important visitor on our premises. He is not dependent on us. We are dependent on him. He is not an interruption of our work. He is the purpose of it. He is not an outsider to our business. He is a part of it. We are not doing him a favour by serving him. He is doing us a favour by giving us the opportunity to do so." This timeless legacy of Gandhi keeps him as relevant to today's technologically competitive world as he was during India's arduous freedom struggle.

**Jitendra Divgi**  
Managing Director

## A TWIST IN THE TAIL...

Power Take-Off units are not uncommon to the automotive industry but what the Divgi-TTS Engineering Team has done is not very common amongst transfer case manufacturers across the globe. In an interesting development, the Power Take-Off (PTO) feature was added to the Dual-Offset Transfer Case (DOTC) currently available with Divgi-TTS as a variant of the DOTC. As the feature name suggests, the PTO enables transfer of torque from the DOTC mounted on a vehicle to any device external to it – pumps, winches, gensets, tippers, hoists or even devices that drill. The list of applications that can be enabled by torque transfer to external devices are virtually endless.

The concept of a PTO working out of a stationary vehicle is well understood. But, our engineers thought further...what if the external power is required while the vehicle is in motion? That's when the idea of the Electronic Motorized Divgi-TTS Transfer case with a PTO was born.

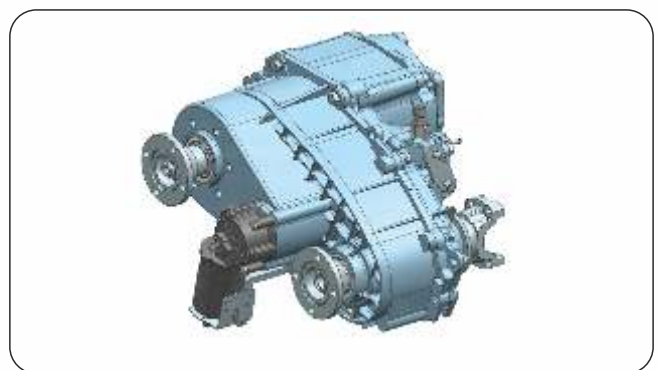
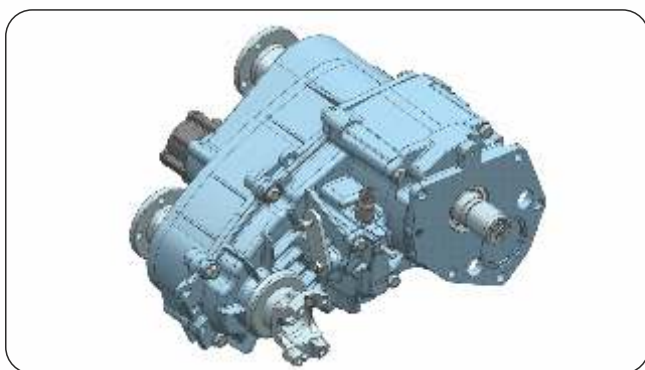
Reworking on the existing design of the DOTC, a new variant DOTC was developed that could work in 9 different modes highlighted as under<sup>1</sup>:

| Mode                | 2H | 4H | 4L |
|---------------------|----|----|----|
| PTO only            | ✓  | ✓  | ✓  |
| Transfer Case only  | ✓  | ✓  | ✓  |
| PTO + Transfer Case | ✓  | ✓  | ✓  |

Such a device is a great head turner considering its application in the rural interiors of our vast country where it can be used as the alternative to the genset and become the power provider for several activities such as borewell drilling, groundwater drawing, winching of vehicles stuck in the slushy paddy field and other such applications.

The external device is typically attached to the transfer case vide a propeller shaft, the device end of which is usually a flange, pulley or gear depending on the compatibility of the coupler on the external device. The adapters are customer-detachable allowing easy connectivity to the transfer case.

