



**प्रौद्योगिकी विकास बोर्ड**  
**TECHNOLOGY DEVELOPMENT BOARD**  
**DEPARTMENT OF SCIENCE AND TECHNOLOGY**

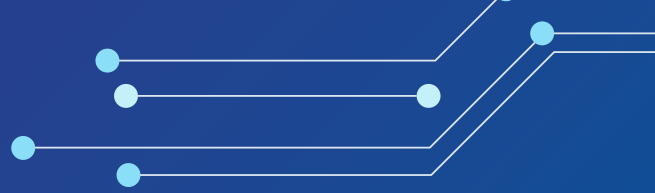
Enabling Technology Commercialization since 1996



**SIGNATURE  
COMPANIES  
& TECHNOLOGIES**

**FUNDED BY TDB FOR COMMERCIALIZATION**





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## Case Studies of Signature Companies

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### Dr. Jitendra Singh

*Hon'ble Union Minister of State (Independent Charge) of the Ministry of Science and Technology; Minister of State (Independent Charge) of the Ministry of Earth Sciences; Minister of State in the PMO; Minister of State in the Ministry of Personnel, Public Grievances and Pensions; Minister of State in Department of Atomic Energy; Minister of State in Department of Space.*

As India marches towards its 75<sup>th</sup> year of Independence in 2022, we look back with pride at the innumerable occasions when India's scientists, enterprises, entrepreneurs, researchers—the entire scientific community came together to develop innovative practical solutions for mitigating global challenges.

India has featured within the top 50 innovative economies globally (at 48<sup>th</sup> rank) as per Global Innovation Index (GII) 2020. India is also emerging as a leader in reputed international scientific coalitions – in fields such as Artificial Intelligence, Astronomy, Solar Energy, Climate Research, and as amply demonstrated recently, in global vaccine research, development and supply. India was recently elected as Chair of the World Health Organization's (WHO) Executive Board.

The ongoing COVID-19 pandemic has unleashed insufferable agony on the common man. As India stabilizes after the deep ravages of the COVID-19 pandemic on the world economy, the imperative ahead for the country is to maintain a high pace of growth over the next few years. Our Governments' focus on *Aatmanirbhar Bharat* goal has embedded scientific spirit and technological acumen which has helped the country catapult itself to becoming a world scientific power. The collaborative efforts of scientific institutions and Industries is precisely cut out — to make the country truly *AtmaNirbhar* from a technology point of view.

Technology Development Board (TDB), a statutory body of the Department of Science and Technology (DST), Government of India, is sustaining the efforts of scientists, technologies, entrepreneurs and industrialists towards strengthening 'Made-in-India' and indigenous products and solutions. TDB has elevated Science & Technology in India to international levels and benefited people across communities in myriad ways. Over the last 25 years, the TDB has contributed significantly in supporting Indigenous technology towards the *AtmaNirbhar Bharat* Mission.

This report features some of the compelling contributions from TDB in commercialization of home-grown technologies. It also presents successful case studies to showcase the impact of TDB support during the past years in promoting the techpreneur ecosystem in the country. As TDB celebrates its 25 years, I take this opportunity to congratulate TDB for their contribution to the country's progress and wish TDB and its initiatives more strength in the days and years to come.





### Prof. Ashutosh Sharma

*Secretary, Department of Science & Technology &  
Chairperson, Technology Development Board*

**C**OVID-19 pandemic is unprecedented in human history. It has brought to the forefront some unimaginable challenges and has highlighted the need for resilient and adaptable science and technology led interventions for health, economic, and social systems.

We are now witnessing a new era characterized by rapid deployment of new and emerging technologies that will transform human life intensely and will drive businesses and nations forward. Science, technology and innovation will be the key drivers for social and economic change in a rapid and inclusive manner. For this to be effective, government, scientists, society and enterprises must seamlessly connect in order to build stronger foundations leading to 'knowledge creation', 'knowledge dissemination' 'knowledge deployment and commercialization'. Identifying, prioritizing, supporting and strengthening scientific knowledge coupled with technology led innovation will be an inevitable tool required across sectors and particularly, in critical areas such as agriculture, health, environment, energy and water.

Towards this end, the Technology Development Board (TDB) has played a seminal role to ensure comprehensive support for technology development and commercialization. TDB is consistently working towards achieving a set of goals to harness & develop commercially competitive technologies for different sectors of the economy through collaborative efforts with the ultimate aim of making India a generator and exporter of Technologies. This aim enables gearing up Indian industries from "Make in India" to *AtmaNirbhar Bharat Abhiyan* across diverse science and technology domains.

While this special issue of "Signature companies and Technologies funded by TDB for commercialization" is a non-exhaustive account of the successes and achievements of the industry and strives to provide a glimpse into some of the innumerable S&T developments resulting from these partnerships. The report presents analysis on a number of parameters based on data drawn from the industries such as publications, intellectual property, technology uniqueness, market size, and impact.









### Shri Rajesh Kumar Pathak, IP&TAFS

*Secretary*

*Technology Development Board*

This year marks the Silver Jubilee Year of Technology Development Board (TDB). In fact this year is unique in the sense that India is celebrating its 75<sup>th</sup> year of independence, DST is celebrating 50<sup>th</sup> year, the Golden Jubilee Year and TDB is celebrating 25<sup>th</sup> Year, the Silver Jubilee Year. TDB dedicates 25 years of its service for inclusive development through Science & Technology. Founded in 1996, TDB has created a mark in promoting new areas of innovation and played a crucial role as the nodal department for commercializing home-grown technologies in the country.

Technology and Innovation has been the key driver of change and progress of any economy, as it disrupts traditional practices and businesses. Over the last few years, the Government of India has made Science, Technology and Innovation as an integral part of policy formulation to realize the goal of New India- Self Reliant India. And in this journey of Self-Reliance, Atma-Nirbhar Bharat, TDB is poised to play a leading role in the various flagship initiatives.

For the past 25 years, TDB has supported many successful projects across wide spectrum of sectors viz. agriculture, transportation, defence, biotechnology, health & medical, chemical, telecommunications etc. Notable among are the first electric car "Reva", Tata Motors, Ampere Vehicles, Zen Technologies, Tata Power, VEM Technologies, Aurora Integrated Systems, Shantha Biotech, Bharat Biotech, Ranbaxy Labs, Cadila Pharmaceuticals, Biocon India, Sudharshan Biotech and Biological E, some of which are presented in this report.

It is with great pleasure that we present this Report on "Signature companies and Technologies funded by TDB" for commercialization. The report provides some case studies of TDB funding and a comprehensive perspective of TDB impact on several fronts.

As TDB has completed 25 years of dedicated service to the nation, and also on the auspicious occasion of 75<sup>th</sup> year of Indian independence, we, at TDB, feel reinvigorated to rebuild our economy, and set course for decades of rapid growth. Technology and innovation will be at the heart of this process.

I congratulate the entire TDB team for their unique and laudable efforts in this direction. I convey my sincere gratitude and complements to Department of Science and Technology and other Ministries & Organisations for collaborating with us on several occasions. I also convey my sincere appreciation to all the industries who have partnered with us in this wonderful journey and have contributed towards overall growth of Science & Technology and use of the knowledge for benefit of common man.



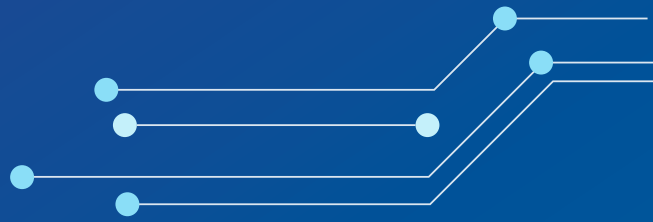
# TESTIMONIALS

“Bharat Biotech has had a long and successful relationship with the Technology Development Board. This collaboration is more than 2-decade long, ever since Bharat Biotech was funded by TDB for its first project of a Hepatitis-B Vaccine. This funding was utilized for the development and commercialization of our Hepatitis-B Vaccine. The project was a great success. Several hundred million doses have been manufactured, supplied and continue to supply in India and to other countries across the world. We are one of the largest suppliers of Hepatitis-B vaccines to the Ministry of Health. The relationship with TDB is not just for one product. TDB has continuously been a supporter and has played an instrumental role in establishing Bharat Biotech as a global leader in vaccines. We thank TDB for all their contributions.”

**Dr Krishna Ella**  
Chairman and Managing Director  
Bharat Biotech

“The Pla Fractor was indeed a home-grown innovation that developed from a disruptive idea to reimagine solid state fermentation from an open manual to a closed and automated system, mimicking submerged fermentation. We produced Mycophenolate Mofetil by the Pla Fractor technology on par with our submerged fermentation platform. We thank TDB for their funding and support in realising the export potential of this technology.”

**Dr Kiran Mazumdar Shaw**  
Executive Chairperson  
Biocon & Biocon Biologics



# TESTIMONIALS

“TDB’s support for development of 14-valent PCV vaccine helped not only in the development of indigenous vaccines for India but also strengthening countries’ Universal Immunization Program. BioE completed its Phase II clinical trial and expects to complete Phase – III clinical trial soon. TDB funding for the development of life-saving vaccines, which helps the manufacturer target large-scale production and keep the cost of vaccines low. Biological E is a major vaccine supplier to Govt. of India’s UIP, support from TDB will help in accelerating indigenous development of 14-valent Pneumococcal Conjugate Vaccine and Injectable Polio Vaccine will strength indigenous vaccine manufacturing capabilities and uninterrupted supply of vaccine for UIP.”

**Ms Mahima Datla**  
Managing Director & CEO  
Biological E. Limited

“True to its mantra - ‘to help Indian Industry move up the innovation ladder’ TDB is playing a great role by providing a ground-breaking platform in encouraging innovations and to develop the R & D ecosystem in MSME companies. The team at TDB has been supportive to SLTL Group right from the concept stage with great mentorship support and networking opportunities. SLTL Group is working on developing Fiber Laser indigenously. Projects of this nature contribute to great technology learnings, applications of relevance and working towards making the world a better place for future generations with our innovation and ultimately making India proud. In the coming years, we at SLTL expect to see more impact from our partnership in the areas of photonics, medical, energy, digitization and life-sciences. We really appreciate TDB’s professional assistance throughout this time.”

**Dr Arvind Patel**  
Managing Director  
Sahajanand Laser Technology Ltd. (SLTL) Group



# EXECUTIVE SUMMARY

Innovation is at the forefront of technology development and financial support plays a important role at every stage of the innovation cycle from the conceptualization of a product, process or service to its commercialization and beyond. This report turns the spotlight on 26 signature companies & technologies funded by TDB. Though this report tries to cover the technological, financial and social impact created by these technologies/companies, the indirect impact created by these technologies in terms of availability of infrastructure, affordability, capacity building etc. cannot be quantified.

A detailed survey was prepared comprising of questions encompassing the particulars of technologies (products/ processes/ services) as well as the impact of technologies commercialised through TDB funding.

**The visible impact resulting from the TDB support to these 26 companies includes:**

1. The signature projects funded by TDB were across 9 states and 9 key sectors. The bulk of these projects are in Health & Medical, Engineering and Information Technology.
2. 23 percent of the signature companies introduced products/ technologies new to the world while 46 percent said they introduced products that were new to the market.
3. There were 214 patent applications, 69 granted patents and 124 publications.
4. More than 92 percent of signature companies responded that considerable employment was generated as a result of funding received from TDB.
5. More than 31 percent of signature companies had collaboration/licensing agreements after receiving funding from TDB.

6. During India's fight against COVID-19, one of the companies supported by TDB, M/s Mylab Discovery Solutions Pvt Ltd. Pune, was instrumental in ramping up the production of a real-time PCR (RT-PCR) based diagnostic kit.

**The report is divided into three main sections:**

01

Section 1 offers the reader a broad overview of TDB with details of the background of study.

02

Section 2 provides an aggregate analysis of the 26 selected and surveyed companies funded between 1998 to 2020. It provides a sector-wise and state-wise distribution of the surveyed companies. This section also discusses the impact of TDB financial support with respect to specific uniqueness of the products/ technology, sources of technology, market size impacted, IPRs, and employment generated by these companies.

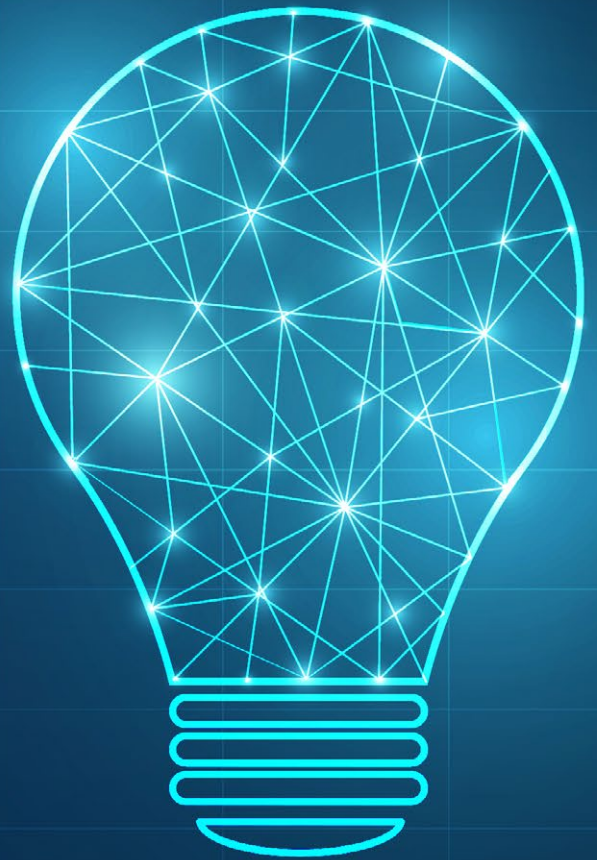
03

Section 3 captures the details of these case studies.

The report provides an insight into successful commercialisation of indigenous innovative technological projects and showcases impact of TDB's support on socio-economic, scientific and technological growth of the country. It also highlights the success stories of collaboration between academia, R&D institutions, industry and the Government of India.

SECTION 1

# OVERVIEW OF TDB





## SECTION 1

# OVERVIEW OF TDB

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### Background

The Technology Development Board (TDB) has been constituted vide an Act of Parliament called Technology Development Board Act, 1995 which received the assent of Hon'ble President of India on the 16<sup>th</sup> December, 1995 and was published vide The Gazette of India (Extraordinary, Part-II) notification no. 66 of 18<sup>th</sup> December, 1995. TDB came into being w.e.f. 1<sup>st</sup> September, 1996 as a statutory body of the Department of Science & Technology.

### TDB's Mandate

The mandate of TDB is as given below:

- (a) Provide financial assistance to industrial concerns and other agencies attempting commercial application of indigenous technology or adapting imported technology for wider domestic applications.
- (b) Provide financial assistance to such research and development institutions engaged in developing indigenous technology or adaption of imported technology for commercial application, as may be recognized by the Central Government.
- (c) Perform such other functions as may be entrusted to it by the Central Government.

### Constitution of the Board

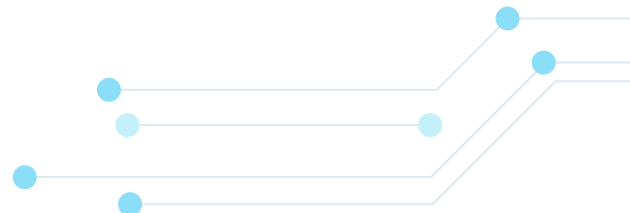
The constitution of the Board is a blend of representation from senior government officials and prominent names from Indian

Industry/academia, who have made meaningful contributions in their fields. Prof VS Ramamurthy was the first Chairman of the Board and the legendary missile man of India and Bharat Ratna, Late Dr. A.P. J. Abdul Kalam was amongst the first board members. Some of the illustrious members of the Board from Indian industry since inception of TDB include Shri. Subodh Bhargava, Chairman, M/s. Videsh Sanchar Nigam Limited (VSNL), New Delhi; Dr. Kiran Mazumdar-Shaw, Chairman and Managing Director, M/s Biocon Limited, Bangalore; Dr.Venu Srinivasan, Chairman & MD, TVS Motors Co. Ltd., Chennai; Dr.Cyrus S. Poonawalla, Chairman & MD, Serum Institute of India Ltd., Pune.

### TDB since 1996 till date

In pursuance of its functioning TDB normally provides soft loans to companies for commercialization of indigenized technology at rate of 5% simple interest up to 50% of the project cost. The TDB had commenced execution of its mandate with a loan grant of just about Rs. 20.00 crore with signing of 20 agreements in the year 1997-98. These numbers, both in terms of money and agreements, grew exponentially to about Rs. 2000 crore with more than 400 agreements signed with various industrial concerns, Venture Capital Funds and Technology Business Incubators / Science and Technology Entrepreneur Parks till financial year ending March 2021.

The initial investment by TDB has been instrumental for companies to leverage



additional funds from banks and other financial institutions for co-investments. As each project is examined in a transparent and in-depth manner with the help of domain experts, TDB evaluation is a source of comfort and confidence for the co-investors even in high risk technology areas. These efforts have resulted in reaping the fruits of indigenous R&D and turning these efforts into commercial ventures by Indian private limited companies.

Also, to appreciate and encourage efforts of Industrial concerns, TDB, every year, presents National Awards in following three categories, as a part of Technology Day Celebration:

- **National Awards for Successful Commercialization of Indigenous Technology** Cash award worth Rs. 25.00 Lakh and a trophy;
- **National Awards under MSME category for successful commercialization of a technology-based product** –Cash award worth Rs. 15.00 Lakh and a trophy;
- **National Awards under Start-up Category** – Cash award worth Rs. 15.00 Lakh and a trophy

### **TDB: An Invisible Thread in Indian Vaccine Ecosystem**

Today, within only a couple of years of the pandemic, the Indian pharmaceutical industry has not only been able to develop its own indigenous vaccines but has also shown the technology absorption capacity to support manufacturing of nearly all the COVID vaccines that have been developed in the world and that too in cost effective manner. It would not be out of place to say that TDB has been an invisible thread in the development of the Indian Pharma Ecosystem.

Some of the major companies in the pharma sector today, like M/s Shantha Biotech (Manufacturer of the first vaccine in India i.e Hepatitis B) and Bharat Biotech, were funded by TDB in their early stages in 1996-2000. Thereafter there has been no looking back for the Indian pharma industry and nearly all the major pharma companies like Biocon, Ranbaxy, Biological E, Gland Pharma, Panacea Biotech, Virchow Biotech, Stride Acrolab etc, have been financially supported by TDB for creation of their project infrastructure.

These Indian pharma companies have not only been providing the yeoman service to the nation but have been instrumental in providing the medicines and vaccines at affordable cost to the entire world and thus making India “The Pharmacy of the world”.

### **TDB: Across the technology sectors**

Over the years, TDB has left a significant footprint in nearly all technology sectors. Be it first electric car by REVA, first Hepatitis B vaccine by Shantha Biotech or development and commercialization of first indigenous car Indica by TATA Motors, TDB has played a significant role in the field of technology commercialization. TDB, since its inception, has funded companies which range from a new start-up like Mylab & QuNu to industry giants like TATA and Birla Groups. These companies, supported by TDB, have made notable contributions in both the social and economic ecosystem of the country.

In addition, TDB has networked with SIDBI; NABARD; Public sector banks and many private investors from India and abroad to invest into Venture Capital Fund to focus on innovative technologically-viable projects covering all sectors. TDB has so far supported 11 VCFs with total commitment of Rs. 285.00 crore till date. Through its participation in VCFs, TDB’s funds have been invested in close to 210 companies, of which around 130 are Start-ups and approximately 150 are Technology focused companies. This co-investment of TDB has resulted in Employment generation close to 50,000.

### **TDB: An important vehicle for ‘Atmanirbhar Bharat Abhiyan (Self-Reliant India Mission)’.**

TDB, with its unique mandate of providing financial support to Indian companies, is rightly poised to carry forward this mission in both letter and spirit. The specific mandate empowers TDB in supporting the Indian industries for enabling commercialization leading to Atmanirbhar Bharat (Self-Reliant India Mission).

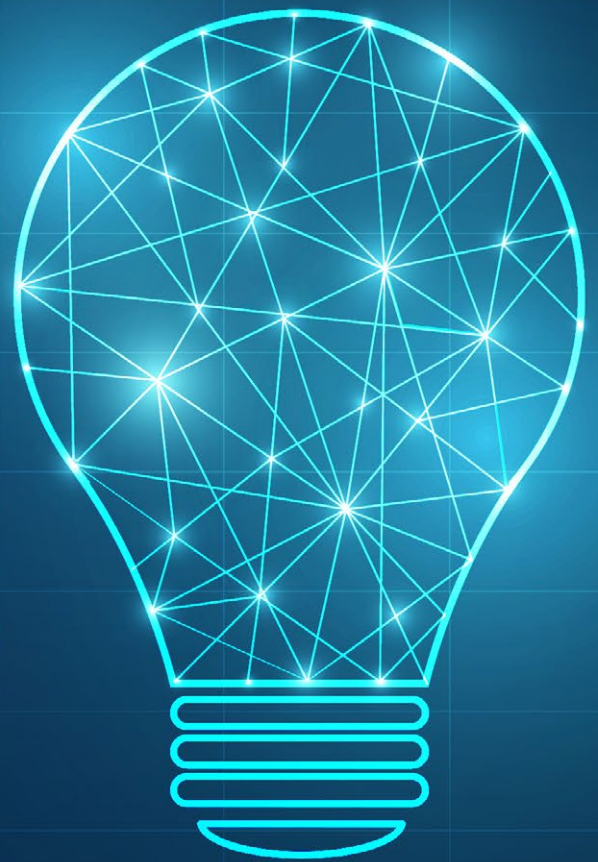
Since inception, TDB has been promoting the Innovation Ecosystem in the country by supporting a large number of seasoned and first-time entrepreneurs. TDB continues its pledge to reach out to Indian technology companies, be it start-ups or big business enterprises, by enabling them to commercialize their innovations and promote homegrown technologies.





SECTION 2

# AGGREGATE ANALYSIS OF THE SIGNATURE COMPANIES



## SECTION 2

# AGGREGATE ANALYSIS OF THE SIGNATURE COMPANIES

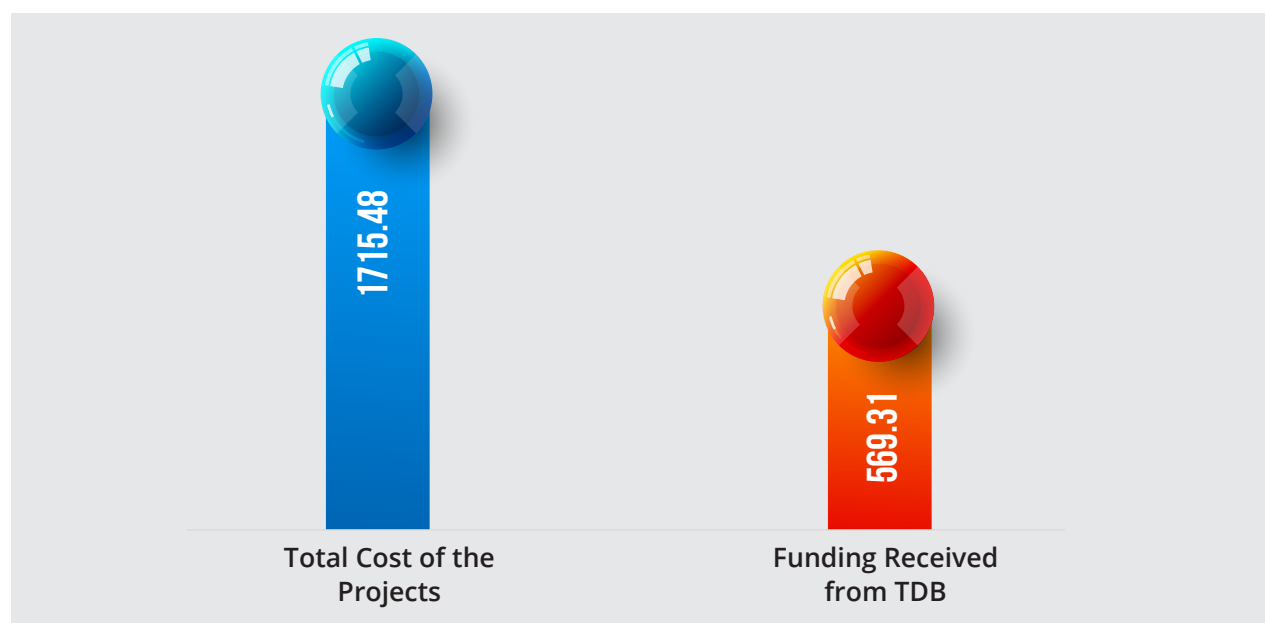
Innovation and technology are the key pillars of socio-economic development of a nation. A stable, accessible and robust financing mechanism plays an important role in the entire cycle of technology development and commercialization. Realizing the importance of this, the present report provides insights on signature companies and technologies funded by TDB. Also, it captures the success stories of collaborations of various academia, R&D institution, industries with the Government of India.

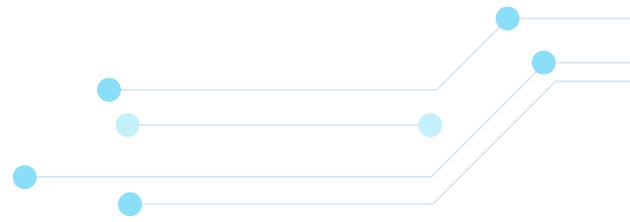
This section of the report presents aggregate

analysis of signature companies funded from 1998 to 2020. It discusses the specific uniqueness of the products/technology, sources of technology, market size impacted (both national and international), numbers of patent applications, patents granted, and employment generated by the surveyed companies. It also covers sector and state-wise analysis of the signature companies.

