



# Innovation TIMES

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## CREATING AN ORGANIZATIONAL CULTURE OF INNOVATION & PRODUCT DEVELOPMENT



Over the past 20 years, the share of Manufacturing in India's GDP has more or less remained the same, between 16% and 18%. This stasis is mirrored in another key indicator: India's R&D spend as a percentage of GDP has hovered between 0.6% and 0.8% in the last two decades. Conventional economic wisdom in India has argued that manufacturing needs to account for at least 25% of our GDP to achieve a growth rate that would help eradicate poverty over the

next few decades. It is therefore disappointing that over the last 20 years, the country has not been able to make a favourable dent in these two indicators of national competitiveness. In contrast, a country like South Korea invests up to 4% of its GDP in R&D. Unlike India, where more than half of our modest R&D spending is done by the Govt, South Korean industry accounts for more than 75% of the R&D expenditure. Consequently, South Korea has one of the world's highest full time R&D personnel per million - 7087 compared to only 216 in India. The outcomes therefore are not surprising - over 25% of South Korea's exports in manufacturing is high technology export. The equivalent figure for India is a modest 7%. If one looks at China, the figures are very impressive compared to India - China invests more than 2% of its GDP in R&D and 77% of that is done by industry. Only 16% of the national R&D spend is from the Chinese Govt compared to 52% in India. China has close 1200 personnel per million in R&D versus 216 in India, and, therefore, justifiably, its percentage share of high technology in the export of manufacturing is around 25%.

The data cited in the previous paragraph is drawn from a seminal research project and publication of the Centre for Technology, Innovation and Economic Research, CTIER, an independent think-tank based in Pune. The research clearly shows that India's industrial ecosystem is not conducive for R&D and

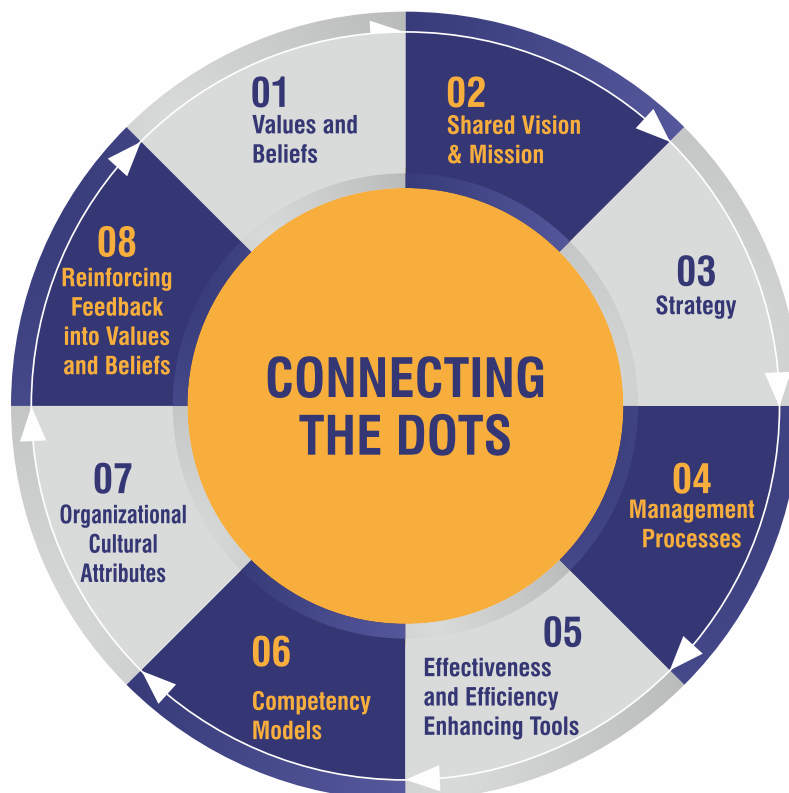
many critical elements and their linkages that are necessary for the critical mass to develop are not in place. Fortunately, among the sectors that make up India's total Industrial R&D, the automotive industry has a significant share of slightly more than 25%. It is significant that among the top 100 R&D spenders across all sectors, the first two are TATA Motors and Mahindra & Mahindra who make up almost 11% of the R&D spending of the Top 100 in India. For over 50 years, these companies have been Divgi TTS's anchor customers for product and manufacturing technology development. It is with these two companies that Divgi TTS has several new product development programs underway, many of which will help develop paradigm-changing technologies and make us future-ready for the global markets.