But it is the PTO + Transfer case mode that is turning heads where “power” transfer is enabled on-the-fly to the external device. It would come in handy if it is essential to power an external device while the vehicle is in motion.



<sup>1</sup> Divgi-TTS also has a separate variant named the “Two-stage DOTC Transfer case with PTO”. This variant operates as the transfer case or the PTO at any given stage.

## SHIFTING THE GOALPOST

### Divgi-TTS advances into the Transmissions space

Divgi-TTS 6MT400



#### Distinctive Features

- Max torque range of 400 NM. Scalable to 450 Nm with ultrasonic shot peening
- Weight 49 Kg without oil
- Design protected for deepest 1st gear ratio of 5.7
- Design protected for modular design, which can offer 5speed and 6speed architecture with single as well as double overdrive
- All speed gears are ground, or power honed to DIN Class 6 to give better NVH durability.
- Constant mesh synchronized gears including reverse gear position
- Steel synchronizers with carbon lining are used for superior shift quality. Triple cone synchronizer for 1st & 2nd gear position, dual cone for 3rd & 4th, single cone for 5th, 6th & rev gear position. Option of dual cone on Rev.
- Compact synchronizer system with short shift travel
- Shaft supported with Central Roller Bearing & Deep Groove Ball Bearing.
- Speed Gears are supported by Needle Roller Bearings.
- Clutch actuated by concentric slave cylinder.
- Remote actuation of gears is through flex cables.
- Internal shift system uses steel sheet metal forks for better stiffness and shift quality.
- Shift shafts are guided using Linear Bearings.
- Integrated shift tower with 3D ramp profile and central detent for better shift hysteresis
- Ideal for Pickups, SUV's and LCV's
- Compatible with the entire range of Divgi TTS transfer cases

When Divgi-TTS decided to expand its products portfolio into a completely new segment of technology, transmissions, it also included a manual transmission. And why, despite the buzz of the emerging electric technology sounding the death knell for IC-engines and transmissions associated with that technology? For one, several marketing consultant biggies have concurred on the trend that the number of manual transmissions produced worldwide, which amounted to 40 million units in 2016, will continue the upward trend. On the business front, India, Europe and China were a ready market for the MTs and cost-effectiveness is an area where Divgi-TTS has immense control over. Most importantly, Divgi-TTS was confident of producing a superior but very cost competitive transmission. After all, a manual transmission contains gears, synchronizers, shift systems, bearings and a housing and Divgi-TTS has been producing gears, synchronizers and housings for several years for its 4WD systems. All it needed was a technology partner of repute to partner with.

With the contours of the program firmed up, a two-pronged approach was put into place. The Business Development team rushed across the globe to get a small pie of the 40 million units being produced worldwide while the Engineering team began to scout for a suitable technology partner. Both the teams struck it rich. In its quest for a technology partner, the Engineering team approached FEV, Germany, one of the world's leading consultants in the automotive transmissions space. Discussions progressed rapidly and eventually translated to a perfect partnership for our initiative. Alongside, the Business Development team tied up its first potential customer for the Divgi-TTS 6-speed Manual transmission with UAZ, Russia, evincing an interest. It was ready to purchase a 6-speed MT for its "Patriot". In order to fit into the undercarriage of the Patriot, the shifting was required to be enabled via a cable.

The project to develop a 6-speed MT prototype for UAZ began in late 2016. The product was christened the Divgi-TTS 6MT400 and the first prototype was rolled out in September, 2019. Four more prototypes are planned to be built and used for validation. The final prototypes are planned to be sent to UAZ by April 2020.

## FACE OF PRODUCT LEADERSHIP

## A Mindshare With Stalwarts Of Our Workforce

## ASHWIN KOPPIKAR

Former Head - ABD, Sales and Support  
(Retired end of December, 2019)



With your career at Divgi-TTS drawing to a close after over 19 years of successful contribution to its growth, we would like to have some parting comments from you on some aspects of your business development and sales role while you were at the helm.