In Figure 1 below, the total cost of the projects of 26 signature companies was Rs.1715.48 crore, of which the TDB has disbursed Rs. 569.31 crore.

**Figure 1: Total cost of the projects and financial assistance provided by TDB (In Rs. Crore)**





## Sectors covered by the signature companies

TDB is sector agnostic and the financial assistance from TDB covers almost all sectors of the economy. The aggregate analysis of surveyed companies covered nine key sectors. These include, Health & Medical, Information Technology, Electronics, Defence & Civil Aviation, Agriculture, Engineering, Road Transport, Textiles, Energy & waste Utilisation.

**Figure 2: Sector-wise break down of signature companies**



### Health & Medical

- Bharat Biotech International Limited (Shamirpet, Telangana)
- Biocon Ltd. (Bangalore, Karnataka)
- Biological E Limited (Hyderabad, Telangana)
- latome Electric India Private Limited (Coimbatore)
- Incredible Devices Private Limited (Noida, Uttar Pradesh)
- Lifecare Innovations Private Limited (Lucknow, Uttar Pradesh)
- Mylab Discovery Solutions Private Limited (Pune, Maharashtra)
- Yashraj Biotechnology Ltd. (Navi Mumbai, Maharashtra)



### Engineering

- Energos Technologies Private Limited (Mumbai, Maharashtra)
- Imco Alloys Private Limited (Mumbai, Maharashtra)
- Panacea Medical Technologies Private Limited (Malur, Karnataka)
- Sahajanand Laser Technology Ltd (Gandhinagar, Gujarat)
- Systemantics India Private Limited (Bengaluru, Karnataka)
- Vehant Technologies Private Limited (Noida, Uttar Pradesh)
- VEM Technologies Private Limited (Hyderabad, Telangana)



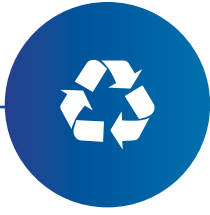
### Information Technology

- AKS Information Technology Services Private Limited (Noida, Uttar Pradesh)
- Silvan Innovation Labs Private Limited (Bengaluru, Karnataka)
- SoftTech Engineers Limited (Pune, Maharashtra)
- Vayavya Labs Private Limited (Belagavi, Karnataka)



### Agriculture

- Biogen Fertilizers India Private Limited (Chennai, Tamil Nadu)
- Kan Biosys Private Limited (Punjab, Haryana)



### Energy & Waste Utilization

- Anarobic Energy Private Limited (Haridwar, Uttarakhand)



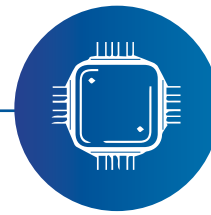
### Textile

- Birla Cellulosic (Grasim Industries Ltd) (Kharach, Gujarat)



### Road Transport

- Clutch Auto Ltd. (Faridabad, Haryana)



### Electronics

- Instapower Ltd (Roorkee, Uttarakhand)



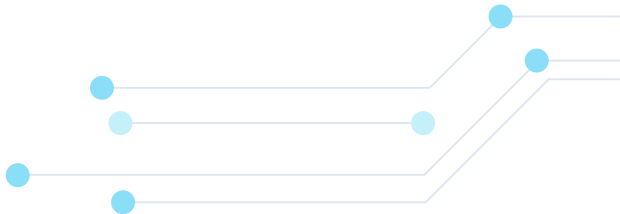
### Defence & Civil Aviation

- Tata Advanced Systems Limited (Kolar Taluk, Karnataka)

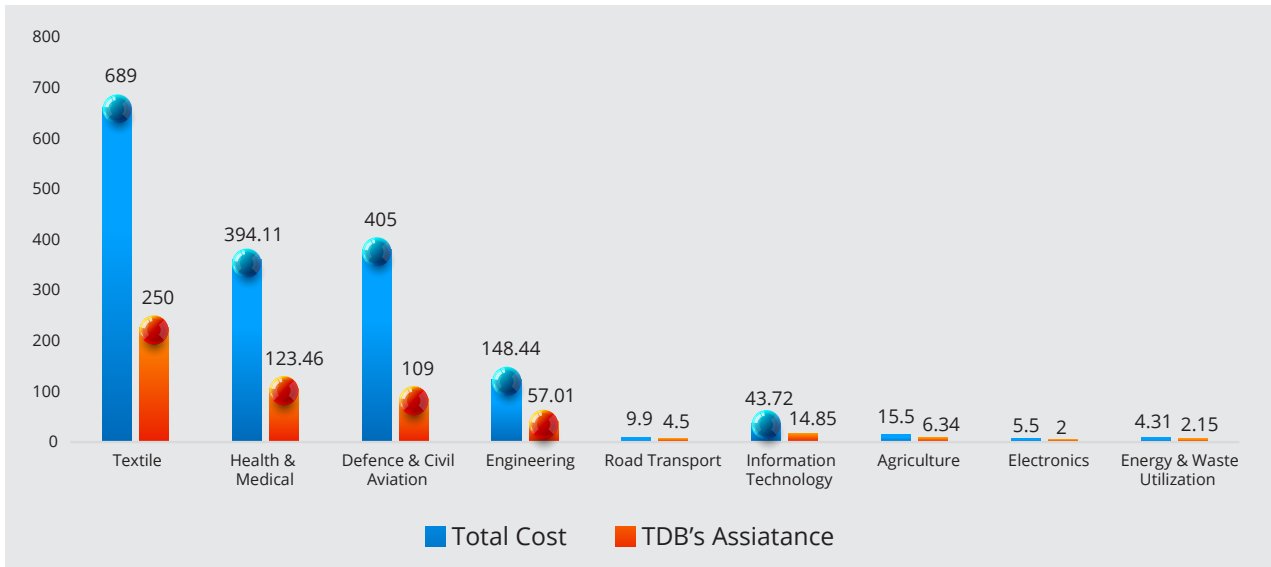
## Sector-wise distribution of total cost of the projects and TDB's Assistance:

In the survey of 26 signature companies, it was found that-

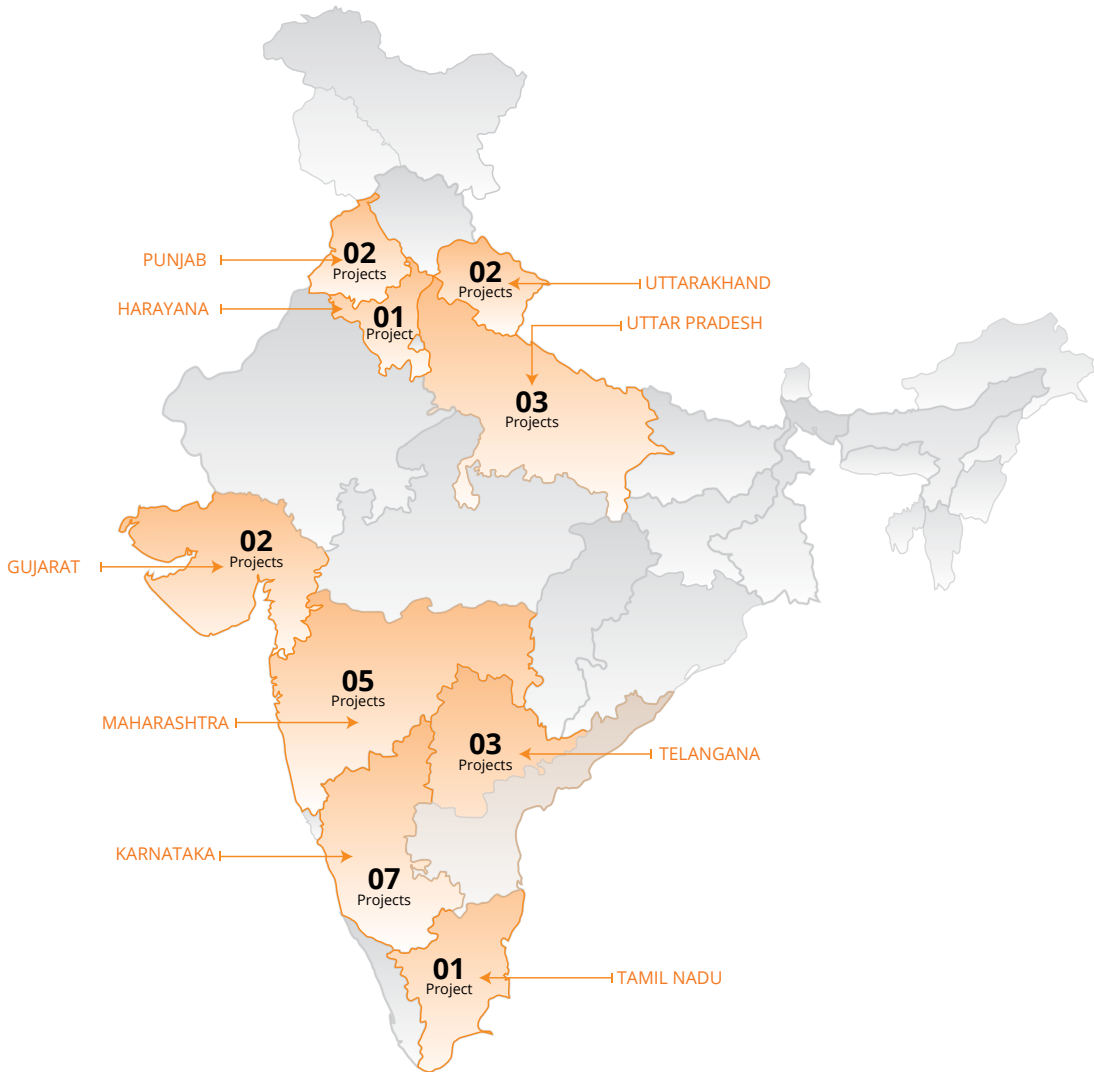
- The total cost of projects in these 9 key sectors was Rs. 1715.48 Crore, out of which TDB has disbursed Rs. 569.31 Crore.
- More than 85 percent of TDB funding went to three sectors i.e. Textile, Health & Medical and Defence & Civil Aviation.



**Figure 3: Sector-wise distribution of total cost of the projects and TDB's Assistance (In Rs. Crore)**



**Figure 4: State-wise distribution of signature companies & projects**



### State-wise distribution of total cost of the projects and TDB's Assistance (In Rs. crore)

In the survey of 26 companies, it was found that-

- The total cost of projects was Rs. 1715.48 crore, out of which TDB has disbursed Rs. 569.31 crore.
- More than 92 percent of TDB funding went to three states, i.e., Gujarat, Telangana and Karnataka.
- Grasim got maximum funding of Rs. 250 crore. The project by Grasim was undertaken in Gujarat.
- Biological E got funding of Rs. 100 crore. The project by Biological E was undertaken in Telangana.
- Tata Advanced Systems Limited (Earlier Tata Power SED) got funding of Rs. 109 crore from TDB. The project by Tata Advanced Systems Limited was undertaken in Karnataka (Bengaluru).

**Figure 5: State-wise distribution of total cost of the projects and TDB's Assistance (In Rs. Crore)**

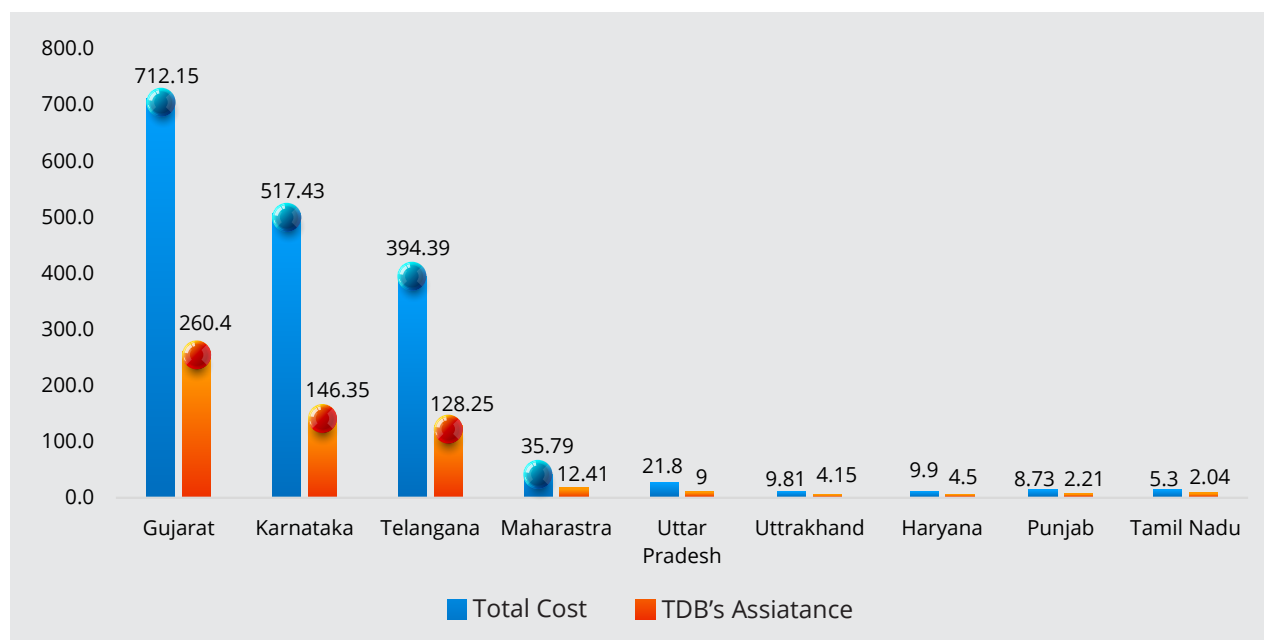
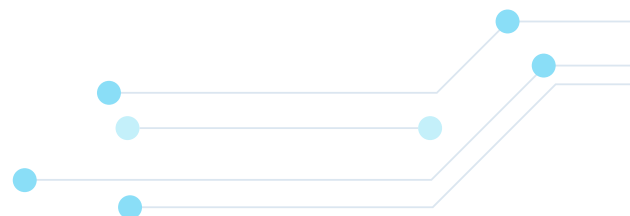


Table 1 below, provides the list of signature companies surveyed and their total cost of the projects. It also includes the funding received from TDB by each company over the period 1998 to 2020. Some of the earlier recipients of TDB funding in this survey include Bharat Biotech International Limited in 1998, Clutch Auto Ltd. in 2000, Biocon Ltd. in 2002 and Yashraj Biotechnology Ltd. in 2004.

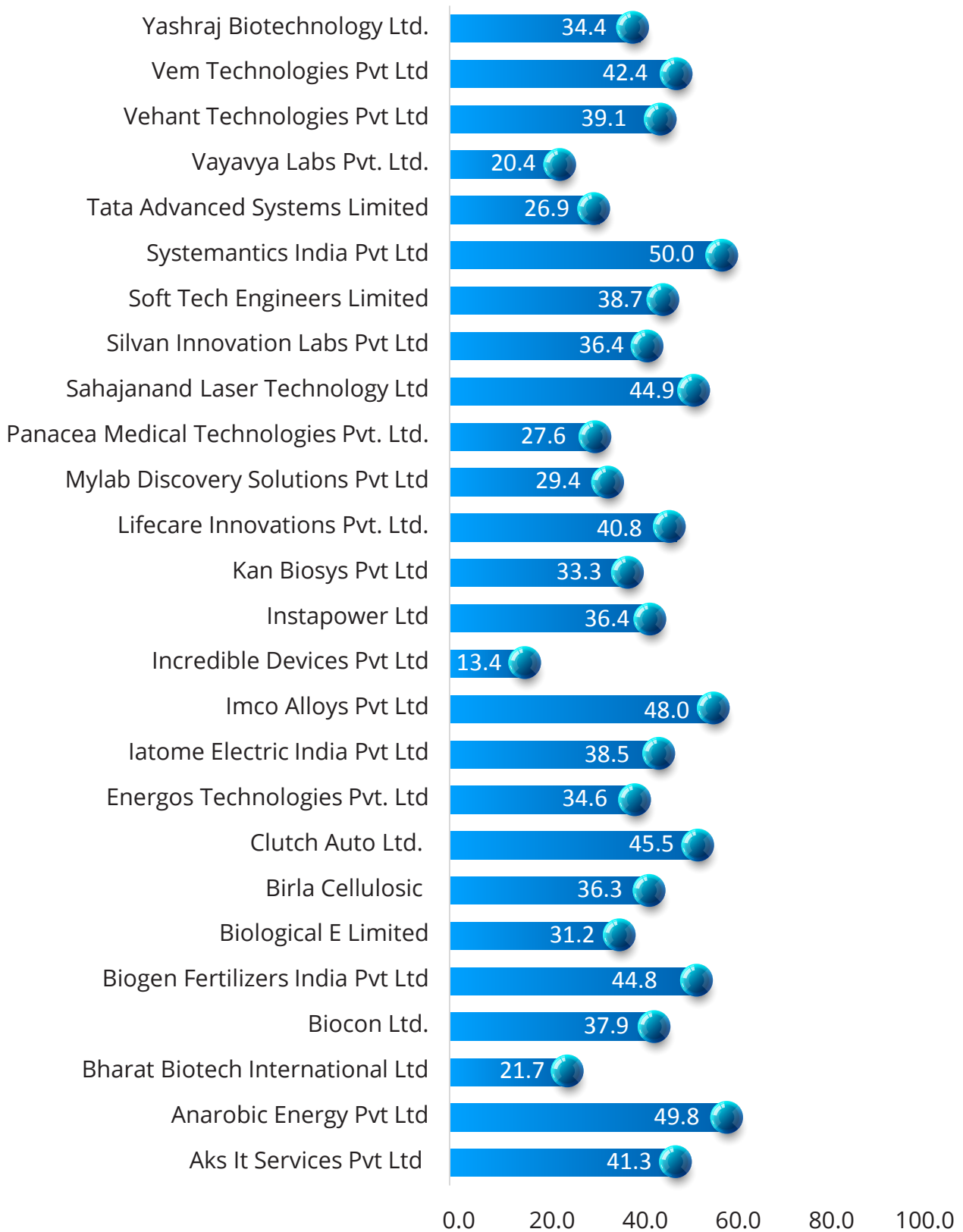
As is evident from the table 1, 4 companies received TDB funding during 2005 to 2010. The maximum number of companies stated that they received funding during 2011 to 2021. Further, amidst the unprecedented COVID-19 crisis, TDB has contributed to India's fight against the pandemic by providing financial assistance to Indian industries for the commercialization of indigenous technology. One such company supported by TDB is M/s Mylab Discovery Solutions Pvt Ltd. Pune, which is ramping up the production of a real-time PCR (RT-PCR) based diagnostic kit.



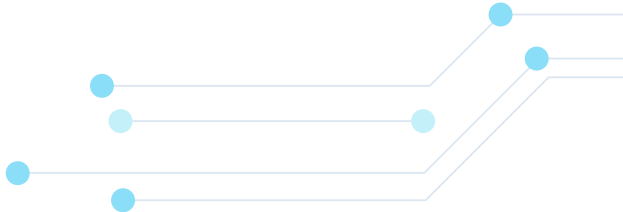
**Table 1: List of Signature Companies, Location and Funded projects**

Sr. No.	Name of the Signature Company	Location	Year of TDB funding received	Total Cost of the Project	Funding Received from TDB
1	M/s AKS Information Technology	Noida, Uttar Pradesh	2018	14.52	6
2	M/s Anarobic Energy Pvt Ltd	Haridwar, Uttrakhand	2019	4.317	2.15
3	M/s Bharat Biotech International Limited	Shamirpet, Telangana	1998	15	3.25
4	M/s Biocon Ltd.	Bangalore, Karnataka	2002	25.6	9.7
5	M/s Biogen Fertilizers India Pvt Ltd	Salem, Tamil Nadu	2019	10.27	4.6
6	M/s Biological E Limited	Hyderabad, Telangana	2016	320.39	100
7	M/s Birla Cellulosic (Grasim Industries Ltd)	Kharach, Gujarat	2018	689	250
8	M/s Clutch Auto Ltd.	Faridabad, Haryana	2000	9.9	4.5
9	M/s Energos Technologies Pvt. Ltd	Mumbai, Maharashtra	2018	6.5	2.25
10	M/s Iatome Electric India Pvt Ltd	Coimbatore, Tamil Nadu	2017	5.3	2.04
11	M/s Imco Alloys Pvt Ltd	Mumbai, Maharashtra	2017	3.67	1.76
12	M/s Incredible Devices Pvt Ltd	Noida, Uttar Pradesh	2017	3.5	0.47
13	M/s Instapower Ltd	Roorkee, Uttrakhand	2009	5.5	2
14	M/s Kan Biosys Pvt Ltd	Punjab, Haryana	2018	5.23	1.74
15	M/s Lifecare Innovations Pvt. Ltd.	Lucknow, Uttar Pradesh	2010	4.9	2
16	M/s Mylab Discovery Solutions Pvt Ltd	Pune, Maharashtra	2020	13.6	4
17	M/s Panacea Medical Technologies Pvt.	Malur, Karnataka	2019	45.36	12.5
18	M/s Sahajanand Laser Technology Ltd	Gandhinagar, Gujarat	2009	23.15	10.4
19	M/s Silvan Innovation Labs Pvt Ltd	Bengaluru, Karnataka	2011	11	4
20	M/s Soft Tech Engineers Limited	Pune, Maharashtra	2017	6.2	2.4
21	M/s Systemantics India Pvt Ltd	Bengaluru, Karnataka	2016	8.2	4.1
22	M/s Tata Advanced Systems Limited	Kolar Taluk, Karnataka	2016	405	109
23	M/s Vayavya Labs Pvt. Ltd.	Belagavi, Karnataka	2012	12	2.45
24	M/s Vehant Technologies Pvt Ltd	Noida, Uttar Pradesh	2007	2.56	1
25	M/s VEM Technologies Pvt Ltd	Hyderabad, Telangana	2017	59	25
26	M/s Yashraj Biotechnology Ltd.	Navi Mumbai, Maharashtra	2004	5.82	2
<b>Total</b>				<b>1715.48</b>	<b>569.31</b>

**Figure 6: Percentage of TDB funding for the Signature Companies**







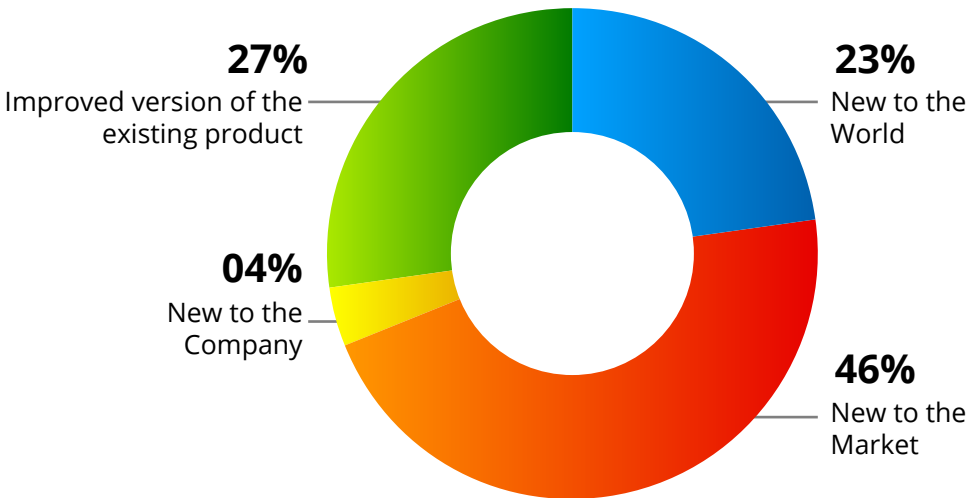
## Impact of TDB Funding

### Specific Uniqueness

One of the objectives of TDB is to support development and commercialisation of innovative technology. Of the 26 signature companies surveyed, it was noted that:

- 23 percent of companies have developed a product/technology that was 'New to the World'
- 46 percent companies have developed product/technology which is 'New to the Market'
- 27 percent companies have developed product/technology which is 'Improved version of the existing product'

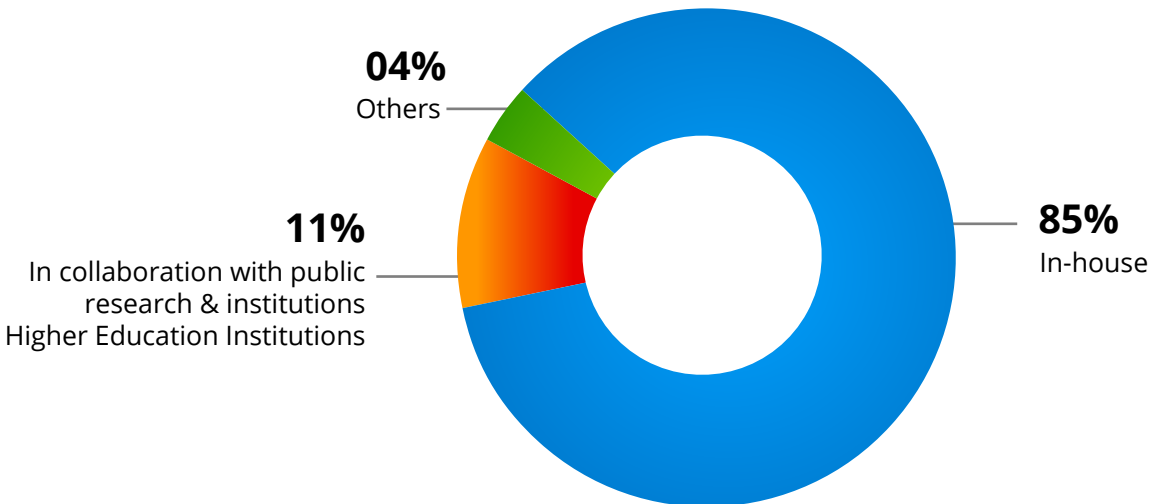
Figure 7: Specific uniqueness of the product/technology



### Source of the Technology:

- The study found that more than 85 percent of the signature companies developed the products/ technologies in-house.
- 11 percent of the companies developed their technology in collaboration with other public research and higher education institutions such as CSIR, IITs.