We are taking advantage of this context to focus on the development of principles, practices and disciplines of technology and product development that will create a culture of independent creative thinking and also the hard competence of high quality product development. These initiatives have included a focussed academia outreach and implementation of new ideas of collaboration with post-graduate faculty and programs of some of India's best universities – IIT Bombay; College of Engineering, Poona; and the Birla

Institute of Technology and Science, Pilani. Exploration is also underway with international universities like the Universities of Aachen, Braunschweig, and Munich in Germany; the University of Cincinnati, Ohio, and Clemson University, South Carolina, in the USA. Divgi TTS is an active participant and collaborator with CTIER Pune to better understand the larger context of our national ecosystem to better shape our overall vision and strategy.

Technology-led innovation is vital for our business sustainability. It is the spearhead of our strategy to fulfill our vision to build a globally recognized brand that is known for superior product leadership in automotive drivetrain components and systems. When combined with application and geographic diversity and executed with disciplines of excellence in manufacturing it is a potent recipe for superior business and financial success. In the ultimate analysis it is the cornerstone of our business sustainability. As our business expands with over 50% of our portfolio being exports to China, Korea, Russia, Europe, and the USA, we know that our strategy is working in the right direction. The challenge will be to sustain the momentum of continuous invention and innovation!

**Jitendra Divgi**  
Managing Director



# FEATURE STORY

## SPASIBA UAZ !

### Project PATRIOT heralds a new era of Indo-Russian collaboration



Contributor

Ashwin Koppikar  
Advance Business Development

On September 20, 2018, members of the Divgi TTS organization in Bhosari, Pune, INDIA, completed logistics and customs formalities, and religious ceremonies and invocations to Lord Ganesha for good luck to dispatch the inaugural 20' sea container to the Russian city of Ulyanovsk on the banks of the great Russian river Volga. It marked a historic milestone in the trade relations between India and Russia and between Divgi TTS and Russia's iconic manufacturer of the UAZ utility vehicle, Ulyanovski Avtomobilny Zavod or just UAZ (pronounced 'ooaaz') for millions of Russians since 1941. The UAZ light utility vehicle is indelibly etched on Russian historical consciousness for its epic and stupendous role along with the now legendary T34 battle tank in the momentous defence of the Russian motherland in World War II. To be associated with this great icon from the history of Russia is a matter of great pride for us in India and Divgi TTS.

The first container bore 200 units of state-of-the-art 4WD electronically controlled transfer cases designed and manufactured for the UAZ Patriot platform. It also marked the successful conclusion of 5 years of arduous and patient development to bring Divgi TTS technology to Russia and UAZ. For the first time in the history of modern India and Russia, an Indian

company was supplying a complete proprietary drivetrain assembly to a Russian Original Equipment Manufacturer, OEM.

To bring our technology to bear on this application required us to build a persuasive and compelling case for sourcing from India against other options that UAZ had from other suppliers. Solutions had to be thought through for the supply route and payment delivery through banking channels. The application called for engineering new distinctive configurations of the 4WD transfer case suitable for the UAZ 5 speed manual transmission and 6 speed automatic transmission. New tooling had to be developed and the electronic controller had to be appropriately altered in respect of the software, and integration into the vehicle wiring harness. All this required a certain minimum rapport with the Engineering organization for efficient communication and coordination. Under the guidance of Mangesh Sindkar, our Russian interpreter and cultural guide with his command of the Russian language and deep insight into Russian culture and history, the Divgi TTS team learned from experience to improve its communication with members of the UAZ organization.