### What challenges were faced at the start of 2018-19 and how did your division address these challenges?

The Transfer Case for UAZ, Russia Project was very strategic – business from a new OEM, our first international customer as a Tier 1 supplier. So, we changed tack from proposing a complete drivetrain solution that involved the replacement of the transmission of the incumbent to proposing the supply of only the transfer case to suit the incumbent's transmission. That broke the impasse.

The Final Drive Gear Project being executed for a world-renowned electric car OEM, through its Indian partner, ran into a technical expectations mismatch. Issues were resolved after sustained discussions with the EVOEM.

Uncertainty in the Ring Gear business from Borg Warner, Korea and China was staring in our face due to an increased volume requirement and high competition from Chinese local suppliers on pricing. We saw it as an opportunity to increase business and quickly ramped up our capacities by commissioning new machines.

### What are the strengths of your division?

**Teamwork:** This is our keystone. The division is strategically structured like a pack of hunting wolves; every member is assigned to address the requirements/ issues of specific working group within OEMs; sourcing, purchase, engineering, quality, supply chain. This structure allows constant contact with the customer on any given aspect of the customer's business. Key Account Managers, well-acquainted with the OEM's technical and commercial issues maintain direct customer contact on a regular basis and provide relevant feedback up the hierarchy. Periodic meetings of the management with customers creates an overall excellent customer experience across the customer's entire management chain.

**Techno-commercial negotiations capability:** It's extremely important to always get "healthy" business for the company i.e. the deal must be a strong WIN-WIN situation for both, customer and supplier – value for money for the customer and adequate margins for the supplier. A powerful techno-commercial understanding and negotiations capability is essential for this purpose.

**Deep understanding of competition practices:** Our deep understanding of competition strategies – product strength and weaknesses, technical fit (or variance) of its solution from the preferred customer requirement, price points of competitors' proposals vis-à-vis ours and its other strategic gameplays. Our business successes at UAZ, Force Motors, Toyota and Bharat Forge were all replacement of incumbent suppliers – Korean, Italian, Japanese and Austrian respectively – speaks volumes of the team's understanding of how to provide more of money's worth to customers than our competitor.

### How do you plan to spend your time in the days to come?

That I will be with family at Dharwad in my future itself is very satisfying. My wife, Neeta, runs a thriving pre-school there. I plan to actively help her in the administration of the pre-school.

The exhausted soldier staggers through the fields of Punjab's sunflowers,  
Their bright exuberance a stark contrast to his dark enveloping sorrow,  
Alone and abandoned, mesmerized by the monotonous unending furrows,  
His love, passion, sacrifices taken for granted, thrown out of the window.

He finally succumbs to the wounds of the gruesome, ruthless battle,  
Falls to the ground, as the grey ashes of his heroic war saving struggle,  
On his pain contorted face, like medals of Honour on his General's chest they settle,  
Scents of sweat, blood and gunpowder, his last memory as he crosses the final hurdle.

Awake India, to the ultimate sacrifice of past battles of our fallen brave heart soldier,  
Let not anyone in his superior rank, take the credit and bear his badge of Honour,  
His sacrifices we need to preserve, his house, his family, his precious daughter,  
In them are enshrined the values, that in the future will make us stronger.

Awake India to the silent sacrifice of our humble maid servant,  
Who toils long hours, eats one meal and bears abuse of a drunken husband,  
Takes in her stride our egoistic, frivolous and insignificant temper tantrums,  
To be able to nurture and provide for her children and honourable life, an education.

Awake India, to the bravery of our fearless daughter, a rape survivor,  
You cannot imagine her courage, to stand up and say, never again, ever!!!  
Through her lopsided battles, she educates our sons and daughters,  
A vision of what India was, and can be, where women and men are equal partners.

Awake India, to the perseverance of our hardworking, diligent farmer,  
From the clutches of famine, he created a green revolution, emulated all over,  
Why is he now giving up his life in a hopeless cycle of unending debt?  
Have we all gone blind to political greed and genetically engineered corporate theft?