Figure 8: Source of the Technology



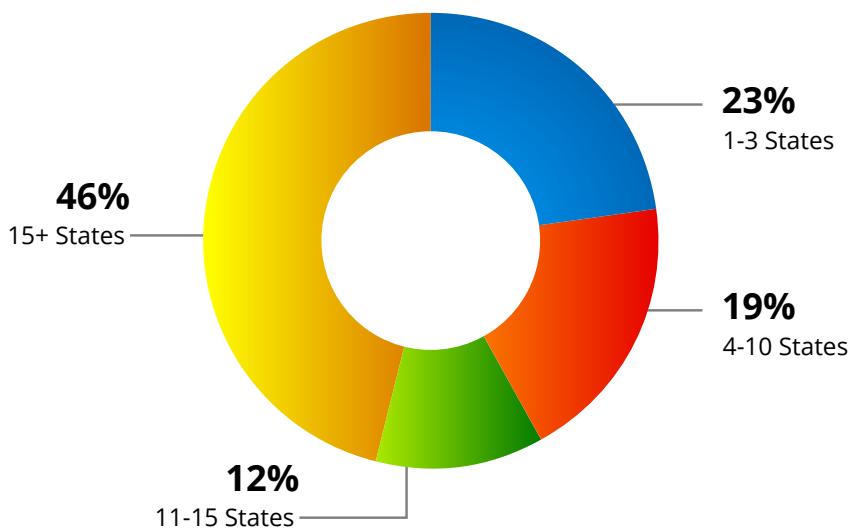


## Market Impact - National

Over the years, TDB funding has been helping industries create and expand their market size, bringing their innovative technologies/solutions to the doorstep of common man. Of the 26 signature companies, it was found that:

- 46 percent of companies have sold their product/technology in more than 15 states in India.
- 12 percent of companies have sold their product/technology in 11-15 states in India.
- 19 percent of companies have sold their product/technology in states in India.
- 23 percent of companies have sold product/technology in 1-3 states in India.

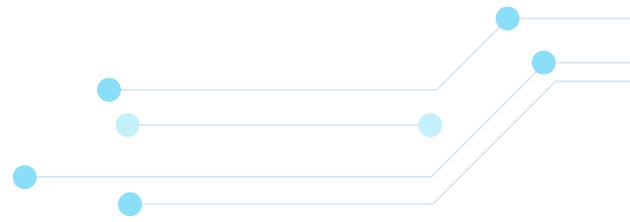
**Figure 9: Market Impact - National**



## Market Impact- International

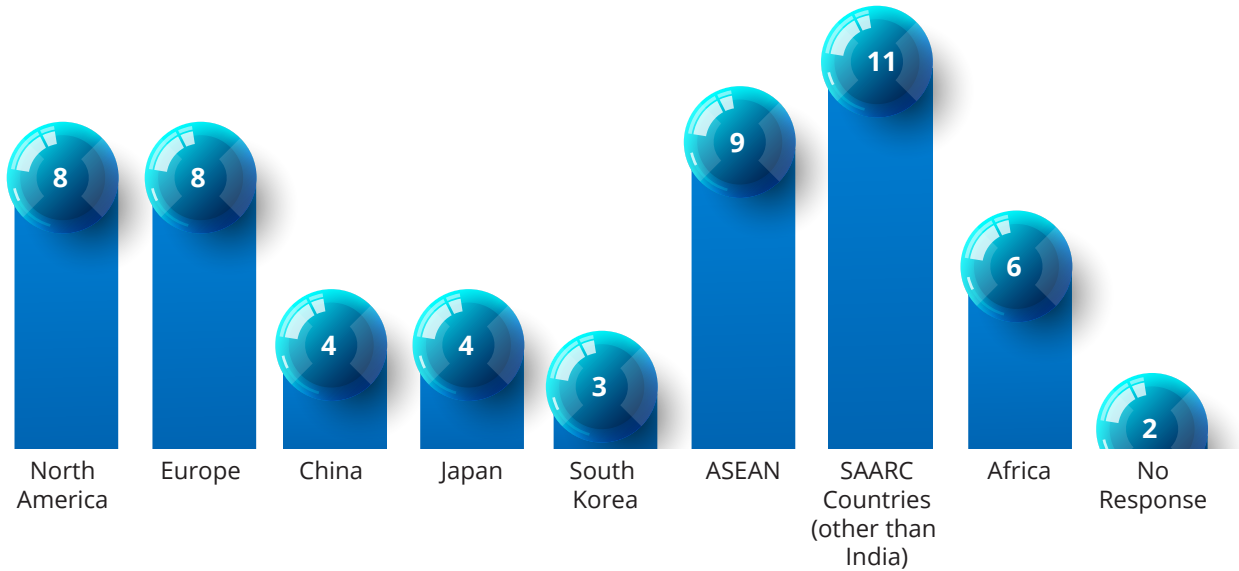
The TDB funding also helped the companies showcase their innovative products in the international market. Figure 10 below shows that many companies have international outreach in more than one region or country. Of the 26 companies surveyed, it was found that:

- Many companies sell their product/technology in more than five countries. These companies include Biocon Ltd., Grasim Industries Ltd., Panacea Medical Technologies Pvt. Ltd., Sahajanand Laser Technology Ltd, Vehant Technologies Private Limited and Yashraj Biotechnology Ltd.
- Biocon Ltd. sells their products in North America, Europe, China, Japan, South Korea, ASEAN SAARC Countries (other than India) and Africa.
- Panacea Medical Technologies Pvt. Ltd. sells their products in North America, Europe, South Korea, ASEAN, SAARC Countries (other than India) and Africa.
- Sahajanand Laser Technology Ltd sells their products in North America and Africa. Serbia, Mexico, Saudi Arabia, United Arab Emirates and Indonesia.
- Vehant Technologies Private Limited has outreach in Europe, ASEAN and SAARC countries (other than India).
- Yashraj Biotechnology Ltd. has outreach in North America, Europe, China and Japan.
- There are 5 companies that sell their product/technology only in ASEAN countries. These companies include AKS Information Technology Services Pvt Ltd, Bharat Biotech International Limited, Soft Tech Engineers Limited, Systemantics India Pvt Ltd and Tata Advanced Systems Limited.



- 11 companies sell their product/technology in SAARC countries (other than India), they also have outreach in other countries.

**Figure 10: Market Impact- International**

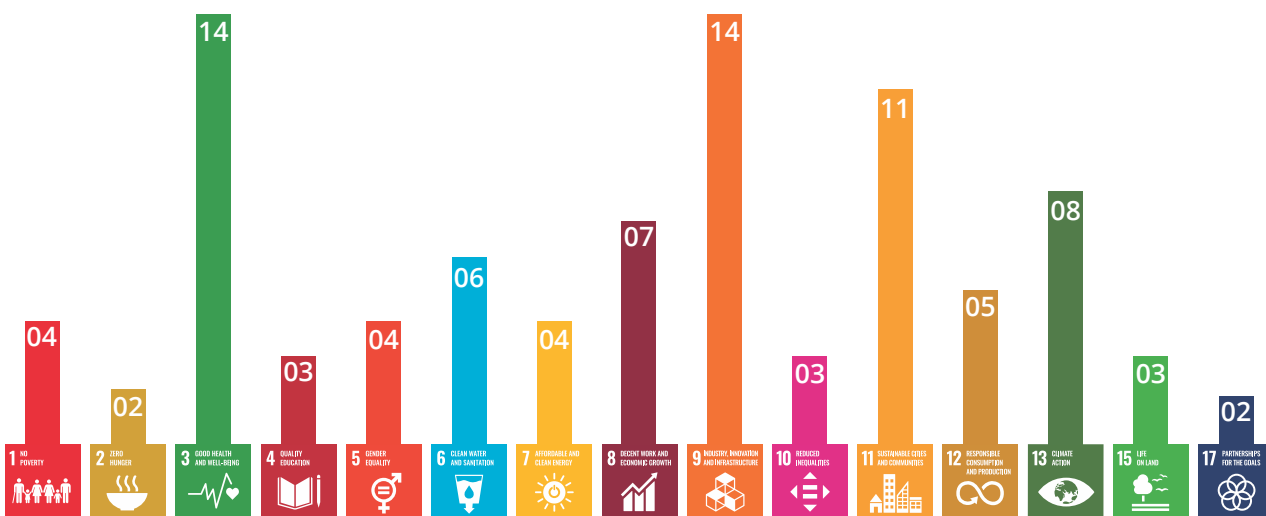


### Sustainable Development Goals (SDGs) Impacted:

TDB funding played significant role for companies to address the sustainable development goals. In Figure 11 below, it is shown that the product/technology developed by signature companies have impacted more than one SDGs. Of the 26 signature companies surveyed, it was found that:

- Around 45 percent of companies through their products/technologies targeted SDG goal 3 'Good health and well-being' and SDG goal 9 'Industry, innovation and infrastructure'. The same company may have also targeted multiple other SDGs.
- Going forward, it was conveyed that company's products/technologies also increasingly targeted other SDGs as well, for example 'Decent work and economic growth', 'Affordable and clean energy', 'Sustainable cities and communities' and 'Climate action'.

**Figure 11: SDGs Impacted**



\*(The total number of companies are higher than the 26 companies surveyed, this is because many companies stated that their products/technology has impacted more than one SDGs).

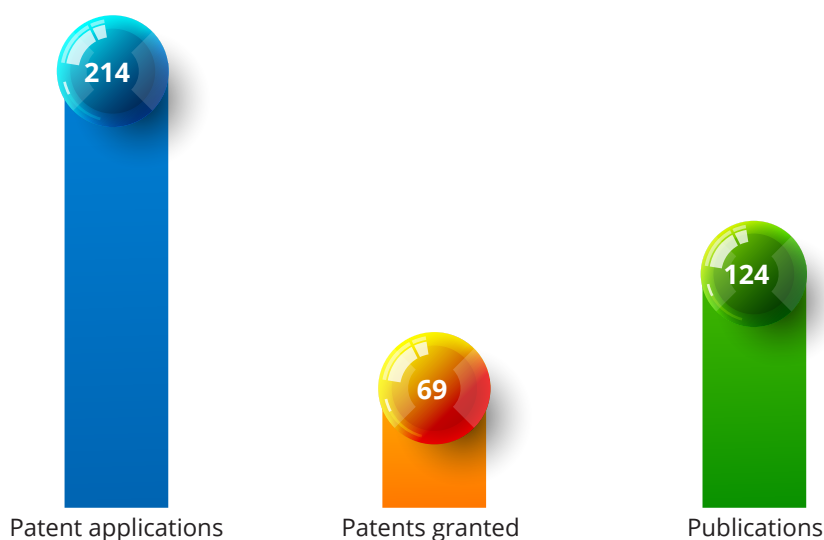


## Number of Patents and Publications

Patents and publications have been widely used as an indicator of technological advancement of any company/sector. Patents are also the direct outcome of inventive processes. Of the 26 signature companies surveyed, it was found that:

- TDB funding contributed towards 214 patent applications, 69 granted patents and 124 publications.
- About 80 percent patent applications were filed by four companies, i.e., Biological E Limited (126), Biocon Ltd (15), Panacea Medical Technologies Pvt. Ltd (19) and Vayavya Labs Pvt. Ltd (11).
- More than 64 percent patents were granted to four companies, i.e., Biological E Limited (16), Biocon Ltd (10), Birla Cellulosic (10) and Vayavya Labs Pvt. Ltd (8).
- More than 80 percent publications were driven by four companies, i.e. Biological E Limited with 80 publications, Clutch Auto Ltd. has 10 publications, Biocon Ltd. and Grasim Industries have 5 publications each.
- Out of 9 key sectors, health & medical got maximum numbers of patent applications, granted patents and publications.

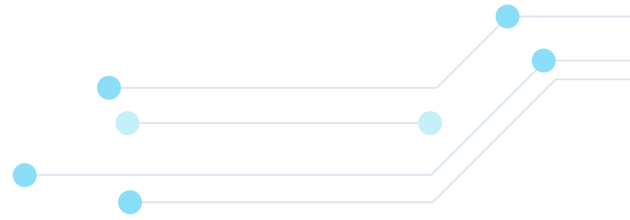
**Figure 12: Aggregate number of patent applications, granted patents and publications**



## Employment Generated

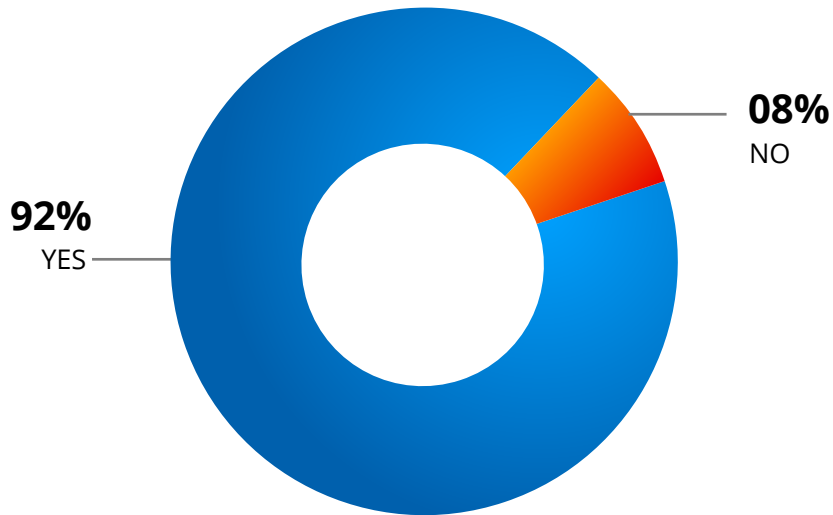
TDB funding has positively influenced the socio-economic needs of the society by generating employment on immediate, mid-term and long-term basis. Of the 26 signature companies surveyed, it was found that:

- More than 1500 people were employed as a result of funding received from TDB.
- In more than 92 percent of companies, the employment has been generated (direct or indirect) as a result of funding received from TDB.
- Highest number of people were hired by Grasim Industries Ltd with 300 employees.
- Biological E Limited hired 250 employees in different departments of the company.
- Yashraj Biotechnology Ltd hired 200 employees in different departments of the company.

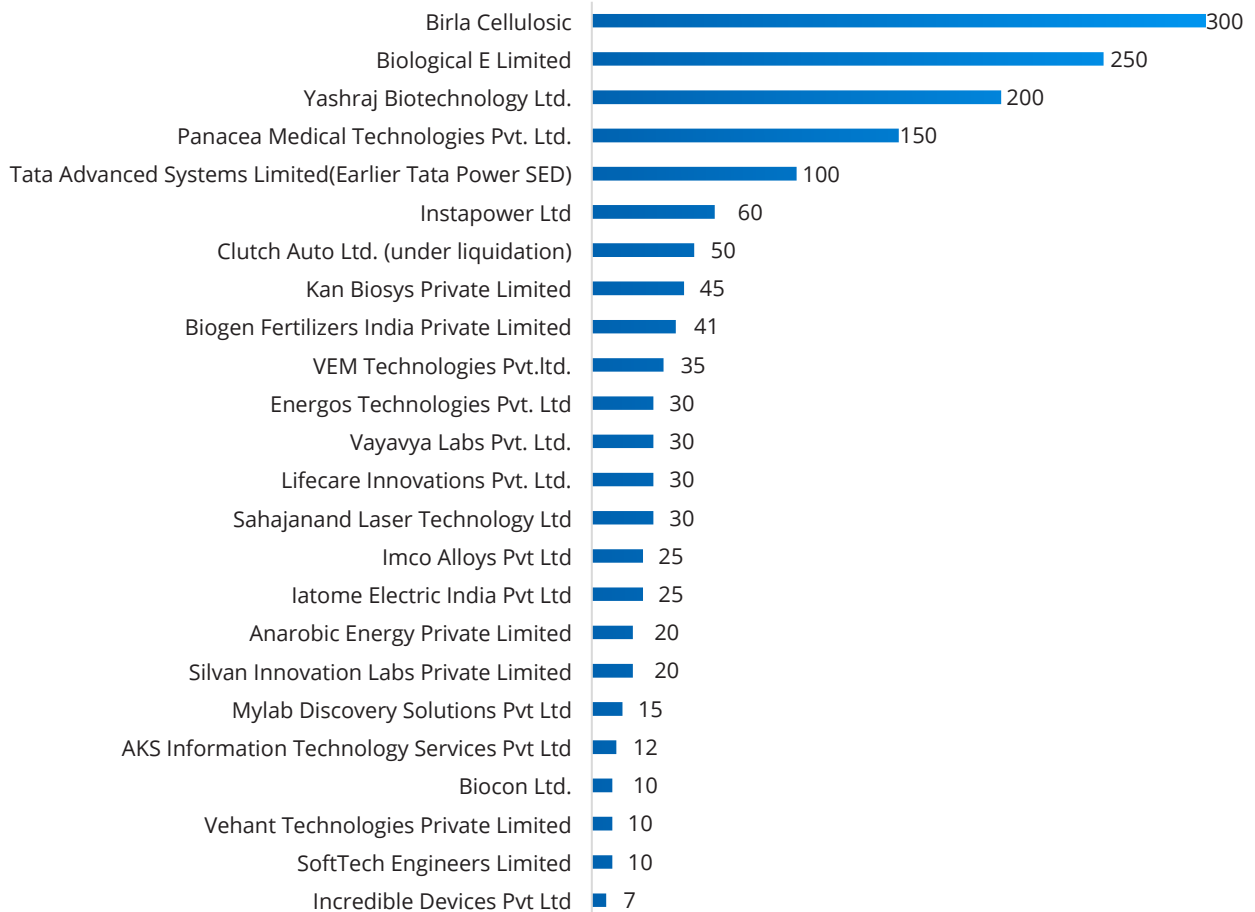


- 150 employees were hired in different departments of Panacea Medical Technologies Pvt. Ltd.
- 100 people got employed by Tata Advanced Systems Limited.

**Figure 13 a: Total Employment Generated**



**Figure 13 b: Employment generated by signature companies**





# QUICK GLANCE ON IMPACT OF TDB FUNDING

Lowered  
the cost of  
product /  
technology

01

Import  
substitution

02

Facilitated  
licensing/  
collaboration  
of  
technologies

03

Helped  
leveraging  
the funds  
from other  
financial  
institutions

04

Resulted in  
direct and  
indirect  
employment  
generation

05

Generated a  
positive  
impact on  
other  
projects of  
the  
company

06

Resulted in  
IPR creation  
and  
publications

07

SECTION 3  
**CASE STUDIES**  
OF 26 SIGNATURE COMPANIES





## SECTION 3

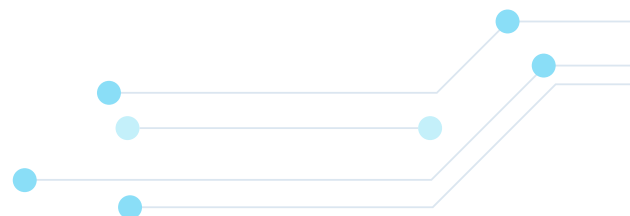
# CASE STUDIES

## OF 26 SIGNATURE COMPANIES

**Table 2: List of signature companies surveyed and the funded projects**

Name of the Company	Project Location	Year of TDB Funding Received	Name of the Project
M/s AKS Information Technology Services Pvt Ltd	Noida, Uttar Pradesh	2018	Development & Commercialization of Anti DDoS Solution
M/s Anarobic Energy Pvt Ltd	Haridwar, Uttrakhand	2019	Development & Commercialization of Bio CNG from Sewage Based Biogas Plant, at Sewage Treatment Plant Jagjeetpur, Haridwar
M/s Bharat Biotech	Shamirpet, Telangana	1998	Development & Commercialization of Revac-B mcf
M/s Biocon Ltd.	Bangalore, Karnataka	2002	Development & Commercialization of Mycophenolate Mofetil by Pla Fractor Technology
M/s Biogen Fertilizers India Pvt Ltd	Salem, Tamil Nadu	2019	Development & Commercialization of Encapsulated Organic Granulated Manure
M/s Biological E Limited	Hyderabad, Telangana	2016	Development & Commercialization of Pneumococcal Conjugate (PCV13) Vaccine
M/s Grasim Industries Ltd	Kharach, Gujarat	2018	Development & Commercialization of Birla Excel Solvent Spun Cellulosic Fibre Plant
M/s Clutch Auto Ltd.	Faridabad, Haryana	2000	Development & Commercialization of Ceramic Clutches Disk and Angle spring Clutches
M/s Energos Technologies	Mumbai, Maharashtra	2018	Development & Commercialization of YIVO Edge
M/s Iatome Electric India Pvt Ltd	Coimbatore, Tamil Nadu	2017	Development & Commercialization of Portable X-ray machine
M/s Imco Alloys Pvt Ltd	Mumbai, Maharashtra	2017	Development & commercialization of Carbide Alloys technology





Name of the Company	Project Location	Year of TDB Funding Received	Name of the Project
M/s Incredible Devices Pvt Ltd	Chandigarh	2017	Development & Commercialization of Catheter Reprocessing System
M/s Instapower Ltd	Roorkee, Uttrakhand	2009	Development & Commercialization of manufacture LED Revolving Light, signaling
M/s Kan Biosys Pvt Ltd	Punjab, Haryana	2018	Development & commercialization of straw utilization technology: In-situ Accelerated and Sustainable Rice Straw Decomposition
M/s Lifecare Innovations Pvt. Ltd.	Lucknow, Uttar Pradesh	2010	Development & Commercialization of Controlled Release Pharmaceuticals: Liposomal Formulation
M/s Mylab Discovery Solutions Pvt Ltd	Pune, Maharashtra	2020	Manufacturing of Testing Kits to detect Covid Corona Virus
M/s Panacea Medical Technologies Pvt. Ltd.	Malur, Karnataka	2019	Development & Commercialization of Medical LINAC for Radiotherapy
M/s Sahajanand Laser Technology Ltd	Gandhinagar, Gujarat	2009	Development & Commercialization of Laser Cutting Machines
M/s Silvan Innovation Labs Pvt Ltd	Bengaluru, Karnataka	2011	Development & Commercialization of Real-time video analytics over wireless IP video surveillance camera system
M/s Soft Tech Engineers Ltd	Pune, Maharashtra	2017	Development & Commercialization of RuleBuddy product
M/s Systemantics India Pvt Ltd	Bengaluru, Karnataka	2016	Development & Commercialization of Industrial Robots
M/s Tata Advanced Systems	Kolar Taluk, Karnataka	2016	Setting up Defence Manufacturing Facility at 50 acres land at Vemagal Industrial Area, Kolar District, Karnataka
M/s Vayavya Labs Pvt. Ltd.	Belagavi, Karnataka	2012	Development & Commercialization of Device Driver Generator
M/s Vehant Technologies	Noida, Uttar Pradesh	2007	Development & Commercialization of UVSS, XBS, Trafficmon
M/s VEM Technologies	Hyderabad, Telangana	2017	Development & Commercialization of RF Seekers
M/s Yashraj Biotechnology Ltd.	Navi Mumbai, Maharashtra	2004	Antigens and Proteins from liquid Bio-medical waste

## M/s AKS Information Technology Services Pvt Ltd

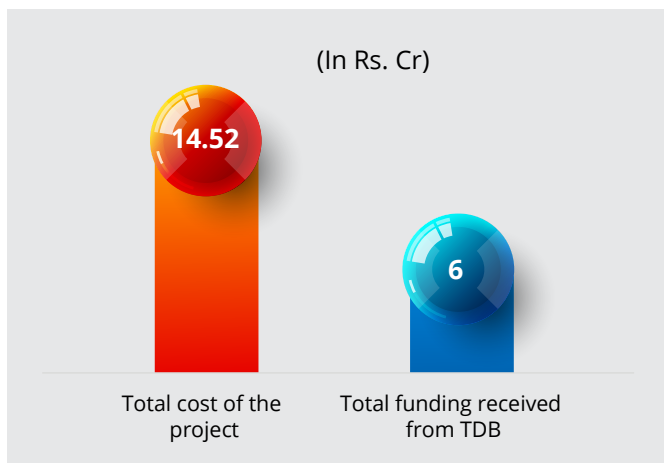


(Noida, Uttar Pradesh)

AKS Information Technology Services Pvt Ltd received funding of **(Rs. 6 crore)** on 19<sup>th</sup> September 2018

AKS Information Technology Services Pvt. Ltd. (an ISO 9001:2015 and ISO 27001:2013 certified company) was founded in September 2006 and is incorporated under the Company Act, 1956. It is a leading IT Security and Solutions provider company with over 8500 clients.