The tenacious pursuit of the project with UAZ's various teams – Purchasing, Engineering, Finance, brought the light of day on the program when, in 2016, the teams arrived at a consensus on the engineering

configuration to be deployed on the Patriot model.

The support and encouragement received from Mr. Vadim Shvetsov, Sollers Group of Companies MD & CEO, UAZ, was invaluable in this regard. This, very quickly, led to the development and supply of the first 2 design intent prototypes from Divgi TTS to UAZ for engineering testing.

So began the long and arduous vehicle level tests to investigate the endurance of the Divgi TTS product. Over the course of the next year Patriots were tested in temperatures ranging from -20 deg Celsius to +40 deg Celsius in the most hostile of terrain of the vast Archedinsko-Don steppes of the Volgograd region. As the prototypes ran on and on to the amazement of the Russian engineers, Head of the Transmission Group, Boris Savhalov remarked, "We pushed the tests very hard to the limits that broke units from other suppliers. I am pleased to say that the Divgi TTS electric shift-on-the-fly (ESOF) transfer case withstood and survived all of that abuse. It is truly among the world's best!".

Divgi TTS brought its proven, time-tested Divgi TTS Production System processes and practices to give UAZ the experience of its fast, efficient and flawless product launch. Our processes are interdisciplinary and were led by our most experienced engineering program manager, Avinash Kurdekar, under whose dynamic and innovative leadership, UAZ has been assured of on-time deliverable throughout the program.

The UAZ program brings great mutual value to both UAZ and Divgi TTS and opens up the possibility of greater cooperation between Russia and India in the automobile sector. Divgi TTS brings a diverse product portfolio to enable UAZ to keep pushing the envelope of its own Product Leadership in the Russian marketplace and sustain its brand leadership as Russia's foremost utility vehicle maker. Our spectrum of technology provides a logical migration path on which UAZ can evolve its product offerings to suit various market niches of the competitive and challenging Russian marketplace.

The successful conclusion of this first phase of our cooperation program is a significant fulfillment of our vision to build a great Indian brand that is respected in the global marketplace and to contribute to India's recognition as a leader in automotive technology in the world. The team at Divgi wishes to place on record its special appreciation and gratitude to the leadership and cooperation of several members of the UAZ organization, specifically, Sollers Co. Dy. CEO & CFO, Ms.Elena Frolova, Head of the transmission group, Mr.Borris Savhalov and UAZ Purchase Director, Ms. Svetlana Sidyakina.

**Thank you and SPASIBA UAZ !!!**



## DARE TO DO IT

### Divgi TTS participates in the 3rd edition of the Mahindra Thar Festival at Kochi

Contributor

Gajanan Chitale  
Customer Support

On a rainy morning on 10th March, Kochi, Kerala's busy cosmopolitan city, known for its ports and harbours just got busier. The Mahindra Thar Fest 2019 was being held there. The fest witnessed many die-hard off-roading teams, many with their distinctively modified Mahindra Thars, competing with each other, each to satiate its hunger for daredevilry.

In the melee was also the Divgi TTS Team but on a completely different mission. As a gesture of its support to Mahindra beyond its day-to-day core business, Divgi TTS had set up a stall at the event, essentially to educate the typically uninitiated 4x4 enthusiast on the functioning of the transfer case and how it forms the crux of Mahindra Thar's image as a "daredevil" machine. Visitors at the stall were explained the functioning of the mechanical-shift transfer case and the auto-locking hub through product cut-sections displayed at the stall.

As a special value-add to this event, a team of two Divgi executives, Gajanan Chitale and Faizan Ansari travelled over 1,200 kms from Pune to Kochi in Divgi TTS owned Mahindra Thar Di fitted with its newly developed Dual-Offset Transfer Case (DOTC). Lightweight and with a much smoother shift feel, the DOTC is designed and developed to suit many of Mahindra's models – Bolero, Bolero pick-up, old MM540 and MM550, Thar Di and Classic.