Awake India, to the energy, innovation and spirit of the entrepreneur,  
Since our Independence he has created more jobs than the public sector,  
In spite of the government's attitude of treating him as a thief, cheat and tax evader,  
More of us work for him and he has become the nation's wealth creator.

Awake India, to the miracle of the selfless unassuming primary school teacher,  
On her shoulders rests the biggest asset of the nation, our demographic dividend,  
We really must not get this wrong, join her ranks, our most significant investment,  
Through her, a billion aspirations met, to economically summit, Mount Everest.

Awake India, to a million more examples of us who have preserved,  
Humankind's most long lasting, open minded, peace loving society in existence,  
One that has never perpetrated on another, slavery, military expansion or humiliation,  
Nor have annihilated one, from the face of the Earth, to the brink of extinction.

Awake India, to the strength, resilience and wisdom of our ancient culture,  
The world needs our inclusive, integrating, open, tolerant, non-aggressive soft power,  
If Buddha's message conquered the East from Pataliputra to the rocky shores of Osaka,  
Gandhi's spirit still lives West, from the mines of Johannesburg to the Mills of Pittsburg.

However beware my fellow Indians, to the biggest threat to our existence,  
The corrupt, corpulent, criminal, unethical value system taking root in our culture,  
We cannot wish it away, through our actions, plan a campaign of eradication,  
As rigorous and sustained, as against the polio virus, that gave us from debilitation, FREEDOM.

## THREE IN A ROW

Divgi-TTS wins the Annual National HR Circle Competition for the third consecutive year.



Mr. Brijmohan Lall Munjal, Chairman of the Hero Group, presenting the CII National HR Circle Competition 2019 Award award to Mr. Gopal Dalvi, Head, HR and OD (R) and Ms. Smita Shanbhag, Sr. Officer- HR & OD (L), Divgi TorqTransfer Systems at the award ceremony organized at India Habitat Centre, New Delhi

Value addition by enhancements in Leadership & Employee Development has been on top of the priority list for many organizations. Training sessions and talent retention play a vital role not only in the growth of an organization but in an employee's individual growth as well. By acknowledging how to develop effectively and sustainably, Divgi TorqTransfer Systems has been able to grow in-house leadership qualities and 'beyond-boundary' roles rather than restricted conventional jobs.

On 17th-18th of July 2019, the Confederation of Indian Industry (CII) conducted the National HR Circle Competition 2019 at India Habitat Centre (IHC), New Delhi. Divgi TorqTransfer Systems (Divgi-TTS) presented a case study on "Leadership & Employee Development" in the category of small and mid-scale industries. Over 60-65 industries nationwide demonstrated their HR practices to a jury of esteemed industry figures.

Divgi-TTS outperformed all and was adjudged the winner. Our case study was on the practice of our Product Leadership Competency Model (PLCM) - a framework for Leadership Development. PLCM aims to understand competencies and draw insights for the development of

practices. A consistent implementation of the PLCM results in developing a leadership pipeline for sustainable business growth.

PLCM operational practices cover the complete spectrum of the business that Divgi-TTS is into. This includes Business Plan Presentations to the company's Board of Directors, Performance Reporting, Balanced Score Card Review, Layered Process Audits, Fast Response Meeting, Employee interactions, Appreciation & Recognition and Training.

The outcome of these practices is very evident - over 45% of our employees have 10 or more of years of service with the Divgi Group, 70% of the leadership / management team has risen through the ranks. Divgi-TTS has also achieved a year-on-year revenue growth of 18%.

Divgi-TTS has maintained pole position for the past 3 years proving its consistency in administering the various processes to remain top of the "Leadership & Employee Development" ladder.

## Congratulations Team Divgi-TTS!



Winning Teams of companies that participated in the event. Divgi-TTS representative, Ms. Smita Shanbhag is standing with the third trophy from the left.