AKS IT Services Pvt. Ltd. provides a wide range of IT security services including WEB Application Security Auditing, Network Security Auditing, GDPR Security Auditing, Vulnerability Assessment & Penetration Testing (VAPT), Information Risk Management, Cyber Forensics, Mobile Forensics & Cyber Crime Investigation, Information Security Training, Computer Security Incident Response Team (Design, Setup and Training) and Security Operations Centre (Design & Implementation). It also provides software solutions and testing infrastructure for its clients.



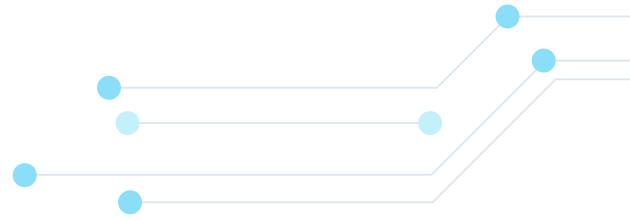
Technology Development Board (TDB) entered into an agreement with M/s AKS Information Technology Services Pvt. Ltd. for the project titled "Development & Commercialization of Anti Distributed Denial of Service (DDoS)" in September 2018 for loan assistance of Rs. 6 crore against the total project cost of Rs. 14.52 crore.

### About the Technology

The Anti-DDoS Solution is a highly innovative, new to the world product. The Anti-DDoS Solution helps protect IT infrastructure and data against cyber-attacks. Anti DDoS Solution minimises downtime and latency from any kind of DDoS attack. Machine learning-based DDoS mitigation is available as an on-premises Appliance. Anti DDoS Solution provides multi-layer, multi-vector protection to ensure that customers' IT networks stays online and is always accessible to users.

### Commercialisation of the Product

This project was undertaken in Noida. Anti-DDoS Solution provides multi-layer, multi-vector protection to ensure that your IT network stays online and always accessible to your customers. AKS IT Services disclaims in full any covenants, representations, and guarantees pursuant hereto, whether expressed or implied. It reserves the right to change, modify, transfer or otherwise revise this publication without notice and the most current version of the publication shall be applicable. Anti-DDoS Solution was commercialised on 24<sup>th</sup> February 2020. It has outreach in more than 3 states in India. The product also got recognition internationally, including in ASEAN Countries. Total 5 units have been sold till July 2021. AKS IT Services used their in-house technology to develop Anti-DDoS Solution. The Anti-DDoS Solution was new to the world.



*AKS Information Technology's Anti DDoS Solution is sold not only in India. It also got recognition internationally, including in ASEAN countries.*

## Impact of Funding

**01** Patent Granted

**Increased** market share after commercialisation

**01** Patent Application

**Improved** Production processes & reduced cost of product after funding

**02** Publications

**Upgraded** Machinery from Process Innovation linked to product

**12** People Employed



**SDG** Impacted

*"Organisation now can have 'Make in India' technology to protect their IT Infra and data from Cyber Attacks. Our country can now take pride in being Atmanirbhar in this technology. Earlier foreign products were imported which were not suited for critical infrastructure due to data localisation. "TDB funding eased out the financial burden, otherwise it would have been difficult to accomplish this. Thanks to TDB for their timely help and boosting our morale"*

*Recently awarded National Technology Award on 11 May 2021 by TDB with a cash award of Rs. 15 lakhs.*

**Ashish Kumar Saxena**

CEO & MD

AKS Information Technology Services Pvt. Ltd.

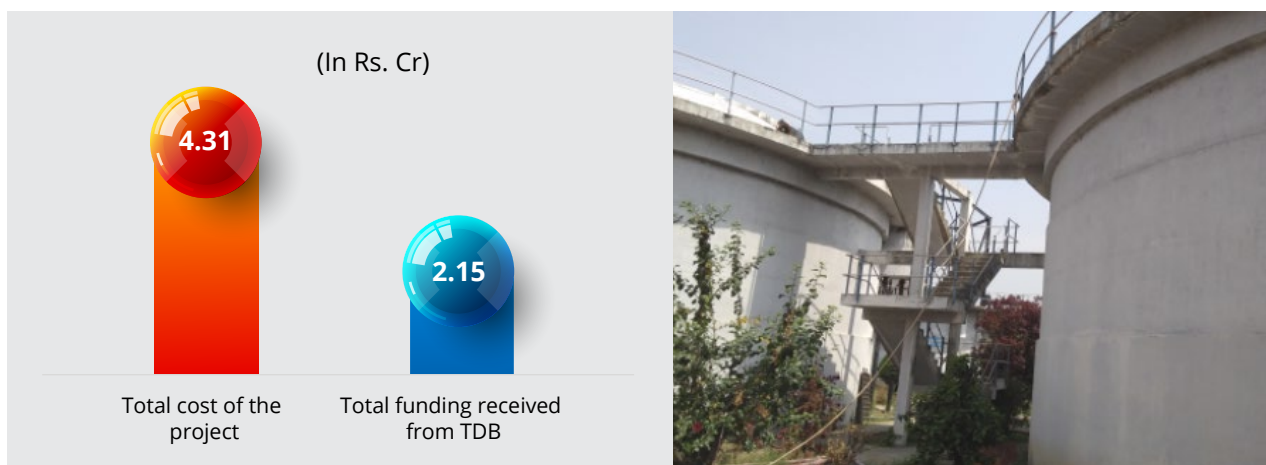
## M/s Anarobic Energy Private Limited

(Haridwar, Uttarakhand)



Anarobic Energy Private Limited received funding of **(Rs. 2.15 crore)** on 8<sup>th</sup> July 2019

Anarobic Energy Private Limited is a Private limited company incorporated on 12<sup>th</sup> July 2017. It is classified as Non-govt company and is registered at Registrar of Companies, Kanpur. It is a newly initiated start-up company certified by the Department for Promotion of Industry and Internal Trade.



During the year 2019-2020, Technology Development Board (TDB) signed an agreement for financial assistance to support M/s Anarobic Energy Private Limited for the project on “Development & Commercialization of Bio CNG from Sewage Based Biogas Plant”, at Sewage Treatment Plant Jagjeetpur, Haridwar for loan assistance of Rs. 2.15 crore against the total project cost of Rs. 4.31 crore.

### About the Technology

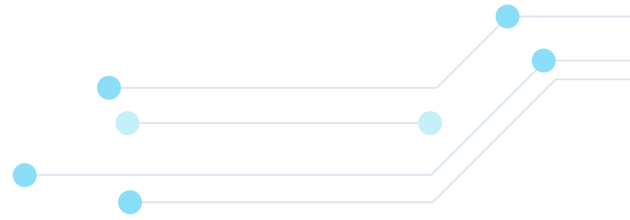
Anarobic Energy Private Limited is producing Bio CNG from Biogas. The company plans to set up its first biogas plant using new to the market technology to produce bio CNG at Haridwar based on sewage sludge available at a treatment plant at Jagjeetpur, Haridwar. The company proposes to generate biogas, refine the biogas to produce bio CNG using technology that is new to the market and generate revenue by its sale. Generation of bio CNG requires two distinct processes:

- i) Generation of biogas from substrate via anaerobic digestion and
- ii) Purification / up-gradation of biogas to bio CNG.

The technology developed enhances methane production essential for CNG more than conventionally produced methane. This has resulted in higher production of bio CNG from the same amount of raw material thus reducing raw material cost on one hand and reduced load on the scrubbing system on the other.

### Commercialisation of the Product

This project was undertaken in Jagjeetpur, Haridwar. The required technology is being sourced from Atmos Power Pvt. Ltd., Ahmedabad and Indian Oil Research & Development Centre, Faridabad. The project will be commercialised on 31<sup>st</sup> December 2021. This project is a joint venture with the Government of Uttarakhand (Uttarakhand Jal Sansthan). The company has a technology tie up with two leading research institutes of the country. Anarobic Energy using their in-house technology for the development & commercialization of Bio CNG from Sewage Based Biogas Plant.



These benefits have resulted in reducing cost and improving profitability leading to commercialisation of this product.

## Impact of Funding

**20** People Employed

**Increased** market share after commercialisation

**Improved** Production processes & reduced cost of product after funding

**Upgraded** Machinery from Process Innovation linked to product



**SDG** Impacted

*"This happens to be the first project of the company. This project is a joint venture with the Government of Uttarakhand (Uttarakhand Jal Sansthan). We have technology tie up with two leading research institutes of the country. We have also received organic certification for organic fertiliser that is produced as a by-product in the process. We are confident that this project will lead the nation towards the Bio Energy Revolution. TDB funding eased out the financial burden otherwise it would have been difficult. Many Thanks to TDB once again. The project would not have been a success without the support of TDB"*

**Rajendra Singh Chikara**  
CEO & MD  
Anarobic Energy Private Limited

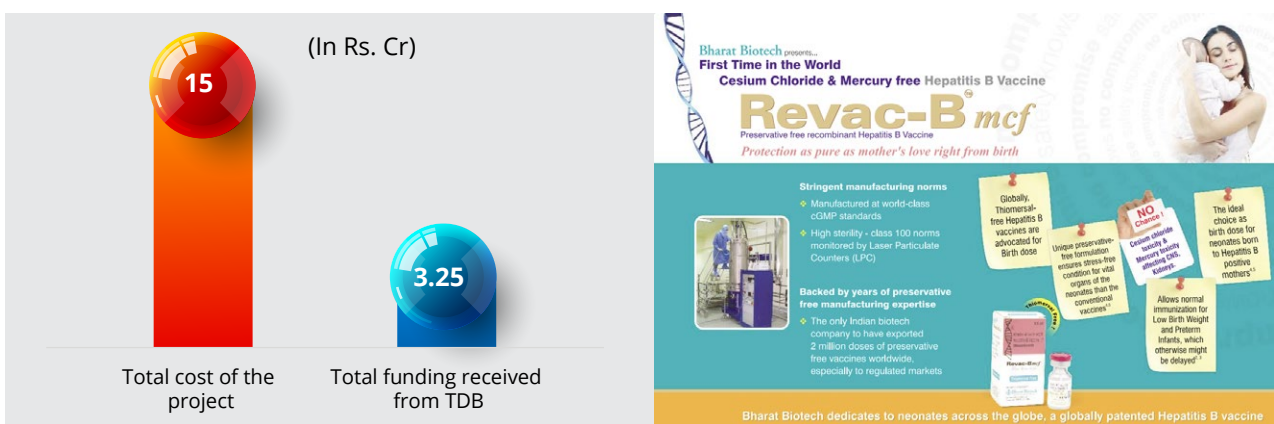
## M/s Bharat Biotech International Limited



(Shamirpet, Telangana)

Bharat Biotech International Limited received funding of **(Rs. 3.25 crore)** on 15<sup>th</sup> April 1998

Bharat Biotech is a pioneering biotechnology company known for its world-class R&D and manufacturing capabilities. The mission of Bharat Biotech is to deliver affordable, safe and high-quality vaccines and bio-therapeutics and make quality healthcare affordable for common man all around the world. The company has recently received much appreciation for successfully commercializing India's first indigenous COVID-19 vaccine COVAXIN.



Technology Development Board (TDB) entered into an agreement with M/s Bharat Biotech International Ltd. for the project on 'Development & Commercialization of Revac-B mcf' in April 1998 for loan assistance of Rs. 3.25 crore against the total project cost of Rs. 15 crore.

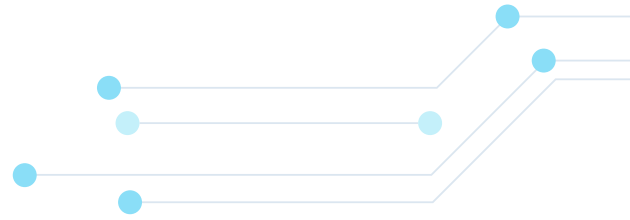
### About the Technology

Revac-B mcf is a Hepatitis-B virus vaccine and is manufactured using recombinant DNA technology. It is the only preservative-free and caesium chloride-free hepatitis B vaccine. The efficacy and safety of Revac-B mcf is ensured through stringent adherence to the highest standards of bio-process control and consistent quality assurance measures. Revac-B mcf fulfils WHO requirements for Hepatitis-B Vaccine made by recombinant DNA technology.

The vaccine is used in Universal Immunisation Programs and is important for prevention of the disease in neonates, infants and young adults. The vaccine also provides protection from probable Hepatitis-B virus induced carrier state, cirrhosis and hepatic cellular carcinoma.

### Commercialisation of the Product

The project was undertaken in Hyderabad. Using in-house technology sources, Bharat Biotech was able to launch this product which was new to the world. It took around 14 months to commercialize the product after the funding was received. In the year of commercialisation and in the subsequent year, namely 1999-2000 and 2000-2001, the number of units sold were 10,000. Since then, Bharat Biotech has sold over a million doses of Revac-B mcf. In the year of commercialisation and in the subsequent year, namely 1999-2000 and 2000-2001, a total Rs. 10 crore revenue was generated.



*Revac-B mcf is sold across India and has also received international recognition in the ASEAN countries.*

<p><b>01</b> Patent Granted</p>	<p><b>Increased</b> market share after commercialisation</p>
<p><b>02</b> Publications</p>	
<p><b>Several new employees</b> as a result of funding &amp; capacity development programmes</p>	<p><b>SDG</b> Impacted</p>

*“Bharat Biotech has had a long and successful relationship with the TDB. This collaboration is more than two decades old, ever since Bharat Biotech was funded by TDB for its first project of a Hepatitis B vaccine. This funding was utilized for the development and commercialization of Hepatitis-B vaccine. The project was a great success. The relationship with TDB is not just for one product. TDB has continuously supported and played an instrumental role in establishing Bharat Biotech as a global leader in vaccines.”*

**Krishna Ella**  
CEO & MD  
Bharat Biotech International Limited

## M/s Biocon India Limited



(Bangalore, Karnataka)

Biocon India Ltd. received funding of **(Rs. 9.7 crore)** on 1<sup>st</sup> July 2002

Biocon India Ltd. is a global biopharmaceutical company changing patients' lives in over 120 countries by finding new and affordable ways to treat diabetes, cancer and autoimmune diseases.



Technology Development Board (TDB) entered an agreement with Biocon India Ltd for the project on 'Development & Commercialization of Mycophenolate Mofetil by Pla Factor Technology' in July 2002 for the loan assistance amount of Rs. 9.7 crore against the total project cost of Rs. 25.6 crore.

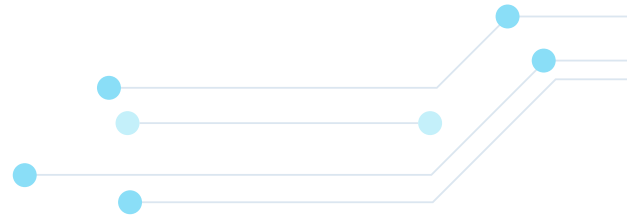
### About the Technology

Biocon India designed, developed and patented a new bioreactor, the PlaFractor for carrying out fermentations that use solid matrices, a term covering both nutritive support matrices as well as non-nutritive matrices impregnated with medium. It was commissioned in 2000. Using the PlaFractor process it is now possible to extend the use of solid matrix fermentation for the production of enzymes, biocontrol agents and pharmaceutical products, that require elaborate containment-under precisely defined conditions.

Biocon India Ltd developed Mycophenolate Mofetil by PlaFractor Technology, which was fully developed by using in-house technology. The PlaFractor is designed to replace the cooker, the trays, the incubation rooms and the extraction device in the semi-automated tray culture process, with one compact piece of equipment.

PlaFractor technology makes fermentation repeatable, predictable and reliable. It requires less equipment and floor space than older solid substrate fermentation technologies, and conserves energy. It is a cost-effective bioreactor which enables all the different stage processes involved in the cultivation and extraction of microorganisms to be carried out within a fully enclosed system and under precise computer control. The product Mycophenolate Mofetil an immuno-suppressant, was produced using this newly developed Plafractor technology and successfully commercialized using financial assistance received from TDB.





## Commercialisation of the Product

The project was undertaken in Bangalore, India. The technology was commercialized on 1<sup>st</sup> July 2003.

On 3<sup>rd</sup> July 2002, Biocon entered into a term loan facility with TDB for Rs. 9.7 crore for funding its fixed asset acquisitions of the PlaFractor plant. These loans are repayable in 9 equal instalments commencing from February 2004, are secured by a first pari passu mortgage and charge on the fixed assets of Biocon and carry an interest rate of 5 per cent per annum. On 31<sup>st</sup> March 2003, Biocon had drawn Rs. 6.5 crore from the above facility. The above term loans were further secured by the personal guarantee of the Managing Director and pledge of 10,000 equity shares of Biocon held by the Managing Director and some employees.

Till date, 24962 products have been sold since the commercialisation of the product. The company was able to earn Rs. 90.58 crore as revenue generated from commercialisation of the product. The total revenue from exports was Rs. 13.4 crore. While the number of units sold in the year of commercialization in 2003 was 233, the total number of exports of the product was 3709.

*The Mycophenolate Mofetil by Pla Fractor is sold not only in India but also in other countries including North America, Europe, China, Japan, South Korea, ASEAN, SAARC countries and Africa.*



## Impact of Funding

**10** Patents Granted

**10** Patent Applications

**05** Publications

**10** People Employed

**Increased** market share after commercialisation

**Improved** Production processes & reduced cost of product after funding

**Upgraded** Machinery from Process Innovation linked to product

**SDGs**  
Impacted



*"TDB has been very supportive throughout our engagement, right from the beginning. As an outcome, the PlaFractor, was scaled up to plant level and has proven to be a commercial success. Today, our unique array of fermentation platforms enables us to produce a variety of high value products, ranging from enzymes to small molecule drugs and biologicals."*

**Siddharth Mittal**  
CEO & MD  
Biocon Limited

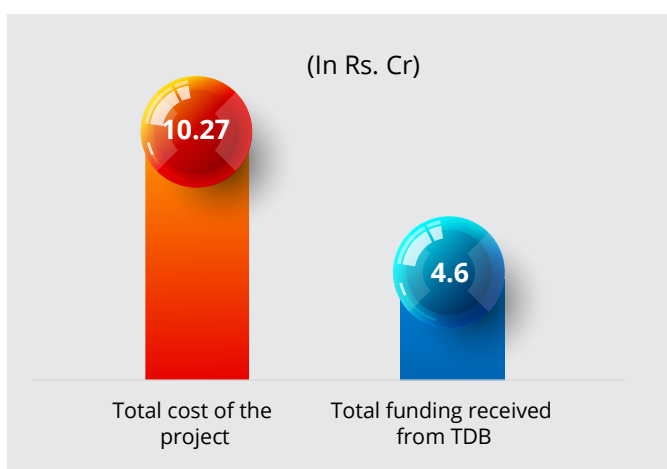
## M/s Biogen Fertilizers India Private Limited



(Chennai, Tamil Nadu)

Biogen Fertilizers India Pvt Ltd received funding of **(Rs. 4.6 crore)** on 29<sup>th</sup> January 2019

Established in 2009, Biogen Fertilizers India Pvt Ltd. is one of the leading manufacturers of certified organic manure (Nutrich), phosphate rich organic Manure (PROMSTAR), and encapsulated organic granulated manure (VARAHI). Biogen is promoted by passionate and purpose driven people in consultation with & guidance of leading experts and scientists from various agricultural institutions.



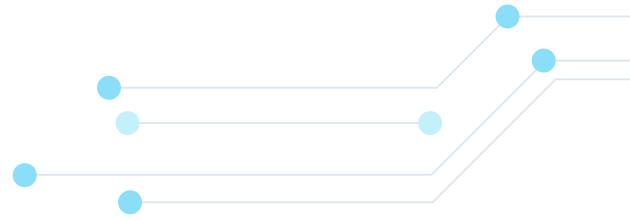
Technology Development Board (TDB) entered into an agreement with M/s Biogen Fertilizers India Pvt Ltd for the project on "Commercial Production of Encapsulated Multi nutrient Granulation / Pelletisation of Organic Manure with Bio NPK to fulfil the unmet need of Indian Farmers". The project includes 'Commercial production of encapsulated multi nutrient granulation/ palletization of organic manure with bio NPK (liquid), bio control microbes, HUMIC, VAM, enzymes, immune modulators and trace elements (zinc, boron, molybdenum, manganese and iron)' The product received a loan assistance of Rs. 4.6 crore against a total project cost of Rs. 10.27 crore.

### About the Technology

Through the process of encapsulated granulation, Varahi as encapsulated bio granules combine the goodness of organic manure and biomolecules (bio fertilizers/ bio pesticides /other probiotic microbes/enzymes/immune modulators etc.). This is a new to the market product developed with technical support from Tamil Nadu Agricultural University and National Center of Organic Farming. The encapsulated organic granules, upon application to crop root zone, creates a dynamic rhizosphere.

Through this process, farmers can reduce the quantity of chemical fertilizers, pesticides and fungicides in farming. This not only saves the cultivation cost but also increases the farm income by enhancing the crop yield. The technology focuses on the concept of triggering the bio power of natural molecules in the crop rhizosphere. It builds the native immunity of the crop and enhances the nutrient imbibition. The soil's fertility is enhanced multi-fold thereby promoting luxuriant growth and higher yields.

The process of combining organic manure with all these essential components gives value addition and enrichment to the manure, which is an innovative idea of developing an almost complete crop food.



## Commercialisation of the Product

This project was undertaken in Chennai, Tamil Nadu. Varahi's Encapsulated Organic Granulated Manure was made under the guidance of leading experts and scientists from various agricultural institutions. The product has been commercialised on 1<sup>st</sup> July 2021, with an outreach in more than 10 states in India. The product has also got international recognition including in SAARC countries. The company was able to earn Rs. 1 crore in the year of commercialization itself.

*Total 100 MT units have been sold in the year of commercialisation itself.*

*Biogen's Encapsulated Organic Granulated Manure is sold in more than 10 states in India. It also got international recognition, including in SAARC countries.*

## Impact of Funding

**01** Patent Granted

**Increased** market share after commercialisation

**01** Patent Application

**Improved** Production processes & reduced cost of product after funding

**02** Publications

**SDGs** Impacted

**41** People Employed  
as a result of technology  
& Capacity development  
programmes



*"It was an excellent experience working with TDB. We gained knowledge from the TDB team and various other experts. Excellent support in terms of value to the products and market support was given by the TDB in the entire project cycle. In a span of two years, we have scaled ourselves up from small company to a large one".*

**S. Senthil Kumar**  
CEO & MD  
Biogen Fertilizers India Private Limited

## M/s Biological E. Limited

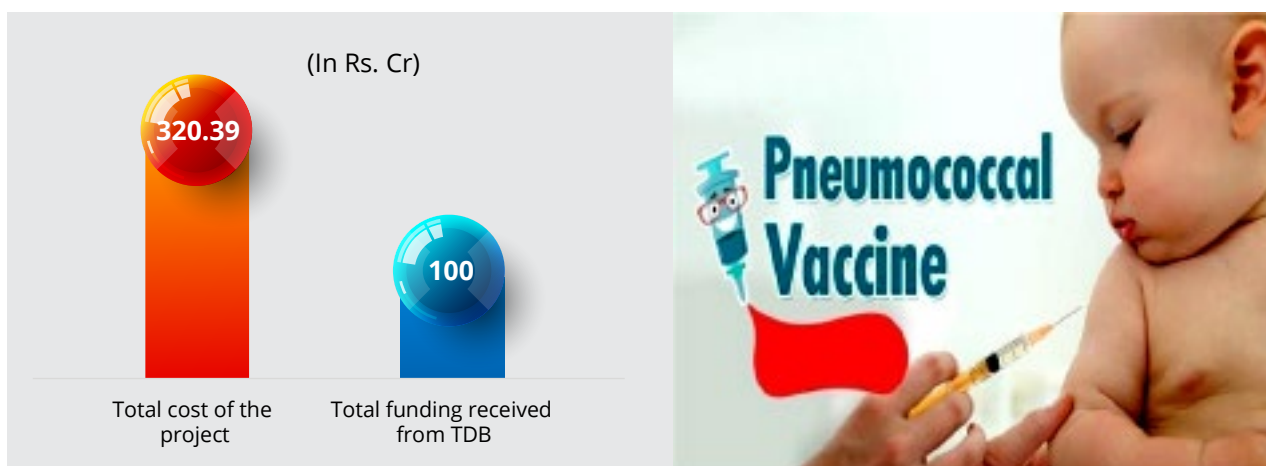
(Hyderabad, Telangana)



*Biological E. Limited*  
Celebrating Life Every Day

Biological E. Limited received funding of **(Rs.100 crore)** on 29<sup>th</sup> April 2016

Biological E. Limited started its journey in vaccine manufacturing in 1962 and became the first Indian private company to enter into the vaccine business. It is one of the leading vaccine companies in India and partners with global healthcare agencies, including the WHO, UNICEF and Pan American Health Organisation in their efforts to make life saving vaccines accessible globally. The company supplies its vaccines to more than 100 countries and has supplied more than 2 billion doses of vaccines in the last decade alone.



Technology Development Board (TDB) entered into an agreement with M/s Biological E. Limited for the project on “Development & Commercialization of Pneumococcal Conjugate (PCV13) Vaccine” The project received a loan assistance of Rs. 100 crore against the total cost of Rs. 320.39 crore.

### About the Technology

Pneumococcal conjugate (PCV13) vaccine uses a carrier protein (CRM197) to provide biostable immunity in children below 2 years for pneumococcal disease. Biological E. Limited was able to make a vaccine that was new to the market using their in-house technology.