The excitement of several off-roading enthusiasts

who visited the stall and "experienced" the shift feel provided several insights into how the product features could be enhanced to maximize the 4x4 experience of Mahindra's customers.

As the event drew to a close, "Daredevils" Gajanan and Faizan got ready to drive the long and tiring 1,200 kms return road journey to Pune feeling very smug about the success of their mission.





# EVENTS

## COLLABORATE TO GROW

### Divgi TTS conducts its 12th Annual Supplier Conference

The hosting of the Divgi TTS Supplier Conference traditionally in the month of November was deferred to January, 2019 due to the sad demise of Shri Bhaskar Divgi, the father figure of the company.

The 12th Annual Supplier Conference of Divgi TTS was held with the same zest and excitement as ever. Much was to be conveyed to the supplier community with respect to the business direction that Divgi TTS intends to pursue in the coming years - its long range plan, new customers added to its prestigious clientele, new products under development, infrastructure investments and other directions that would have significant impact on the business going forward.

The theme, **Collaborate to Grow**, aptly brought forth the increased synergies that would be required between Divgi TTS and its suppliers to sustain and overcome the upheaval that the automotive industry is currently transitioning through.

Facts and figures of Divgi TTS' progress and entry into new spaces were presented and future growth opportunities discussed with the suppliers. Suppliers who excelled in the areas of quality, cost delivery and customer satisfaction were recognized for their superlative performances.

Chief Guest and Keynote Speaker Dr. B. B. Ahuja, Director – College of Engineering, Pune provided

fantastic insights into how the new technological age and ease of information is triggering students to think of 'out-of-the-box' solutions in all fields of business and how these solutions, in turn, are driving OEMs in their respective fields to realign their plans to take maximum advantage of such solutions.

The SQIG (Supplier Quality Improvement Group), led by Deepak Vani, Head - Purchase and Global Supply Management were at their committed best as the event closed after a networking session over cocktails and dinner.

#### Contributor

Vikram Hosamani  
*Supplier Technical Assistance*









**Sandeep D. Deshpande**

Sr. Manager Manufacturing Engineering.

- Education** : Diploma In Mechanical Engineering
- Total Experience** : 24 Years
- With Divgi Tts** : Over 22 Years
- Career Goals** : To Be Techno-expert & Bring Advance Technologies In Process Engineering.
- Hobbies** : Cooking, Playing Cricket
- Family Details** : Spouse : Rashmi Teacher, Daughter : Sahana Ttudent

## WHAT IS YOUR CURRENT ROLE IN DIVGI TTS ?

Currently, I coordinate Product and Process development and engineering activities at the Shivare facility. I also support the sales group to meet revenue targets. My Gear Honing and Gear Grinding operations knowledge helps bring continual product and process improvements in quality and overall productivity

## WHAT HAS BEEN YOUR EXPERIENCE WITH DIVGI TTS?

Manufacturing of gears, heading overall production and quality, monitored stringent customer requirements of product and process quality, ensuring timely deliveries made me strong in in Quality Systems and PPAP and developed my technical and problem solving skills. Interactions with international suppliers for selection and validation of new machines/ equipment helped me learn advanced technologies in machine tools and manufacturing processes, hone my soft skills like communications, presentations and negotiations and my decision making and execution skills.

## WHAT HAS BEEN YOUR CONTRIBUTION IN DIVGI TTS PRODUCT LEADERSHIP INITIATIVES?

### I Strongly Contributed To:

- ▶ Internal honing of NGT 520 / 530 Gears and W201 Reverse Idler Gear in soft machining condition
- ▶ Developing Final Drive Gear for Tesla
- ▶ Spearheading installation and commissioning of state-of-the-art machinery

## WHAT DO YOU BELIEVE ARE SOME OF YOUR NOTABLE ACHIEVEMENTS AT DIVGI TTS?

### Some Of My Notable Achievements Are:

- ▶ Developing W201 RIG Gear in single piece construction with Honing Finish rout
- ▶ Developing NGT 530 R and W201 sleeve with plug quenching In-house
- ▶ Leading the OD grinding process for shafts on Hi life CNC grinding
- ▶ Re-locating soft machining of BD30 Gears to the Sirsi facility.
- ▶ Establishing gear grinding process for Final Drive Gear.