CRM197 production is carried out in fermentation with optimized media using *C. diphtheriae* C7 strain, which was engineered in-house to increase CRM197 yield. The fermenter broth containing CRM197 is further processed by downstream processing. The purified CRM197 is analyzed to meet the predetermined quality attributes.

### Commercialisation of the Product

The project was undertaken in Hyderabad. The vaccine is not commercialised yet, but the expected date of commercialization is December 2022. The projected sales of this vaccine are 50 million doses. Currently, the product is in Phase III clinical trial and launch is planned in Q2 of 2022. Therefore, the revenue generation on this product would start from Q2 2022.

Exports are planned towards the end of 2022 or early 2023 based on WHO pre-qualification.

## Impact of Funding

**16** Patent Applications

**80** Publications

**250** People Employed

as a result of technology & Capacity development programmes conducted

**Upgraded** Machinery & byproducts from process Innovation linked to product

**Improved** Production processes & reduced cost of product after funding

**Increased** market share after commercialisation

### SDGs Impacted



*“Pneumococcal diseases are a major challenge for developing countries such as India, which is already burdened with other communicable and non-communicable diseases. According to the Indian Chest Society, 2019 report; the most common serotypes found in the study were 1, 3, 5, 19F, 8, 14, 23F, 4, 19A, and 6B. These serotypes accounted for 54.9% of IPD cases, which shows a clear need for the additional serotypes for necessary protective coverage in the country. TDB’s support for development of 14-valent PCV vaccine helped not only in the development of indigenous vaccines for India but also strengthening countries’ Universal Immunization Program. BioE completed its Phase II clinical trial and expects to complete Phase – III clinical trial soon.*

*TDB funding for the development of life-saving vaccines, helped the manufacturer target large-scale production and keep the cost of vaccines low. Biological E is a major vaccine supplier to Govt. of India’s UIP. Support from TDB will help in accelerating indigenous development of 14-valent Pneumococcal Conjugate Vaccine and Injectable Polio Vaccine which will strengthen indigenous vaccine manufacturing capabilities and uninterrupted supply of vaccine for UIP. Overall TDB funding and the project monitoring committee were very helpful in the entire project cycle”*

**Mahima Datla**  
CEO & MD  
Biological E. Limited



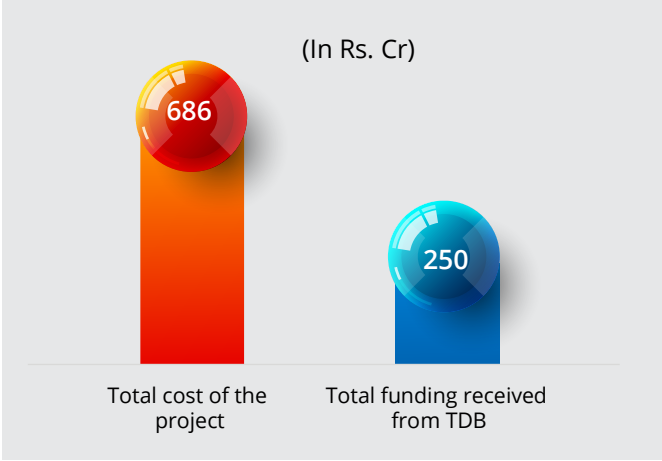
# M/s Grasim Industries Limited

(Kharach, Gujarat)

M/s Grasim Industries Pvt Ltd received funding of **(Rs.250 crore)** on 27<sup>th</sup> March 2018 to develop its product called **Standard Grade Greige Lyocell Fiber**

M/s Grasim Industries Pvt Ltd is a world leader in viscose staple fibre (VSF) and a trusted raw material partner for the global textile and non-woven value chain, representing a perfect melange of nature and science. Birla Cellulosic was set up in the year 1997 to produce Viscose Staple Fibers (VSF) to cater mainly to the export market. This state-of-the-art VSF manufacturing facility at Kharach was established with its primary objective to redefine the cellulosic fibre in terms of quality, cost and applications.

The annual turnover of Grasim Industries was about Rs. 18,609 crore (FY 2020 standalone), and the overall R&D expenditure of the firm was about Rs. 97 crore in the same year. The company's major sectors of operation are chemical and textiles.

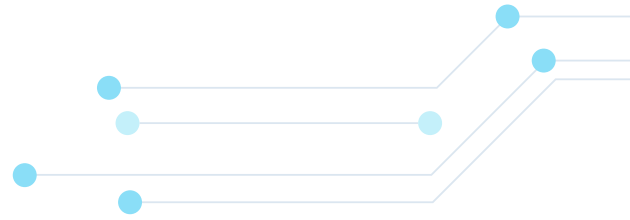


Birla Cellulosic, part of the Aditya Birla Group and one of the largest global man made cellulosic fibre (MMCF) producer, has emerged as a winner in the first edition of the 'National Innovative and Sustainable Supply Chain Awards' by UN Global Compact Network India". There was a loan assistance of 250 crore against the total project cost of Rs. 686 crore.

## About the Technology

The Lyocell technology is a closed loop technology with superior sustainability credentials than all the man-made fibres and cotton. Lyocell fibres are produced by regenerating cellulose in an organic solvent, N-methyl morpholine-N-oxide hydrate, which is nontoxic and biodegradable and is almost completely recycled. The production of fibre is with zero emissions thereby leading to better environmental conditions for society and communities as compared to production of other manmade fibres.

The technology requires fewer steps than conventional cellulosic fibre and hence it has better cost economics. Standard grade greige lyocell fiber manufactured by the Birla Cellulosic was both new to the firm as well as new to the market.



## Commercialisation of the Product

The project was undertaken in Bharuch district of Gujarat. Commercialisation of third generation solvent spun Lyocell technology, considering its environment credentials, was the key milestone for the company to sustain market leadership.

By commercialising Lyocell technology, Grasim has increased its speciality fibre portfolio, which is the company's primary focus to ensure sustainable profit margins. Production of Lyocell fibre in India has substituted import of the fibre from Europe. Also, the Indian textile industry is getting faster supplies from their next door suppliers and hence inventory optimization at spinner's level.

It was developed using in-house technology. The product was commercialised on 1<sup>st</sup> May 2019. The technology was able to generate Rs. 310 crore post the commercialisation of the product and bring Rs. 212 crore from export of the product.

*The product is sold not only in Indian States but also in Europe, China, Turkey and SAARC Countries*

## Impact of Funding

**10** Patents Granted

**05** Publications

**300** People Employed

### SDGs Impacted



*"The entire process of TDB funding grant was very smooth starting from application for funding to project completion. TDB's process of evaluating proposal, due diligence and subsequent compliances is well defined and objective. This enabled us to speed up the entire process and get the funding on time for us to be able to complete the project well within the timelines. Various teams were deputed by TDB for evaluation, audit and due diligence involving experienced experts from industries and institutions".*

**Dilip Gaur**  
CEO & MD  
Grasim Industries Ltd

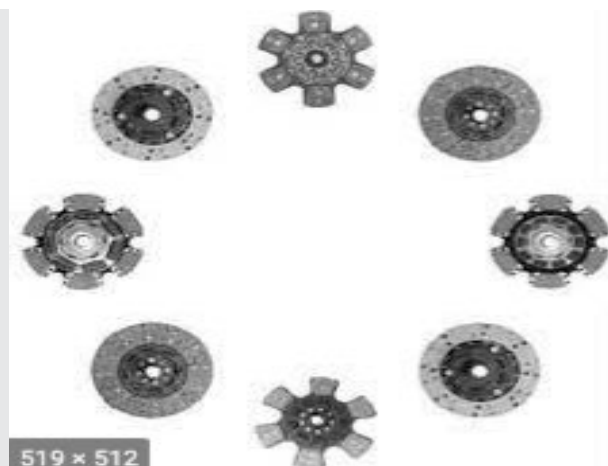
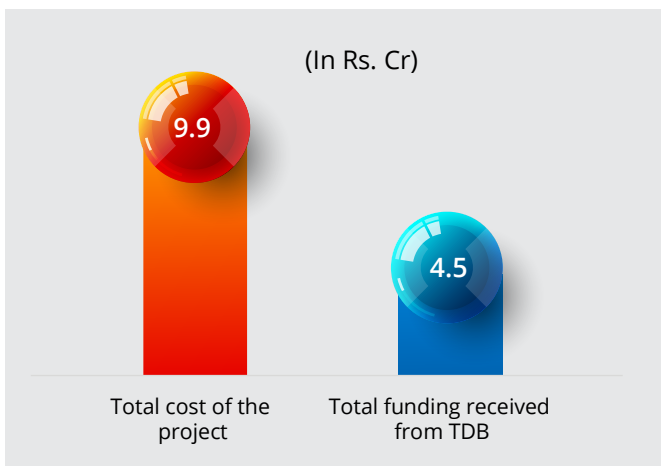
## M/s Clutch Auto Limited

(Faridabad, Haryana)



Clutch Auto Ltd. received funding of **(Rs. 4.5 crore)** on 10<sup>th</sup> June 2000

Clutch Auto Limited was incorporated on 13<sup>th</sup> May 1971. It is classified as Non-govt company. The company is involved in manufacture of parts and accessories for motor vehicles and their engines.



The Technology Development Board (TDB) entered into an agreement on 10<sup>th</sup> June 2000 with M/s Clutch Auto Ltd. for the project "Development & Commercialization of Ceramic Clutches Disk and Angle spring Clutches". A loan assistance of Rs. 4.5 crore was received against the total project cost of Rs. 9.9 crore.

### About the Technology

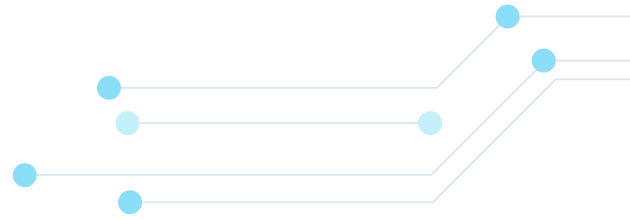
The developed product, Ceramic Clutches Disk and Angle spring Clutches were manufactured as improved versions of the existing product. The company has introduced ceramic clutches, developed in house using own R&D unit, whose life is expected to be more than twice that of the current family of clutches.

### Commercialisation of the Product

The project was undertaken in Faridabad. These products were developed using in-house technology. The products were commercialised on 1<sup>st</sup> January 2009 and had outreach in more than 15 states in India. They got recognition internationally including in North America. The total revenue generated from the product in the year of commercialisation (2009-10) was Rs. 5 crore. Total revenue from exports in the year of commercialisation was Rs. 5 crore as well. The organisation was able to sell 20,000 units in the year of commercialisation itself. 30,000 units have been sold till date of the product. 20,000 units have been sold as exports in the year of commercialisation.

*Ceramic Clutches Disk and Angle spring Clutches is sold not only in Indian states but also in North America*





## Impact of Funding

**08** Patents Granted

**13** Patent Applications

**10** Publications

**50** People Employed  
as a result of technology & Capacity  
development programmes

**Improved** Production processes  
after commercialisation

**SDG** Impacted



*"Our experience with TDB was excellent. TDB has been very supportive throughout our engagement, right from the beginning. The organization as a whole was the major beneficiary of the technology commercialized through TDB funding"*

**VK Mehta**  
CEO & MD  
Clutch Auto Limited

## M/s Energos Technologies Private Limited

(Mumbai, Maharashtra)



Energos Technologies Pvt. Ltd. received funding of **(Rs. 2.25 crore)** on 21<sup>st</sup> September 2018 for implementing the project titled 'Changing Energy Habits'

M/s Energos Technologies Pvt. Ltd. develops an end-to-end platform based on IOT and edge AI analytics to automate the energy flow between distributed energy loads and distributed energy resources. The company has operations in the United States, Australia, South East Asia and India. Energos is a product and software services company with vast experience in domains like energy management, building management, video surveillance, access control, transit systems and others.



Technology Development Board (TDB) entered into an agreement with M/s Energos Technologies Pvt. Ltd. for Development & Commercialization of YIVO Edge (for air conditioning optimization and energy saving through AI based controls), and received a loan assistance of Rs. 2.25 crore against the total project cost of Rs. 6.5 crore.

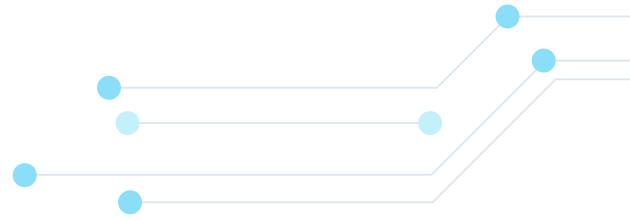
### About the Technology

YIVO Edge is a new-to-the market AI enabled sensor cum controller of heaters and air-conditioners of multiple makes and types. This internet based device provides a complete solution for monitoring and control of electricity for commercial officers with room air conditioners through development of Advanced Analytics and setting up of Global 24X7 NOC (Network Operating Centre) with Energy Saving Services on a SaaS model. Its distributed AI algorithms allow creating continuously learning virtual smart systems for vastly spread out businesses and campuses.

YIVO Edge reduce energy consumption and cost from heating and cooling or HVAC loads in a multiplication, multi user environment, making it ideal for large businesses and utility service providers to deploy energy efficiency services at grid scale. The company designs and manufactures over 350 security products with special focus in Public Infrastructure and Transport sectors.

### Commercialisation of the Product

This project was undertaken in Mumbai, Maharashtra. Company's expertise includes analytics, business intelligence, mobility solutions, cloud computing, collaboration technologies and social media. YIVO Edge by Energos Technologies Pvt. Ltd. was entirely new to the market. The company mainly used their in-house technology. The technology was commercialised on 20<sup>th</sup> September 2019. Total 10 crore were generated from the total revenue generated in the year of commercialisation and subsequent year. There were 10,000 units sold in the year of commercialisation (2019-20) and 25,000 units have been sold till date.



*YIVO Edge (for air conditioning optimization and energy saving through AI based controls) has outreach not only in Indian states but has also got international recognition, including in ASEAN and SAARC countries.*

### Impact of Funding

**01** Patent Granted

**01** Patent Application

**01** Publication

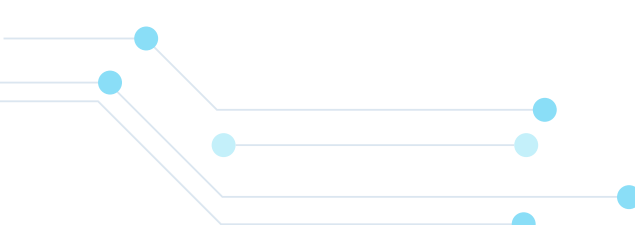
**30** People Employed  
as a result of technology & Capacity  
development programmes conducted

**SDG** Impacted



*“After receiving the TDB funding, we have implemented energy efficiency projects through AI operated air conditioners in multi-site businesses like banks and food chains in corporates. The company had to raise less equity funding which is very helpful in retaining higher shareholding in the beginning. Keep up the good work TDB. Congratulations to our government for this support to entrepreneurs”*

**Rajesh Solanki**  
CEO & MD  
Energos Technologies Private Limited



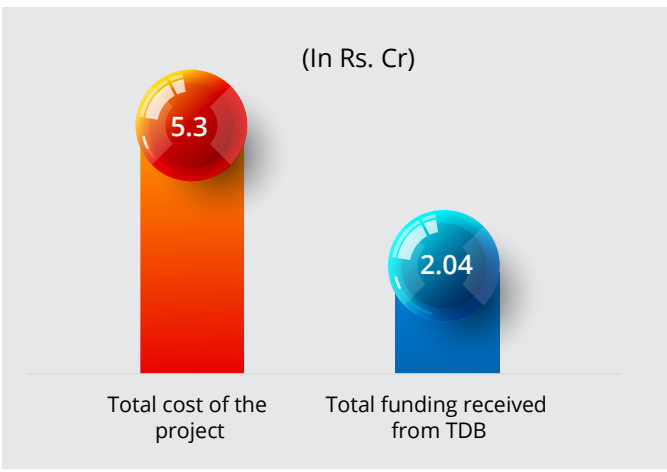
# M/s Iatome Electric India Private Limited



(Coimbatore, Tamil Nadu)

Iatome Electric India Pvt Ltd received funding of **(Rs. 2.04 crore)** on 28<sup>th</sup> March 2017

Iatome Electric India Pvt Ltd provides power electronics engineering & design solutions to customers worldwide. The company specialises in X-Ray generators, high voltage power supplies and customised power conversion equipment.



Technology Development Board (TDB) entered into an agreement with M/s Iatome Electric India Pvt Ltd for the project on "Development and Commercialization of Portable X-ray machines". The loan assistance received was Rs. 2.04 crore against the total project cost of Rs. 5.3 crore.

### About the Technology

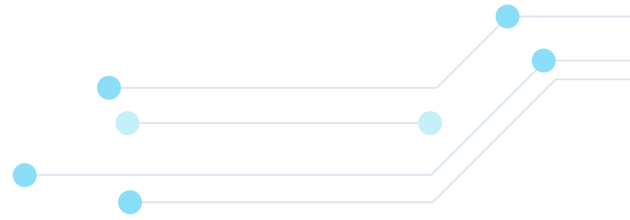
Iatome Electric manufactures diagnostic X-Ray machine, X-Ray generators and integrated tube heads for medical and industrial imaging applications. All designs are contemporary and use high frequency improved switching techniques. The diagnostic products are highly improved versions of the existing products in the market.

All products are designed and manufactured in India using award winning and innovative Indian technology. Over the years, Iatome Electric have become experts in electronics and X-Ray technology and offer a range of products in diagnostic and industrial x-ray machines.

### Commercialisation of the Product

This project was undertaken in Coimbatore, Tamil Nadu. All indigenous diagnostic X-Ray Machines were manufactured using in-house technology. The products were commercialised on 1st January 2020. These diagnostic X-Ray machines have outreach in more than 10 states in India. They also got international recognition including in SAARC countries. Total 300 units were sold in the year of commercialisation itself.

*Diagnostic X-Ray machines is sold not only in Indian states but has recognition in International market including SAARC countries*



## Impact of Funding

**Improved** Production processes & reduced cost of product after funding

**25** People Employed as a result of technology & Capacity development programmes

**SDG** Impacted



## Awards and Recognitions

2016: Medical Innovation Award, AERB Certification.

President's Technology Award, CM/L-4758079

CII Award, ISO 13485 Certified Company



AERB Certification



CM/L-4758079



ISO 13485 Certified Company.

*"We are supported by the TDB for commercialisation of indigenous science and technology. Over the years, we have become experts in electronics and X-Ray technology and offer a range of products in diagnostic and industrial X-Ray."*

**Uthamachandran P K**  
CEO & MD  
latome Electric India Pvt Ltd

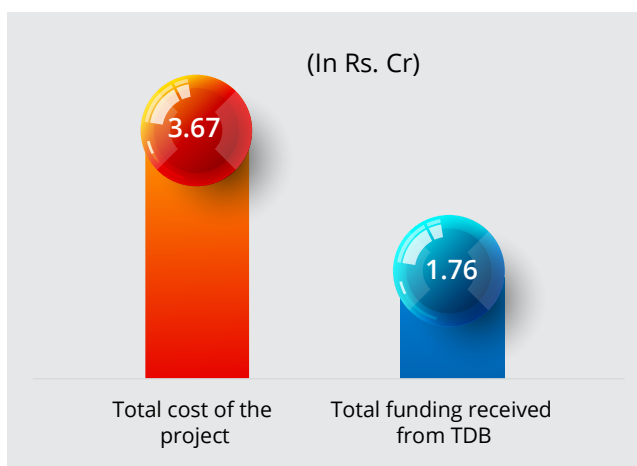
## M/s Imco Alloys Private Limited

(Mumbai, Maharashtra)



Imco Alloys Private Limited received funding of **(Rs. 1.76 crore)** on 17<sup>th</sup> November 2017

Imco Alloys Private Limited was incorporated on 12<sup>th</sup> October 2001. It is classified as Non-govt company and is registered at Registrar of Companies, Mumbai. The company is involved in manufacture of other fabricated metal products; and metal working service activities.



Technology Development Board (TDB) entered into an agreement with M/s Imco Alloys Private Limited for the project "Development and commercialization of Carbide Alloys technology". They received a loan assistance of Rs. 1.76 crore against the total cost of the project of Rs. 3.67 crore.

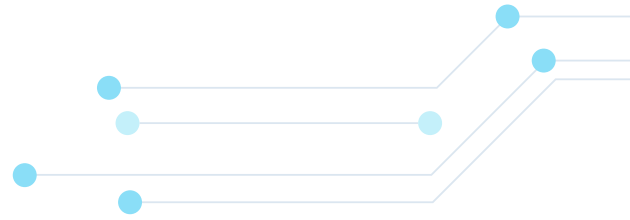
### About the Technology

IMCO Alloys is a manufacturer of replaceable carbide tips for various types of applications related to wear and tear issues faced in industries like sugar, cement, aerospace, mining & construction, automobile etc. The industry faced tremendous losses due to early wear and tear of these hammers and subsequently the mills had to take stoppage to change all these hammers in every two months interval. This technology is new to the market. IMCO using indigenous technology makes replaceable sintered carbide tips instrumental in stopping this practical and save millions of dollars in such downtime losses not only in India but to the entire world.

The company is the first authorised distributor of Ewac Alloys (L&T), Eutectic welding alloys and EDP chrome carbide wear plates. The sintered carbide alloy powder block/Plate is further exposed to metallurgical bonding with Ceramic embedded HiCr.

### Commercialisation of the Product

The project was undertaken in Mumbai. Imco Alloys Private Limited developed carbide alloys technology using in-house technology. Using the technology, IMCO Alloys was able to create the site and plant infrastructure and import the vacuum furnace from Poland which is a critical component for commercialization of their patented technology. The product was commercialised on 31st July 2019. Total 5 units have been sold till date. A total revenue of Rs. 1.1 crore was generated from the commercialization of the product. Rs. 0.14 crore have been received from exports of the product.



*Carbide Alloys technology is sold not only in Indian states but also in other countries including in North America, Japan and SAARC Countries*

## Impact of Funding

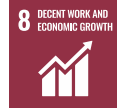
**02** Patents Granted

**01** Patent Application

**01** Publication

**10** People Employed  
as a result of technology & Capacity  
development programmes

### SDGs Impacted



*"The entire staff of IMCO are looking forward to creating a friendly atmosphere where we are looking at community that is living and working together to understand the needs of India and give more and more employment to not just feed the underprivileged but upgrade and make them work for this nation. IMCO makes indigenous technology that has been instrumental in overcoming the issues with the conventional technology and, at the same time save millions of dollars. With TDB support, M/s IMCO Alloys was able to create the site and plant infrastructure which went a long way towards the project success."*

**Joydeep Duttagupta**  
CEO & MD  
Imco Alloys Private Limited



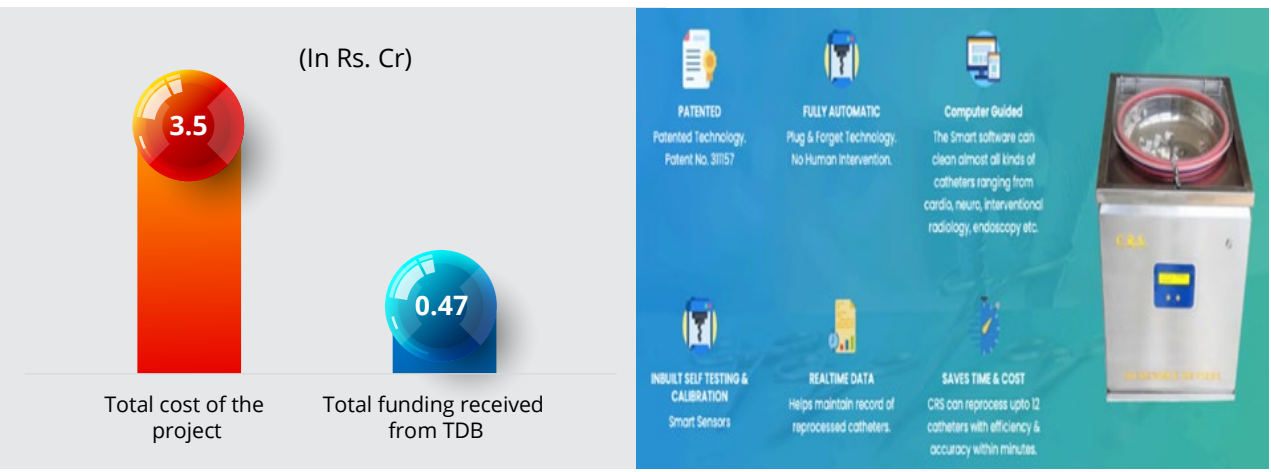
# M/s Incredible Devices Private Limited

(Chandigarh)



Incredible Devices Pvt. Ltd. received funding of **(Rs. 0.47 crore)** on 21<sup>st</sup> November 2017

Incredible Devices Pvt. Ltd. is the world's first company to build fully Automatic Reprocessing Systems.



Technology Development Board (TDB) entered into an agreement with M/s Incredible Devices Pvt. Ltd. for the project on 'Development and Commercialization of Catheter Reprocessing System'. It received a total loan assistance of Rs. 0.47 crore against the total project cost of Rs. 3.5 crore.

## About the Technology

CRS (Catheter Reprocessing System) defeats the current challenges of manual cleaning of catheters. It is an automatic computer guided catheter reprocessing machine with inbuilt self-testing and calibration which ensures best cleaning of catheters. It was new to the world, fully automatic and computer guided. This software can clean almost all kinds of catheters ranging from cardio, neuro, interventional radiology, endoscopy etc.

It offers accessible, affordable and safe treatment for poor patients. IDPL states that the reduction in price not only benefits 100% patients, but also additional 50% patients who earlier had no access to treatment, can now avail it. CRS targeted a niche market of Hospitals dealing in heart, vascular and neuro patients. The (CRS) system was validated at Fortis Hospital by QCI, Quality Council of India and was awarded the DL Shah Platinum Award for the technology. The (CRS) system was then accepted across the group which further helped to launch it in the market.

## Commercialisation of the Product

The project was undertaken in Chandigarh. It was developed using in-house technology. The system (CRS) was commercialised on 10th December 2019. 5 Units of CRS were sold in 2019-2020 and total 10 units of CRS have been sold till date. CRS brought a paradigm shift in technology by revolutionizing conventional catheter cleaning to the safest computerized system. A total revenue of Rs. 0.76 crore was generated from the commercialization of the product in the year of commercialization and subsequent year.

*CRS (Catheter Reprocessing System) is sold not only in India but also in SAARC Countries*



## Impact of Funding

**01** Patent Granted

**01** Publication

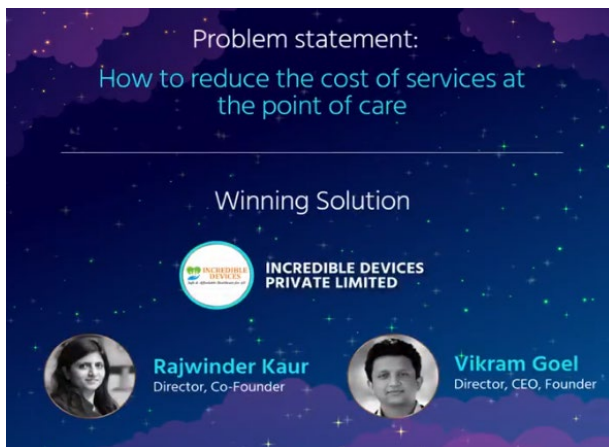
**07** People Employed

**Increased** market share after commercialisation

**Improved** Production processes & reduced cost of product after commercialisation

**Upgraded** Machinery & byproducts from process innovation linked to product

**SDGs Impacted**



*"TDB helped an engineer become an entrepreneur. Working in the healthcare sector, we have witnessed the struggles of poor patients and then explored ways to get rid of the root cause of the problem, which is expensive treatment. TDB helped us realize our dreams into reality by making healthcare safe, affordable & accessible for lakhs of people. With the funding support from TDB, we were able to start from a garage and reach the commercialization stage in just 24 months with a fully established R&D office.*

*With the TDBs support, Incredible Devices has been able to commercialize and successfully launch the product in the market. The impact created by CRS won us many awards and laurels such as PMJAY Startup Awards, Top 10 Innovator Under 35 by MIT Tech Review and Mint 2018, D. L. Shah Platinum Quality Awards by Quality Control of India, DST LOCKHEED MARTIN India Innovation Growth Programme 2016 (First Prize), MARICO Innovation Award 2018, CII India Innovation Initiative 2016 (First Prize, Rs. 50,000/-), Best Innovative Medical Product of the Year 2016 at 22<sup>nd</sup> International Medical Fair, Young Innovator of the Year 2016 by PGIMER, Chandigarh, ICICI Advantage Award 2018, Conquest 2017 (Prize Money: Rs. 1,50,000/-), MARICO Innovation Award 2018 etc."*

**Vikram Goel**  
CEO & MD  
Incredible Devices Private Limited

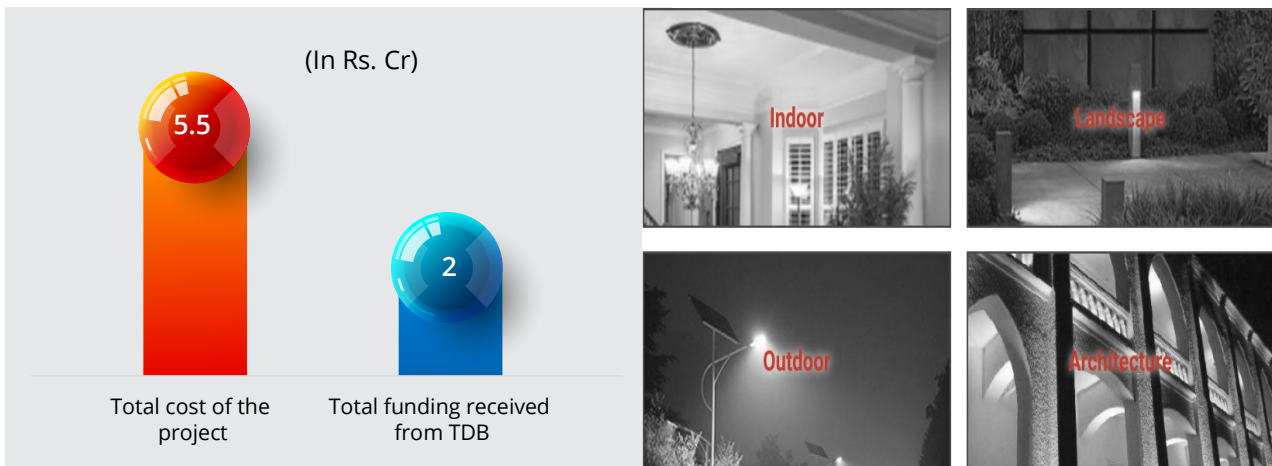
## M/s Instapower Limited

(Roorkee, Uttarakhand)



Instapower Ltd received funding of **(Rs. 2 crore)** on 6<sup>th</sup> January 2009

Instapower Ltd has been a leading name in power electronics and LED lighting for over two decades. It provides lighting design solution and lighting design consultancy. Instapower Ltd has done a number of Government and Private projects including Signature Bridge in Delhi, Gujarat Bhawan In Delhi and Rumi Darwaza in Lucknow. The company has also done illumination of Gandhinagar Railway Station in Gujarat and Many Metro Stations of Lucknow Metro. The company deals in Indoor Lights, Outdoor Lights, Landscape Lights, Architectural Lights and Aviation Lights.



Technology Development Board (TDB) has entered into an agreement with M/s Interpower Ltd for the project on “Manufacturing and Commercialization LED Revolving Light signaling”. It received a loan assistance of Rs. 2 crore against the total project cost of Rs. 5.5 crore.

### About the Technology

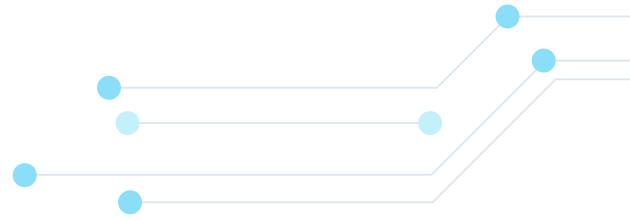
The project supports the design, development and commercialization of two LED based Products

- Medium Intensity Revolving Aviation Obstruction light
- Railway signalling systems

The proposed technology is superior to the existing technology as the design consumes the least amount of power and can be well integrated with solar power backup. LED Railway Signaling System uses patented current regulator and current sense technology and would function even if 40% of the LED's fail.

### Commercialisation of the Product

The project was undertaken in Raipur, Roorkee, and Haridwar. Instapower Ltd was able to make products by adding more features in existing versions of the products. The project supports commercial production using patented technology for development of power factor correction based on secondary optics to obtain enhanced results in terms of the directional and focusing aspects.




Instapower has state-of-the-art testing equipment and conceives, designs and makes LED based products, including all electronics like LED PCB's, LED drivers and fixtures. After final assembly, extensive in-house testing is done before supplying products to the market. It took around 24 months to commercialise the product after the funding was received from TDB. Since then, Instapower Ltd has sold over 2000 units in all over India.

*LED Revolving Lights made by Instapower Ltd is sold across India and has also received international recognition including in Africa, South East Asia and SAARC countries*

Instapower's vast product range is well accepted by various government, semi-government organizations/ institutions and private companies and has received satisfactory performance test certificates. Its products have been supplied and installed at Rajpath, Pragati Maidan, Vigyan Bhawan, Nirman Bhawan and at other prestigious landmarks like Rashtrapati Bhawan and the Parliament House. Instapower has successfully supplied over 5,00,000 LED lights to various customers in India & abroad.

### Impact of Funding

<p><b>05</b> Patents Granted</p>	<p><b>Upgraded</b> Machinery &amp; byproducts from process innovation linked to product</p>
<p><b>Improved</b> Production processes &amp; reduced cost of product after funding</p>	<p><b>SDGs Impacted</b></p> 

*"We would like to thank TDB for its never ending support and help. Working with TDB has been a really amazing experience."*

**H.R. Vaish**  
CEO & MD  
Instapower Limited

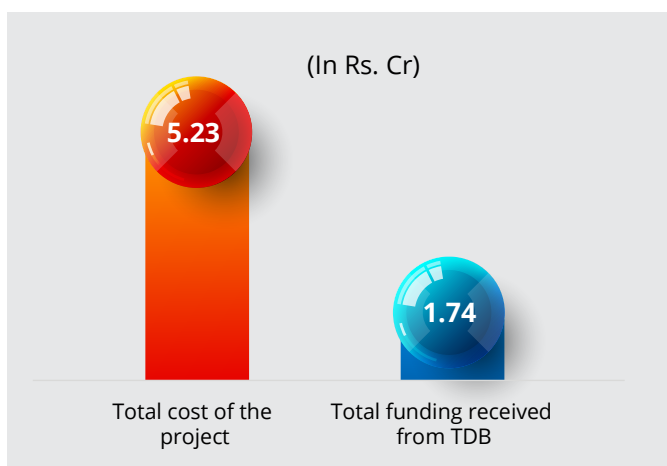
## M/s Kan Biosys Private Limited



(Punjab, Haryana)

Kan Biosys Private Limited received funding of **(Rs. 1.74 crore)** on 27<sup>th</sup> March 2018

Kan Biosys Private Limited is a specialized agri-biotech company working in the field of plant nutrition and pest management. With a vision to be a Pan India and then global, Kan Biosys is committed to bring full plant potential to life by microbial inputs and precision agriculture.



Technology Development Board (TDB) entered into an agreement on 27th March 2018 with M/s Kan Biosys Pvt. Ltd., Pune for Project on "Development and commercialization of straw utilization technology: In-situ Accelerated and Sustainable Rice Straw Decomposition (ASRSD). They received a loan assistance of Rs. 1.74 crore against the total project cost of Rs. 5.23 crore.

### About the Technology

Kan Biosys has developed a novel aerobic process for in situ incorporation of rice stubble using Speed Kompost. In-situ Accelerated and Sustainable Rice Straw Decomposition (ASRSD), which was new not only to the firm and market but also new for the world.

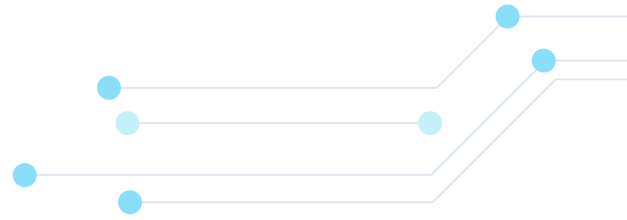
One of the major benefits of this technology (ASRSD) is that the microbial cultures are directly added to the soil where they aid in cellulose, starch and silica conversion. This technology involves minimal use of machinery and water.

This is an economically viable option to farmers for management of rice straw and at the same time maintaining soil health for higher yield and pollution abatement measures. The technology is India's solution to rampant stubble burning. Reports of 3 years trials confirm the beneficial effects of ASRSD on soil properties and more than 20 percent increase in yield of wheat which is cultivated after rice straw utilization by ASRSD.

### Commercialisation of the Product

The project trials were undertaken in Punjab & Haryana. It was developed using in-house technology. A total of 31,975 units were sold in the year of commercialization itself. Total revenue of Rs. 1.35 crore has been created from the commercialization year and the subsequent year. The company has 16 state of the art microbial products developed using in-house technology. All products are marketed in India and exported to over 5 countries routinely.

Field trials were initiated at Punjab Agricultural University and Haryana Agricultural University to scientifically evaluate the impact of technology for straw utilization. Speed Kompost TM Quality



control laboratory was upgraded to ensure product quality as per FCO norms. The equipment procured were Kel Plus, Fume Hood, accessories for AAS, etc. The Speed Kom post TM production capacity was upgraded to 1000 tonnes/annum. The equipment procured were fermenter, water storage tanks, mixers, conveyer belt, compressors, rotary shakers, etc.

Marketing strategies used for successful implementation of ASRSD included farmer and dealer meetings, radio jingles, hoardings, television/newspaper/magazine advertisements, press conferences at Delhi and Ludhiana, participation in Krishi mela at Punjab Agriculture University (PAU), and participation in TDB exhibition.

Around 120 tons of the product has been sold on over 30,000 acres of rice fields since 2018 leading to 3000 plus satisfied rice farmers.

***In-situ Accelerated and Sustainable Rice Straw Decomposition (ASRSD) is sold not only in India but also in other countries including North America***

### Impact of Funding

**01** Publication


**45** People employed as a result of technology

**Improved** machinery after commercialisation


**Improved** Production processes & reduced cost of product after funding

**SDGs Impacted**


2  
ZERO HUNGER




3  
GOOD HEALTH AND WELL-BEING




6  
CLEAN WATER AND SANITATION




13  
CLIMATE ACTION



15  
LIFE ON LAND



17  
PARTNERSHIPS FOR THE GOALS





In the year 2020, a total of four companies including Kan Biosys Private Limited have been selected for the National Award for MSME's. The Award of Rs. 15 lakhs each in this category is given to selected MSME's that have successfully commercialized the product based on indigenous technology. The awards were given by the Technology Development Board (TDB), a statutory body of Government of India functioning under the Department of Science of Technology for the year 2019-20. The winners were selected from a total 128 applications after thorough examination by eminent technologists and a stringent two-tier evaluation process.

*"TDB has been very supportive throughout our engagement, right from the beginning. One of the major benefits of this technology is that the microbial culture is directly added to the soil where they aid in cellulose, starch and silica conversion. This technology involves minimal use of machinery and water. This is an economically viable option to farmers for management of rice straw and at the same time maintaining soil health for higher yield and pollution abatement measures"*

**Sandeepa Kanitkar**  
CEO & MD  
Kan Biosys Private Limited

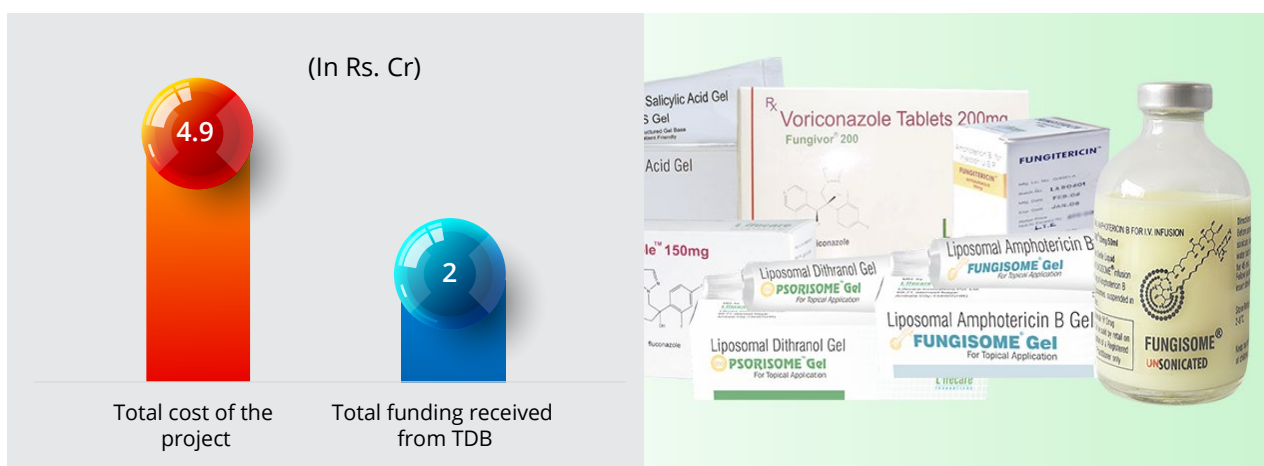
## M/s Lifecare Innovations Private Limited

(Lucknow, Uttar Pradesh)



Lifecare Innovations Private Limited received funding of **(Rs. 2 crore)** on 3<sup>rd</sup> February 2010

Lifecare Innovations Private Limited was incorporated in 2000 as a biotechnology company to address unmet medical needs. The company is engaged in Research & development, manufacturing and marketing of healthcare products and specializes in controlled release pharmaceuticals employing an array of technologies of novel drug delivery systems (NDDS).

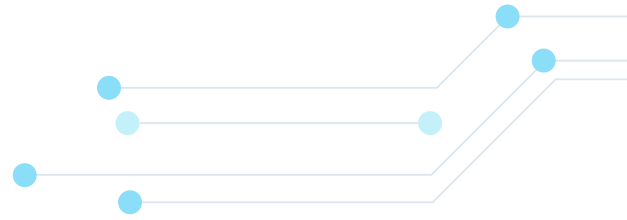


Technology Development Board (TDB) entered into an agreement with M/s Lifecare Innovations Private Limited for the project on “Development and Commercialization of Controlled Release Pharmaceuticals: Liposomal Formulation”. It received a loan assistance of Rs. 2 crore against the total project cost of Rs. 4.9 crore.

### About the Technology

Liposomal Amphotericin B (LAmB-S) in Saline Suspension was a critical unmet medical need and a life-saving drug used for treatment of Kala-azar (Visceral Leishmaniasis; VL) and systemic fungal infections. Healthcare products developed using Liposomal Technology were entirely new to the world at that time. *India was solely dependent on imported Liposomal Amphotericin B resulting in outgo of precious foreign exchange. FUNGISOME is both an import substitute and source of export income.* FUNGISOME i.v. is the first in Asia and one of the only two Liposomal Amphotericin B injections in the world and is produced by M/s Lifecare Innovations Private Limited. It is the only hepato-safe and nephro-safe antifungal drug. The Nephrotoxicity, anti-fungal efficacy and daily dose of FUNGISOME are zero, >90%, 1-3mg/kg body wt./day in comparison to the imported LAmB which is 27%, 50% and 3-6mg/kg/day respectively, making FUNGISOME safer, more effective, and an economical drug to treat systemic fungal infections. FUNGISOME is effective in the treatment of MDR nosocomial infections viz. *Candida auris*, and *Candida haemuloni* that are resistant to imported LAmB. FUNGISOME has helped hospitals minimize mortality and morbidity caused by fungal infections and antifungal drugs.

For VL, a single dose of FUNGISOME followed by oral Mitefosine for 14 days has given 100% treatment success, no relapse and no Post-kala-azar dermal leishmaniasis (PKDL) for at least 5 years, whereas, the imported LAmB failed in VL Clinical Trials in Africa and caused PKDL in 60% patients. PKDL is caused due to incomplete VL treatment because of which the parasite hibernates in skin and acts as a parasite reservoir for future VL episodes.



FUNGISOME single dose treatment is a logistics boon for the VL treatment and PKDL prevention programs globally. FUNGISOME Gel is the only topical Amphotericin B for treatment of topical fungal infection of skin, burn victims, bed-sores etc. The gel is also the most effective treatment for Eye fungal infections. Liposomal Dithranol and Lipotar are novel formulations for treatment of Psoriasis that affect about 2% of the population.

TDB funding helped to build the technology and healthcare products for medical needs.

### Commercialisation of the Product

Lifecare Innovations Private Limited is a Biotechnology company pioneering in Liposomal Technology for unmet medical needs. This project was undertaken in Biotech Park, Lucknow. These healthcare products were manufactured using in-house technology. The products were commercialised on 11th May 2003. These healthcare medicines have outreach in more than 15 states in India. They also got international recognition including in North America, Europe, China, Japan, South Korea and Africa. Approximately 4,00,000 products have been sold till date.

*Liposomal Amphotericin B in Saline Suspension for treatment of Kala-azar and Systemic Fungal infections, Liposomal Amphotericin B Gel for Topical and Ophthalmic Fungal Infections, Liposomal Dithranol for Psoriasis and Coaltar and Salysilic Acid- Phospholipid Structured Gel for Psoriasis F is sold not only in India but also in international markets including in North America, Europe, China, Japan, South Korea and Africa.*

### Impact of Funding

**30** People Employed as a result of technology & Capacity development programmes

**Improved** Production processes & reduced cost of product after funding

**SDGs Impacted**



7 AFFORDABLE AND CLEAN ENERGY



8 DECENT WORK AND ECONOMIC GROWTH



13 CLIMATE ACTION

### Awards and Recognitions

<p><b>2010:</b> FUNGISOME Top Medicine Innovation Award</p>	<p><b>2010:</b> Vishnu Kamal Award from Cancer Awareness &amp; Care Organization</p>	<p><b>2015:</b> Haryana Vigyan Ratna Award</p>	<p><b>2015:</b> ICMR and National Innovation Foundation of India Certificate of Recognition for Contribution in Science &amp; Technology</p>
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*“TDB has been very supportive throughout our engagement, right from the beginning. It is a good program for encouraging Innovation and Techno-preneurship. With the help of TDB Funding, we were able to commercialize the in-house developed technology. Low funding requirement from bank, reduced production cost, increased employment, availability of local options through import substitution were some of the benefits. TDB significantly complemented us as an enabler in this National Mission of making India self-reliant in NDDS drugs”.*

**Jitendra N. Verma**  
CEO & MD  
Lifecare Innovations Private Limited

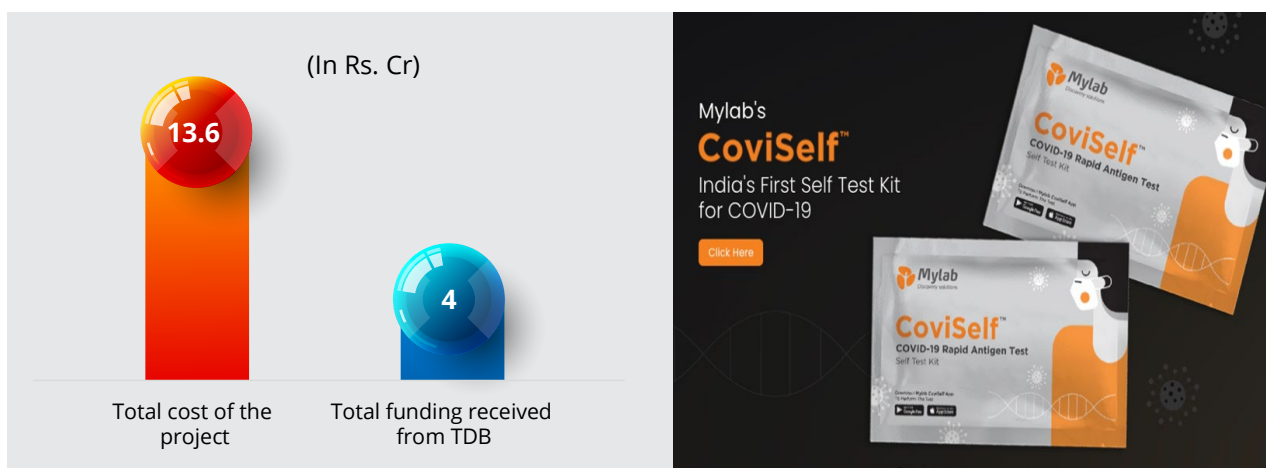
## M/s Mylab Discovery Solutions Private Limited

(Pune, Maharashtra)



MyLab Discovery Solutions Pvt Ltd received funding of **(Rs. 4 crore)** On 22<sup>nd</sup> May 2020

MyLab Discovery Solutions Pvt Ltd is an Indian molecular biology company. MyLab Discovery Solutions began with an idea to simplify the complex nature of disease detection, making it more affordable and bringing cutting-edge science and technology to everyday detection. In just a few years the idea has evolved into best-in-class products and services that empower the work of many hospitals and laboratories globally.



Technology Development Board (TDB) has entered into an agreement with M/s Mylab Discovery Solutions Pvt Ltd for the project on 'Manufacturing of Testing Kits to detect COVID Corona Virus' and received a grant assistance of Rs. 4 crore against the total project cost of Rs. 13.6 crore.

### About the Technology

Currently, most pandemic-prone diseases, including coronavirus, are diagnosed accurately by polymerase chain reaction (PCR) only, a molecular technique that is the gold standard in diagnostics, and is also recommended by CDC. The PathoDetect™ COVID-19 detection kit has been developed and deployed implementing a robust diagnostic methodology for use in public health laboratory settings for the screening and detection of COVID-19. The company has developed a validated diagnostic workflow for the same. The workflow reliably detects COVID-19, and further discriminates COVID-19 simultaneously within 2.5 hours compared to 7 hours+ required by other protocols.

PathoCatch COVID-19 Ag Card test is used for in vitro qualitative detection of the antigen of novel Coronavirus in human throat swabs or nasal swabs.

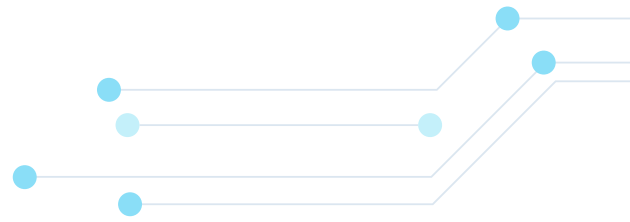
This rapid kit for testing COVID-19 virus can be used with samples from throat or nasal swabs and gives results in 20 minutes. The test is a Point of Care test and has the best performance characteristics in ICMR evaluation.