## RAPID FIRE

### Favorite Quote :

“The apology is changed behavior”

“The golden treasures are your memories”

“Bahut khoobsurat hote he ese rishtey jin par kio haq bhi na ho aur shaq bhi na ho”

**Favorite Book** : ‘Wings of Fire’ by Dr. A.P.J. Kalam. and ‘The 3 Mistakes of My Life’ by Chetan Bhagat.

**Life is** : A series of tiny miracles.

**Family is** : Positive Attitudes...Humble sayings ...Stress-free smiling

**On Holidays** : Chill out with friends and families

# TECHNOLOGY NEWS

## THE MISSING LINK

### The Reducer Disconnect System 'marries' low-torque engines with high torque applications

Contributor

Avinash Kurdekar  
Product Engineering

In on-going discussions with a European OEM on the supply of electric vehicle transmissions, a requirement was presented to Divgi TTS' team of engineers in the month of March 2018 for its consideration.

The requirement was to develop a suitable connect and disconnect system that engages and disengages the electric gearbox from the electric transmission (which in-effect would disengage the transmission from the IC engine) at 8500 rpm.

Divgi TTS quickly realised the immense benefit that

OEMs would derive from such a connect and disconnect system as it would allow engines with low torque ratings to be made feasible on high torque applications based on a customer-specified cut-off speed. With a strong understanding of manufacture of electric gear drives and electronic signals, the Divgi TTS engineering team went ahead to ready a suitable system that would be common across various transmissions of OEMs.

Starting from Ground Zero, the task was daunting, the challenges and risks high. But with gladiator-like confidence, the team set up a full-fledged test stand. In November 2018, months after due development and testing of various requirements of such a system, a prototype of the Reducer Disconnect System (RDS) was made ready and supplied to the OEM. The prototype RDS, architected as a 2-piece system, is currently undergoing field-level vehicle testing in Europe.

Further improvements to its performance and architecture is planned on receipt of the report on the performance from the European OEM.



# INSIDE BUZZ

## CHILD'S PLAY AT WORK

### Divgi TTS conducts "Enabling Leadership" program as part of its corporate social responsibilities.

It was a very pleasant morning on the 9th of December as Sheetal Marathe and I entered the Mallasajjan College of Physical Education in Dharwad to be a part of the "Just For Kicks" League Match. The ground looked colourful with children in vibrant sportswear all geared to begin their respective matches in age categories of Under 10, 12, and 14 to be played simultaneously on four pitches.

Participants, volunteers, parents, school teachers and other well-wishers from 12 schools from different villages around Dharwad, travelled far to cheer the children up. Tulasi from the Somapur U10 girls' team was the highest goal scorer on the day with 6 goals!



## A Total Of 48 Teams And 480 Children Qualified For The Finals Held On 20th January 2019.

Divgi TTS has been very dogged in its pursuit of its core values. 'Responsibility to our Communities' is one of them. In fulfilment of this value and in satisfaction of its Corporate Social Responsibilities, Divgi TTS endeavours to impact social and community development with planned and systematic actions that are translated into projects/ events of the above kind.

Based on the fundamental conviction that education can help provide the answers to some of the greatest challenges like poverty, inequality and environmental degradation, Divgi TTS lays high stress on two aspects of upbringing; strengthening the educational and knowledge base right from the primary education levels. This includes inculcating and developing leadership qualities in underprivileged children through innovative and creative programs, by developing soft skills through music, games and sports and developing rural environments to improve the living standards of people by developing educational infrastructure in the rural area where the company operates one of its plants.

### Contributors

Sheetal Marathe  
Jyothi Divgi

CSR Activities