The company has recently developed a home testing kit called "COVISELF", India's first self-test kit that has been approved by ICMR and the production of the same is being ramped up for commercialization.

### Commercialisation of the Product

This project was undertaken in Lonavala, Maharashtra. The company offers a broad range of complete high quality, CE-IVD marked real-time PCR kits with ISO13485 manufacturing standards, produced in WHO - cGMP compliant facility. Each reagent represents the level of quality required





when developing tests for the clinical market. The company mainly uses in-house technology. The products were commercialised in 2020. A total revenue of Rs. 8.4 crore has been generated in the year of commercialization and subsequent year itself. A total of 39 lakh RT-PCR tests have been sold till date.

*Coviself / RT-PCR & Antigen developed by Mylab Discovery Solutions have outreach in almost all Indian states, and also got international recognition, including in Africa.*

## Impact of Funding

**15** People Employed  
as a result of technology & Capacity  
development programmes  
conducted

**SDG** Impacted



**Improved** Production processes &  
reduced cost of product after funding

*"Through TDB funding we were able to ramp up our manufacturing of RT-PCR kits from 40,000 tests per day to 4,00,000 tests per day, which enabled Nation to test more. We wanted to augment our capacity through automation. Before automation our capacity to manufacture was around 20,000 tests per day which increased to 4,00,000 test per day after automation. TDB funding helped us in acquiring the capital assets for automation. Being bootstrapped we started our journey by having an R&D lab in Pune and we also started building the Manufacturing facility in Lonavala. As our facility was ready and we had received CDSCO approval in January 2020, we were gearing up for launch of our various Biomolecular Diagnostic kits for Blood Test to detect hepatitis and various other products. In the meanwhile, when COVID -19 virus was rampant in China, the R & D team at Mylabs was focusing on how they can contribute to detection and in March 2020 we got the approval for our kits which helped the nation in doing more testing."*

**Hasmuk Rawal**  
CEO & MD

Mylab Discovery Solutions Private Limited

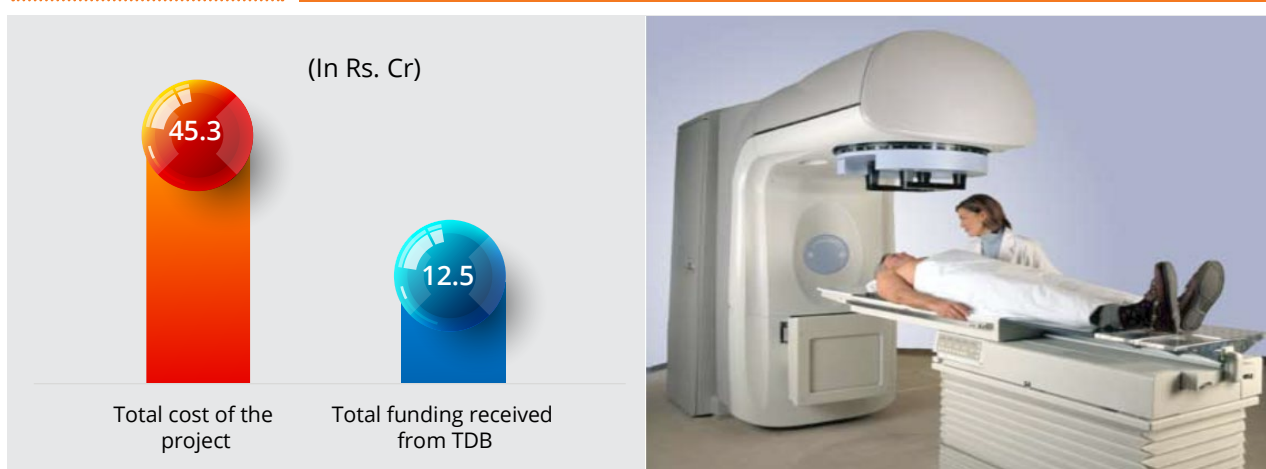
## M/s Panacea Medical Technologies Private Limited

(Malur, Karnataka)



M/s Panacea Medical Technologies Pvt. Ltd. received funding of **(Rs. 12.50 crore)**

Panacea Medical Technologies Pvt. Ltd. is a technology centric company which manufactures top notch medical equipment to meet the needs of today's radiotherapy and radiology centres. With an insight to provide complete and comprehensive solutions for cancer care, Panacea has a multi-faceted team of talented and dedicated engineers working round the clock to design and develop products in compliance to international standards. Panacea's equipment is manufactured and produced to meet global standards, in a state-of-the-art manufacturing facility.



Technology Development Board (TDB) has entered into an agreement with M/s Panacea Medical Technologies Pvt. Ltd. for the project on "Commercialization & setting up of manufacturing line for indigenous Medical LINAC". The project received the loan assistance of Rs. 12.5 crore against the total project cost of Rs. 45.3 crore.

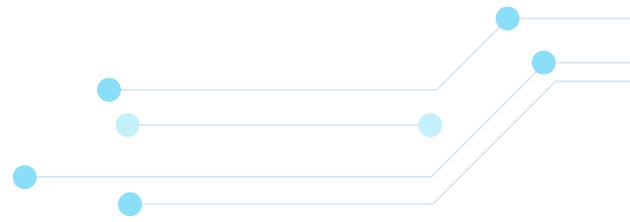
### About the Technology

A medical linear accelerator (LINAC) machine is most commonly used for external beam radiation treatments for patients with cancer. It delivers high-energy x-rays or electrons to the region of the patient's tumor. The product is an improved version of existing products in the market. These treatments can be designed in such a way that they destroy the cancer cells while sparing the surrounding normal tissue. The LINAC is used to treat all body sites, using conventional techniques, Intensity-Modulated Radiation Therapy (IMRT), Volumetric Modulated Arc Therapy (VMAT), Image Guided Radiation Therapy (IGRT), Stereotactic Radiosurgery (SRS) and Stereotactic Body RadioTherapy (SBRT). There is a high cost and limited access to Radiotherapy across several countries.

### Commercialisation of the Product

The project was undertaken in Karnataka. Panacea Medical Technologies Pvt. Ltd. was able to make products by adding more features in existing versions of the medical LINAC for radiotherapy. Today, Panacea's 100+ radiotherapy machines are commercialized in South & South-East Asia and East & West Africa which have helped their hospitals to treat over 280,000 cancer patients. With installations in premier institutes across the globe, Panacea is leaving no stone unturned to ensure that every cancer patient has access to the best radiotherapy treatment.




Medical LINAC is a complex technology was received from SAMEER (Society for Applied Microwave Electronics Engineering & Research), an R&D Laboratory. The company has developed the technology in house which is recognized by DSIR. The company has worked on developing product and process



features to be self-reliant and have established the product and processes to make the majority of the components in house by part count. The company has designed & built special purpose machines for production of critical components for indigenously manufacture. The product has received CE approval. TDB funding helped to build the technology. A total revenue of Rs. 8 crore has been generated in the year of commercialization and subsequent year itself.

**Medical LINAC for Radiotherapy by Panacea Medical Technologies Pvt. Ltd. is sold across India and has also received international recognition including in North America, Europe, South Korea, ASEAN, SAARC countries and Africa.**

### Impact of Funding

<p><b>19</b> Patent Applications</p> <p><b>01</b> Granted Patent</p> <p><b>02</b> Publications</p> <p><b>150</b> People employed as a result of technology &amp; Capacity development programmes</p>	<p><b>Upgraded</b> Machinery &amp; byproducts from process Innovation linked to product</p> <p><b>Improved</b> Production processes &amp; reduced cost of product after funding</p> <p><b>SDGs Impacted</b></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>3 GOOD HEALTH AND WELL-BEING</p> </div> <div style="text-align: center;">  <p>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</p> </div> <div style="text-align: center;">  <p>5 GENDER EQUALITY</p> </div> </div>
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*"The support from the entire team of TDB was very good. They have truly been the supporting pillar for the success of the project. We attribute the success of the project entirely to TDB support.*

*Being an MSME organization, developing complex technology was a tough task for the organization, including expanding the team size. With timely support from TDB at sanction and disbursement and a lot of non-financial advice and guidance, the organization was benefited. There is a high cost and limited access to Radiotherapy across several countries especially for the common man. With our solution the cost of treatment will be significantly reduced and access to such modern technology will be increased, benefitting society.*

*Development of high technology products is the need of the hour for our nation. This is a complex technology developed entirely in India, generating confidence in young people of our country as a result of this work. We have not just generated employment for young people, but have kindled interest in product development, regulatory compliance, process enhancement. employment generation is incidental for about 240+ techno pruners who are part of team Panacea. This is nation building.*

*TDB with its funding and handholding attitude has helped us to reach the completion of the product. We convey our heartfelt gratitude for the entire team at TDB. Probably these two words cannot describe our appreciation for the support that TDB gave for our project. We have also understood from other beneficiaries of TDB assistance that they too have received similar support. We request that this be continued for more emerging SME enterprises to be supported for the benefit of our nation by growth of indigenous technology."*

**Subrahmanyam GV**  
CEO & MD  
Panacea Medical Technologies Private Limited

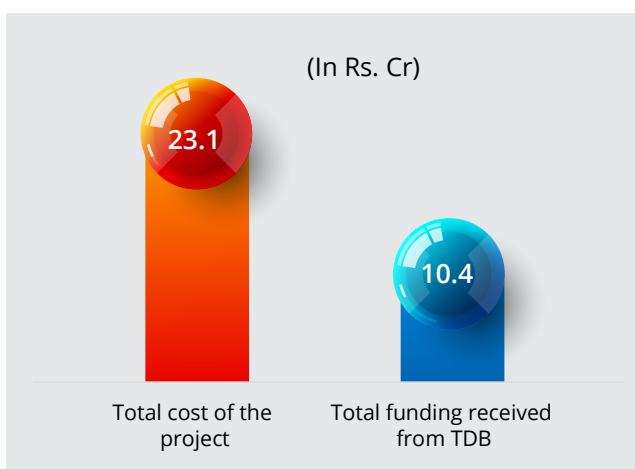
## M/s Sahajanand Laser Technology Limited

(Gandhinagar, Gujarat)



Sahajanand Laser Technology Ltd. received funding of **(Rs. 10.4 crore)** on 1<sup>st</sup> May 2009

Sahajanand Laser Technology Ltd. (SLTL) is one of the largest manufacturers, supplier & exporter of Laser Systems in India and one of the largest equipment suppliers in the world for the Diamond Industry.



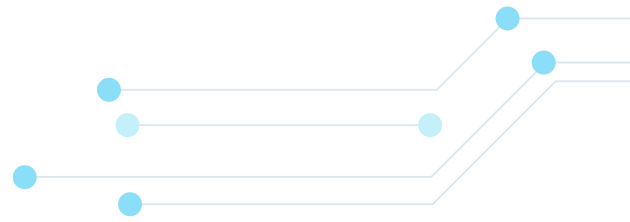
Technology Development Board (TDB) has entered into an agreement on 1<sup>st</sup> May, 2009 M/s Sahajanand Laser Technology Limited for the project "Development and Commercialization of Laser Cutting Machines, Laser Marking Machine, Diamond Processing Machines, after sales services of Machines like AMCs, Call Base, upgrade of software and hardware etc". It received the loan assistance of 10.4 crore against the total project cost of 23.1 crore.

### About the Technology

Convention laser cutting machines use Nd: YAG, and CO2 lasers for material processing applications. Fiber laser is a new-to-the-world technology and has advantages over conventional technologies used for building laser systems. Sahajanand Laser Technology Ltd (SLTL) has taken up the project to commercialize the fiber laser cutting systems in India for the first time in the world. Laser Cutting Machines, Laser Marking Machine, laser enabled Diamond Processing Machines were entirely new not only to the market but also new to the world. Lot of work is being carried out to commercialize the fiber laser based laser cutting systems in the world.

SLTL remained one step ahead in the design, development and commercialization of laser cutting systems in India. Design and development of the laser systems based on fiber laser supplied by IPG Germany is completed and trials on material like MS, SS are over. Results prove that the product is ready to enter the market in a big way. SLTL has already started invoicing the machines and started negotiating with prospective clients in India and abroad.

An ISO 9001:2008 company with 6 manufacturing units and more than 7000 successful installations worldwide, SLTL commands a lion's share in the Laser Industry. SLTL use wide range of lasers for varies applications such as Laser Cutting, Marking, Welding, Micro machining, Solar Cell Scribing/ Cutting, Scanning, Diamond processing, Medical surgeries, Medical Stent cutting, etc, which caters to the needs of diversified industries.



## Commercialisation of the Product

The project was undertaken in Gandhinagar, Gujarat. These Laser Cutting, Laser Marking and Diamond Processing Machines were manufactured using in-house technology. These machines were commercialised on 31<sup>st</sup> March 2011. These machines have outreach in more than 15 states in India. They also got international recognition including in North America and Africa. Total 278 units have been sold till date.

*Laser Cutting Machines, Laser Marking Machine, Diamond Processing Machines manufactured by Sahajanand Laser Technology is sold not only in Indian states but also in North America and Africa. Serbia, Mexico, Saudi Arabia, United Arab Emirates and Indonesia is the top export country.*

## Impact of Funding

**02** Patent Applications

**01** Granted Patent

**01** Publication

**Improved** Production processes & reduced cost of product after funding

**30** People employed as a result of technology & Capacity development programmes

**SDGs Impacted**



Winner of "Technology Day Award" in 2008 & 2011. Apart from these awards, SLTL has received many awards such as 2004 Export Excellence award, 2005 NRDC award, 2014 Best MSME Award by Hon'ble PM, 2019 and 2021 Best Brand Award by Economic Times, 2017 Manufacturing Excellence award and many others.

*"Overall experience with TDB was smooth. With the help of TDB Funding, we were able to commercialize the in-house developed technology. Low funding requirement from bank, reduced production cost, and increased employment with import substitution were the clear benefits".*

**Maulik Patel**

CEO & MD

Sahajanand Laser Technology Limited (SLTL Group)

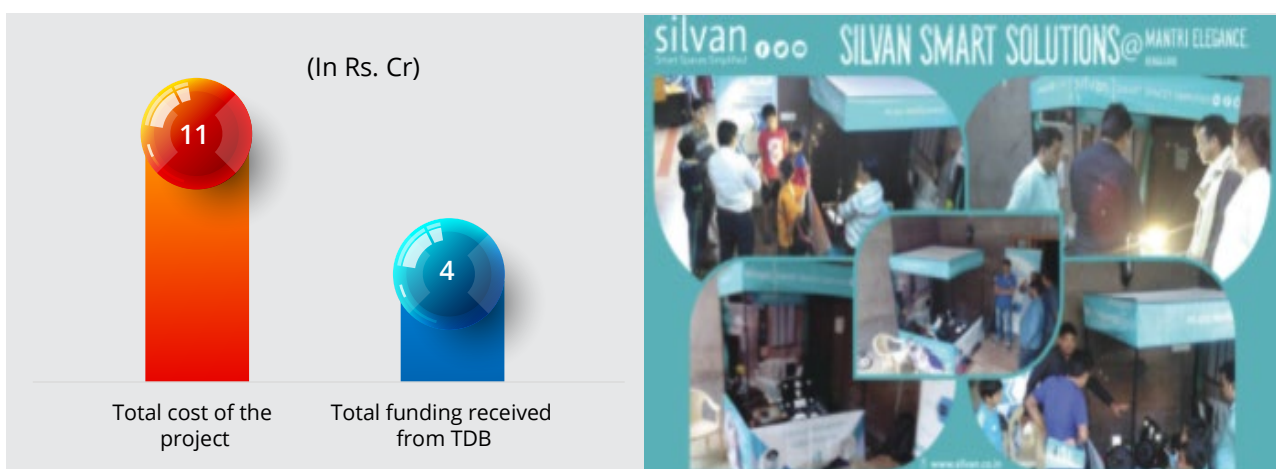
## M/s Silvan Innovation Labs Private Limited

silvan

(Bengaluru, Karnataka)

Silvan Innovation Labs Pvt Ltd. received funding of **(Rs. 4 crore)** on 1<sup>st</sup> March 2011

Founded in 2008, Silvan Innovation Labs is a technology company focused on providing automation solutions for homes, offices and hotels.



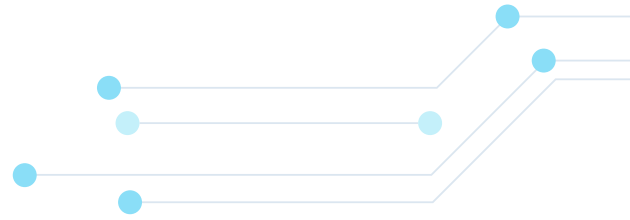
Technology Development Board (TDB) has entered into an agreement with M/s Silvan Innovation Labs Private Limited for the project 'Development and Commercialization of Real-time video analytics over wireless IP video surveillance camera system'. The project received a loan assistance of Rs. 4 crore against the total project cost of Rs. 11 crore.

### About the Technology

The wireless surveillance product from Silvan Innovation Labs is an all-digital system comprising digital cameras with embedded edge electronics that provide real-time security alerts in addition to the traditional streaming of the video to a remote server for secondary alerts and post event analysis. Real-time video analytics over wireless IP video surveillance camera systems was entirely new to the market. Unlike most current analog camera systems, Silvan's products are completely in the digital domain and video is streamed over IP. Current installed base of legacy analog cameras can be easily migrated with the Silvan's Eagle product that converts analog streams to digital streams over which video analytic algorithms are applied. The company is able to use these capabilities to create a home automation market for India using totally indigenous technologies.

The key innovations in the Silvan offerings are a system of cameras that have embedded analytics software and the micro-electronics in the camera to generate alerts in real-time at the edge unlike any system available in the market today. To address the needs of the Indian Market, the Silvan cameras have for the first time introduced on-board power source in high capacity Li-ion batteries and can continue to operate for 30 days with the algorithm after power loss. This innovative approach has helped us get orders from Godrej for introducing surveillance cameras in their Safe Deposit Lockers.

The On-Board Memory on SD cards will capture and store 7 days of continuous video information. The time-stamped on-board storage is very essential for brown-out conditions and post event



reconstruction of the video for forensic investigation. The system of cameras functions in tandem and gets reassigned if a camera in the system fails or is destroyed. The local memory is still intact and can be retrieved with a WiFi or a 3G modem on-board the camera. This again is unlike any other system available today.

### Commercialisation of the Product

The project was undertaken in Bangalore. This surveillance camera system was developed using in-house technology. The system was commercialised on 15<sup>th</sup> May 2013. Total 550 units have been sold till date. A total revenue of Rs. 0.35 crore was generated from the commercialization of the product.

*Real-time video analytics over wireless IP video surveillance camera system is sold not only in Indian states but also in SAARC Countries*

### Impact of Funding

<b>01</b> Patent Application	<b>Improved</b> Production processes & reduced cost of product after funding
<b>20</b> People employed as a result of technology & Capacity development programmes conducted	<b>SDG Impacted</b> 

*“Experience with TDB was excellent. We developed in-house capabilities to build embedded system products specifically targeted at the Indian market. We were able to use these capabilities to create a home automation market for India using totally indigenous technologies. The TDB funding was extremely useful in creating embedded systems product development capabilities in the organization. It also helped understand the specific needs of the Indian market and we were able to create products in the home automation space that MNCs were not able or willing to do.”*

**Giridhar Krishna**  
CEO & MD  
Silvan Innovation Labs Private Limited

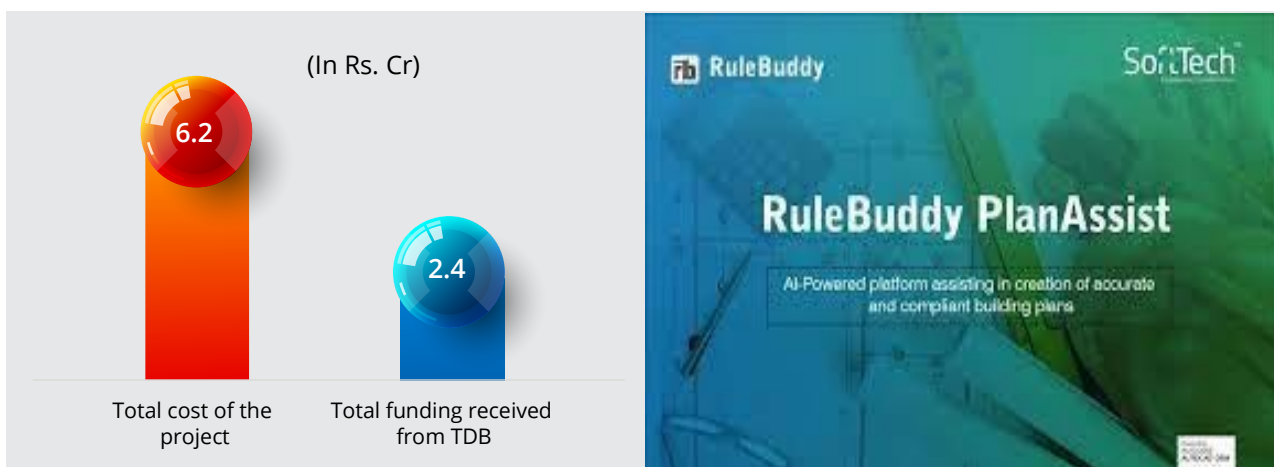
## M/s SoftTech Engineers Limited

(Pune, Maharashtra)



SoftTech Engineers Ltd received funding of **(Rs. 2.4 crore)** on 28<sup>th</sup> March 2017 to develop its technology called **Rulebuddy**

SoftTech Engineers Limited have been innovating reliable and world-class software products for the niche vertical of Architecture-Engineering-Construction in India.



Technology Development Board (TDB) has entered into an agreement with M/s SoftTech Engineers Limited for the project "Development and Commercialization of RuleBuddyproduct." The project received the loan assistance of Rs. 2.4 crore against the total project cost of Rs. 6.2 crore.

### About the Technology

RuleBuddy, is a SMAC (social, mobile, analytics and cloud) enabled portal for providing e-commerce-based services to the professionals like Architects, Project owners, independent homeowners / buyers and real estate owners. It is a unique AI powered platform assisting in creation of accurate and compliant building plans. RuleBuddy also works to provide specific rules related to projects just by providing basic keywords and/or project information. RuleBuddy technology was new to the market. It leverages successfully implemented cloud enabled solutions for automation of building plan permit systems in more than 500 ULBs in India, which is extensively used by authorities engaged in granting permissions to owners/consultants of the building project. RuleBuddy is a web portal and mobile app-based system developed on Microsoft.Net Framework. It is developed using DNN (DotNetNuke), C# and ASP.Net. Microsoft SQL Server and MongoDB. With the above technology RB Project methodically uses the data and functions of the current system to the company's new web-based and mobile app based product in order to preserve data integrity and allow time to time updates to all the users. The RuleBuddy platform is compatible with all other current IT systems.

### Commercialisation of the Product

The project was undertaken in Pune. RuleBuddy saves the crucial time spent on rework, giving ample time for creative energies in designing better buildings, thereby gaining revenue and customer satisfaction. This technology is useful for real estate companies, architects and consultants, project owners and investors etc. It was developed using in-house technology. The technology was commercialised on 1<sup>st</sup> July 2020. A total revenue of Rs. 0.2 crore has been generated in the year of commercialization itself. A total of 291 units were sold in the year of commercialisation and 829 units sold till April 2021.



The RuleBuddy is sold not only in Indian States but also in ASEAN Countries

### Impact of Funding

**01** Patent Application

**Improved** Production processes & reduced cost of product after funding

**10** People employed as a result of technology & Capacity development programmes conducted

**SDG** Impacted



CONSTRUCTIONWEEKONLINE

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How Much Does Your Need Ever

Online building plan approval will boost Smart Cities initiative in India

Vijay Gupta, founder and CEO, SoftTech Engineers, makes a point

When we speak of smart cities or smart governance, one thing that comes to our mind is how citizen-centric processes will be tackled or implemented in the current tech-savvy environment. The collection and monitoring of data have



*“Experience of working with TDB was very enriching in terms of industry experts. We got many inputs during project evaluation and constant motivation for achieving higher quality standards. Team is highly cooperative. TDB is a great idea and wonderful institute for budding entrepreneurs”.*

**Vijay Gupta**  
CEO & MD  
SoftTech Engineers Limited

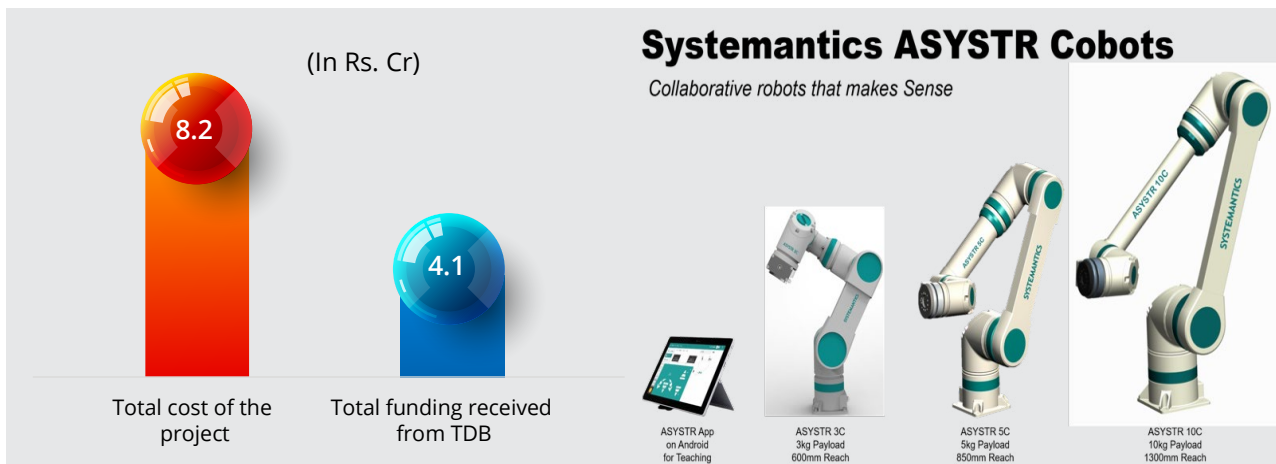
## M/s Systemantics India Private Limited

(Pune, Maharashtra)

**SYSTEMANTICS**  
sensible robotics

Systemantics India Pvt. Ltd. received funding of **(Rs. 4.1 crore)**

Systemantics India Pvt Ltd is a High-Tech Industrial Robots Maker and Solutions provider company based out of Bangalore, India. Systemantics is funded by Accel Partners, Blume Ventures, Infosys Co-Founder Nandan Nilekani, Serial Entrepreneur Pradeep Singh and Harvard Angels.



Technology Development Board (TDB) has entered into an agreement with M/s Systemantics India Pvt Ltd for the project on 'Design, Development and Manufacturing of Industrial Robots' The project received the loan assistance of Rs. 4.1 crore against the total project cost of Rs. 8.2 crore.

### About the Technology

Systemantics is engaged in the business of design and manufacture of Industrial Robots to enable widespread adoption of flexible automation in industry.

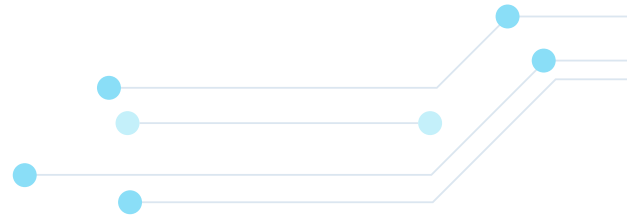
Sensible Robotics in Systemantics Products is the new paradigm for Industrial Robotics. It is an approach to design and manufacture that lowers key adoption barriers for the shop floor. By driving innovations to reduce cost and complexity, and make the robot affordable and easy to use, Sensible Robotics delivers a faster ROI and a robot that is future-ready.

The ASYSTR robotic arm is the first of its kind hybrid design which combines the large working volume of a serial link arm with the fast cycle times and low power consumption of parallel link arms making it new to the world. The model can be ordered with one of three working volumes specified by the radial reach of the arm tool tip.

Sensible robotics is the new paradigm for Industrial Robotics. It is an approach to design and manufacture that lowers key adoption barriers for the shop floor. By driving innovations to reduce cost and complexity, and make the robot affordable and easy to use, Sensible Robotics delivers a faster ROI and a robot that is future-ready.

### Commercialisation of the Product

The project was undertaken in Bengaluru, Karnataka. Systemantics India Pvt Ltd was able to make Industrial Robots: Design, Development & Manufacturing by adding more features in existing versions of Industrial Robots. TDB assistance in the form of a loan was used to commercialize its design,




including purchase of test and measurement equipment, setting up an assembly floor, developing intellectual property and setting up an infrastructure to showcase technology. With the help of the loan, the company has produced ASYSTR 400, a 4 axis robot with parallel mechanism; and ASYSTR 600, a 6 axis serial arm.

Since the TDB project concluded in Sep 2018, Systemantics produced prototypes of its 6-axis robotic arm based on the patented hybrid-serial linkage, ASYSTR 602 and ASYSTR 610.

The company has more than 20 years of experience in robotics engineering. By using in-house R&D, the company not only designs, manufactures and supplies industrial robots but also provides end-to-end custom robotics solutions. Systemantics is a one-stop shop for robotics and product engineering services to support your product development and enable your application. The company drives business outcomes for robot makers and robot users in manufacturing, process automation and plant automation.

*Systemantics India drives business outcomes in product development, manufacturing, process automation and plant automation. The company sells the products not only in Indian states but also in the global market including in ASEAN countries.*

### Impact of Funding

<b>02</b> Patent Applications	<b>Upgraded</b> Machinery & byproducts from process Innovation linked to product
<b>02</b> Granted Patents	<b>SDG Impacted</b>
Capacity development programmes conducted after TDB funding	
<b>Improved</b> Production processes & reduced cost of product after funding	<b>Increased</b> market share after commercialisation

*"TDB plays a pivotal role in the development of technology in the country. An entrepreneur is a creator. He/she is a person who sees a problem, has an idea to solve the problem and puts his life energy behind that idea. In the process, he unleashes his ingenuity to build an ecosystem of stakeholders who help bring his idea to fruition and deliver benefits to all. A big part of the journey is partnering with progressive organizations and individuals who relate to the painted vision and throw their weight behind the entrepreneur to help him get there.*

*TDB is such an organization that understood the vision and granted a loan to Systemantics that could help commercialize its technology. TDB assistance was used to help purchase test and measurement equipment, set up an assembly floor, develop intellectual property and set up an infrastructure to showcase technology. All of these required funds were supported by TDB which would have been difficult to obtain otherwise.*

*Thank you so much TDB. Systemantics India Pvt Ltd looks forward to bringing out many advanced technological products with the support of TDB in the coming years".*

**Harsha Lal**  
CEO & MD  
Systemantics India Private Limited

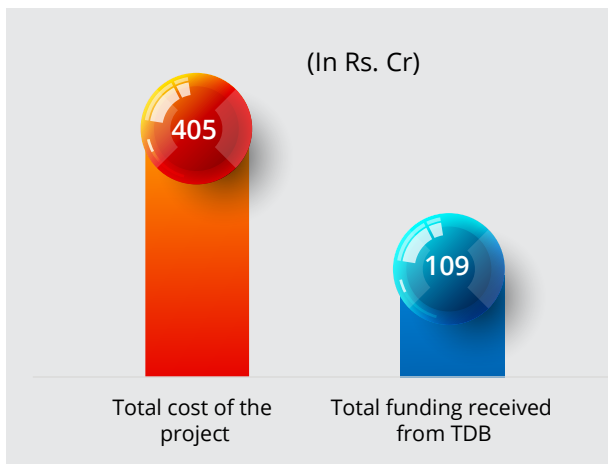
## M/s Tata Advanced Systems Limited

TATA ADVANCED SYSTEMS

(Kolar Taluk, Karnataka)

Tata Advanced System Limited received funding of **(Rs. 109 crore)** on 1st April 2016

Tata Advanced Systems Limited (TASL), a wholly owned subsidiary of Tata Sons, is the strategic Aerospace and Defence arm of the TATA Group. TASL is both an operating & a holding company. TASL group is fast emerging as a key defence and aerospace player in India with established capabilities.



Technology Development Board (TDB) has entered into an agreement with M/s Tata Advanced Systems Limited (TASL) for the project on 'Setting up of Defence Manufacturing Facility at 50 acres Land at Vemagal Industrial Area, Kolar District, Karnataka'. The project received the loan assistance of Rs. 109 crore against the total project cost of Rs. 405 crore.

### About the Technology

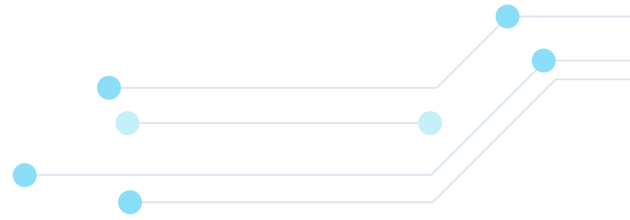
The company develop defence solutions either on their own or in collaboration with DRDO and then respond to Ministry of Defence RFPs for commercialization.

TASL is currently participating in development of sub-systems for 3 major Indian Missile programs for Indian Defence forces-

- Design & Manufacture of Combat Management Systems (CMS) for Medium Range Surface to Air Missile (MRSAM) program
- Design & Manufacture of Mission Control Centers (MCC) for Missile Defence program
- Precision part manufacturing such as Rocket motor casing, Control fins & Thrust Vector control systems with additional focus on Actuators, Delay electronics, wiring Harness etc.


### Commercialisation of the Product

This project was undertaken in Vemagal Industrial Area, Kolar Taluk, Karnataka. All defence systems that were designed and manufactured by Tata Advanced Systems Limited were improved versions of the existing products available in the market. These defence systems were manufactured using in-house technology. The products were commercialised on 10<sup>th</sup> September 2020. A total revenue of Rs. 75 crore has been generated in the year of commercialization itself. These defence systems have outreach in more than 15 states in India. They also got recognition internationally, including in ASEAN countries and Africa.



*Defence Systems manufactured by Tata Advanced Systems Limited is sold not only in Indian States but has recognition in International markets including ASEAN Countries and Africa.*

### Impact of Funding

<b>02</b> Patent Applications	<b>SDG Impacted</b>
<b>100</b> People employed as a result of technology & Capacity development programmes conducted	
	<b>Improved</b> Production processes & reduced cost of product after funding

*"TDB has clear processes in place. We wer supported by the government for commercialisation of indigenous science and technology. Over the years, we have become experts in electronics and X-Ray technology and offer a range of products in diagnostic and industrial X-Ray. Strategic systems for Indian defence forces (MoD) resulted in Self-reliance and not sharing sensitive defence data with foreign companies. We are a large company and the TDB supported us in setting up a modern manufacturing facility along with testing infrastructure. This helped us realize different solutions with quality."*

**Sukaran Singh**  
CEO & MD  
Tata Advanced Systems Limited

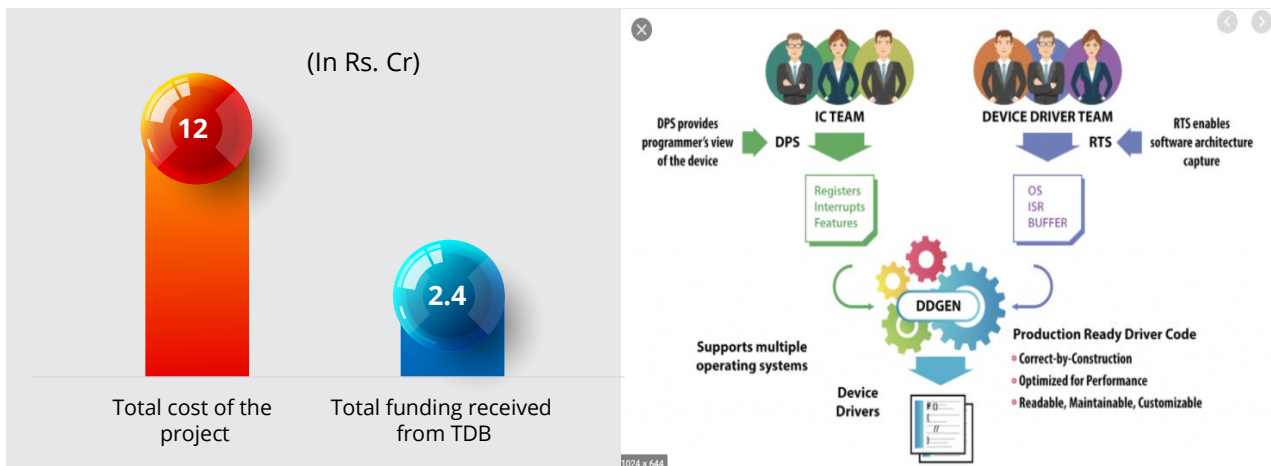
## M/s Vayavya Labs Private Limited

(Belagavi, Karnataka)



Vayavya Labs Pvt. Ltd. received funding of **(Rs. 2.45 crore)** on 1<sup>st</sup> December 2012

Vayavya Labs Pvt. Ltd. is a pioneer & an industry leader in Hardware-Software Interface Tools & Methodologies. The lab provides embedded software expertise across Automotive, EDA, Semiconductors, and Communications verticals. It holds 11 patents covering EDA/ESL, Embedded SW and SW Automation domains.



Technology Development Board (TDB) has entered into an agreement with M/s Vayavya Labs Pvt. Ltd. for the project on “Development and Commercialization of Device Driver Generator (DDGen).” The project received the loan assistance of Rs. 2.4 crore against the total project cost of Rs. 12 crore.

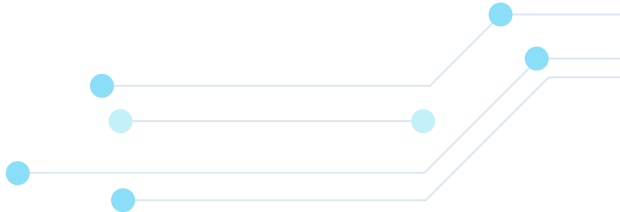
### About the Technology

Device Driver Generator (DDGen) is a tool that automatically generates almost complete device driver based on two input specifications. The two input specifications are Device Programming Specification (DPS) and Run Time Specification (RTS). This product is new to the market and industry. The DPS which enables the formal capture of the Programming sequence of all peripheral functionality of a SoC. The RTS enables the capture of the software and systems specification of the driver environment. DDGen supports multiple operating systems. DDGen can reduce up to 40 per cent cost and up-to 50 per cent reduction in time to market. DDGen makes 10x faster support for derivation boards or different OS.

Vayavya's technology is now part of Global standards (under Accellera org the contributions are called Hardware-Software-Interfaces (HSI)). The technology has also featured as Deloitte Fastest 50 (Technology).

### Commercialisation of the Product

The project was undertaken in Belagavi. It was manufactured using in-house technology. The product (DDGen) was commercialised on 15th December 2014. A total revenue of Rs. 1.1 crore has been generated in the year of commercialization and subsequent year itself.



**Device Driver Generator (DDGen) tool is sold not only in India but also in Europe and North America.**

Usually, the selling process starts with a proof of concept (POC). In a POC, the company takes up a customer problem statement or challenge and showcases how adoption of tools and technology helps their business goals. The POC takes anywhere from 8-12 months before the customer decides to adopt. The tool adoption is many times in the form of yearly tool licenses or sometimes under the terms of turnkey services.

**Impact of Funding**

<b>11</b> Patent Applications	<b>SDG</b> Impacted
<b>08</b> Granted Patents	
<b>02</b> Publications	<b>30</b> People employed as a result of technology & Capacity development programmes conducted



*“TDB funding helped us to build the technology. It also helped in positioning ourselves as an IP and standards contributor at the international standards body.”*

**RK Patil**  
CEO & MD  
Vayavya Labs Private Limited

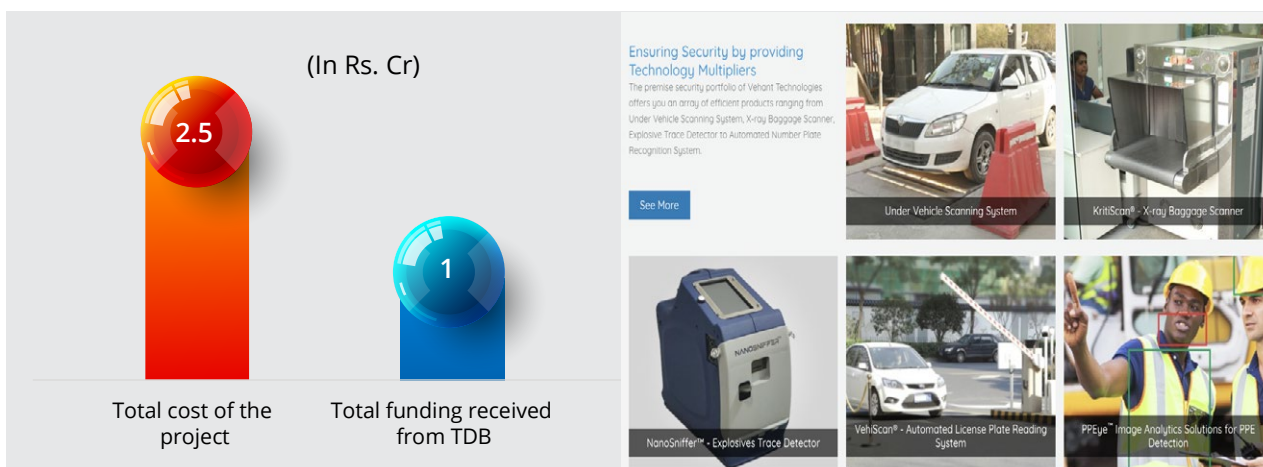
# M/s Vehant Technologies Private Limited

(Noida, Uttar Pradesh)



Vehant Technologies received funding of **(Rs. 1 crore)** on 20<sup>th</sup> August 2007

Vehant Technologies is a pioneer in Artificial Intelligence/ Machine Learning based Physical Security, Surveillance and Traffic Monitoring & Junction Enforcement Solutions. It was incubated in Indian Institute of Technology (IIT)-Delhi in 2005.



Technology Development Board (TDB) has entered into an agreement with M/s Vehant Technologies for the project on 'Development and Commercialization of UVSS, XBS, Trafficon, Trafscan, Febrieye'. The project received the loan assistance of Rs. 1 crore against the total project cost of Rs. 2.5 crore.

## About the Technology

(UVSS) is a complete camera system combining hardware and software to scan the undercarriage of vehicles passing through the checkpoints. Undercarriage is the only area of a vehicle which can never be locked or sealed hence automatic under vehicle inspection system is needed. X-ray baggage scanners (XBS) offer customers the most contemporary security solutions. XBS is a technological advancement, which smartly classifies the materials scanned based on their composition.

ZenScan Advanced Vehicle Scanner System facilitates the inspection of the underside of vehicles by imaging the underside at a very high resolution and making it available through an easily navigable and intuitive GUI. It is an improved version of the existing products. Currently, the inspection of the underside image is performed by trained security personnel. Automated Image Comparison (or AIC) attempts to take this solution to the next level by automating the process of inspection by comparing the current underside image against a reference image. Integration with License Plate Reading System caters to reducing the operation time and offering convenience in terms of database lookup based on the license plate for the last transaction of the same vehicle. The Portable Version of ZenScan can be used to extend the usability for those scenarios where the location of the security need for inspection changes from time to time or where installing a full-fledged permanent unit might not be feasible.

## UVSS installed at DDU junction

**TIMES NEWS NETWORK**

Varanasi: To step up security measures at DDU Junction, the railway has installed Under Vehicle Scanning System (UVSS) to check all the all the vehicles reaching the parking lot.

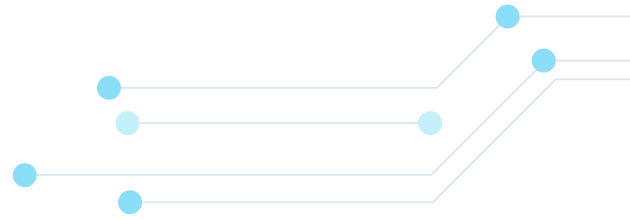
The system was inaugurated by GM, East Central Railway Lalit Chandra Trivedi and DRM, Deen Dayal Upadhyay Division, ECR Rajesh Kumar Pandey on Friday. They said that it was the part of an integrated security system, which is being adopted to ensure the safety of people and avert terror attacks.

The UVSS has been designed and installed by Vehant Technologies. The Railway Protection Force personnel have also been trained to operate the machine. It is a camera system that combines hardware and software to track down the vehicles passing through a checkpoint. It captures the chassis number and number of the vehicle and face of the driver as the vehicle passes through it.

According to officials, this system has been installed for important clues in case of suspicious goods in vehicles or any untoward incident at the railway station.

According to Kapil Bardeja, CEO and co-founder of Vehant Technologies, the UVSS requires physical devices to easily inspect vehicles during both night and day hours in any weather condition. All vehicles passing through this system will be given one-by-one entry once the trains are in regular operation. All vehicles will require UVSS scanning. This mechanized monitoring system will check trespassers and unwanted vehicles, ensuring the safety of passengers.






## Commercialisation of the Product

The project was undertaken in Noida. It took 16 months to commercialise the product after the funding was received. In the year of commercialisation and subsequent year, namely 2009-2010 and 2010-2011, the number of units sold were 14. Since then Vehant Technologies has sold over 729 units.

*UVSS, XBS, Trafficmon, Trafscan, Febrieye is sold across India and has also received international recognition including in Europe, ASEAN and SAARC countries*

## Impact of Funding

<b>01</b> Patent Application	<b>SDG Impacted</b> 
<b>05</b> Publications	
<b>10</b> People employed as a result of technology & Capacity development programmes conducted	<b>Upgraded</b> Machinery & byproducts from process Innovation linked to product
<b>Increased</b> market share after commercialisation	<b>Improved</b> Production processes & reduced cost of product after funding

*"The experience has been really amazing. Working with TDB has helped our organization as a whole. TDB funding helped in developing innovative products and secondly increased marketing competitiveness. TDB funding acted as a driving force in our risky innovative development. The overall journey as an entrepreneur has been amazing with TDB support. Vehant as an organization would like to thank TDB for its never ending support and help."*

**Kapil Bardeja**  
CEO & MD  
Vehant Technologies Private Limited

## M/s VEM Technologies Private Limited

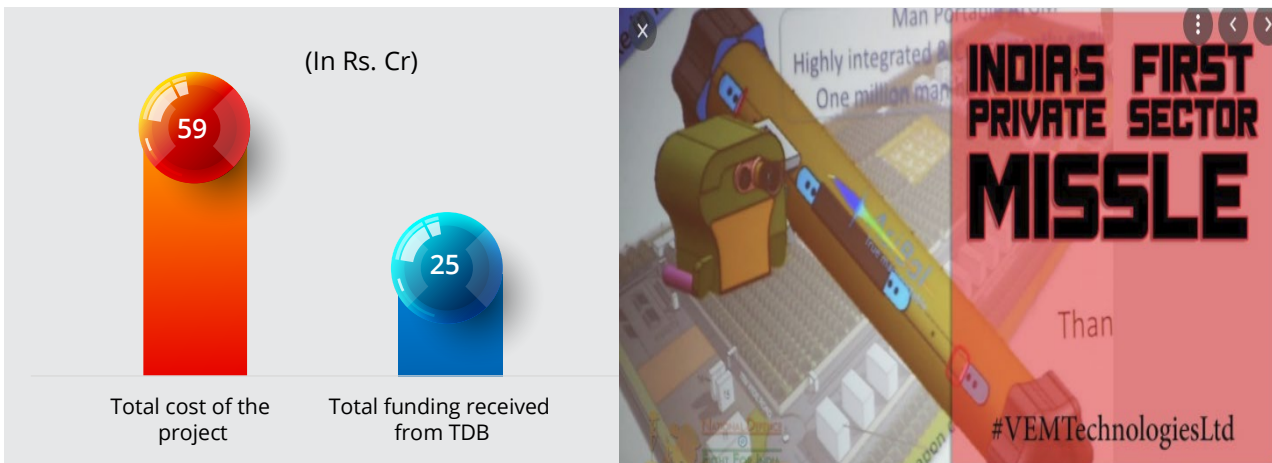
(Hyderabad, Telangana)



VEM Technologies Pvt. Ltd.  
received funding of  
**Rs. 25 crore**

VEM Technologies Pvt. Ltd. is an Aerospace, Defence and Homeland Security systems solutions company. Employing more than 900 professionals, VEM Technologies focus on research, design, development, manufacture, assembly, integrating and testing of systems, products and solutions.

Modern missiles represent an example of a highly integrated set of subsystems that all interact cooperatively to guide the missile to its target. The key to intercepting moving targets is the missile seeker, and for all weather, day/night, and long-range performance, the RF seeker is the preferred option. RF seekers are often viewed as “little” airborne intercept (AI) radars.



Technology Development Board (TDB) has entered into an agreement with M/s VEM Technologies Pvt. Ltd for the project on “Development and Commercialisation of RF Seekers (Radar Missile Seekers)”. The project received the loan assistance of Rs. 25 crore against the total project cost of Rs. 59 crore.

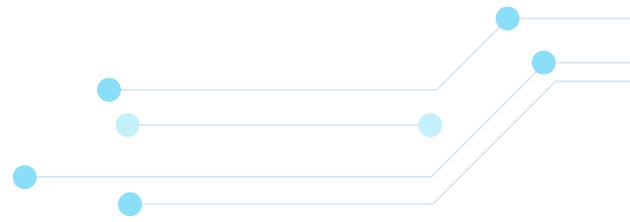
### About the Technology

Modern airborne systems need all weather, fire & forget capability in detecting and tracking a target. These functions are performed by RF sensors, which are called by trade-name RF seeker. The seeker is essentially a high-tech Microwave radar mounted on the nose of an airborne system with Radome providing environmental protection to it. These are compact in size and less in weight. The product is an improved version of the existing product in the market.

These seekers are complex in nature and highly customized to meet the stringent space, weight and dynamic constraints of different air borne systems.

The RF Seeker developed by the company is a pulsed Doppler radar, with capability of multiple PRF Waveform. The antenna is stabilized to maintain the line of sight to the target in spite of the body motion of the missile.

The RF Seeker can track the target in angle, velocity and range. Based on the designation given in angle, velocity and range; the seeker detects the target, subsequently locks on to it; then it goes into tracking mode. The signal for transmission is generated by the exciter coherently using a precise local oscillator and the PRF specs of the system.



While the seeker was being developed, supporting technologies were also developed, e.g., servo-control stabilization system components like motors, encoders, gyros; slotted array antenna design, fabrication and brazing; MMIC die handling, bonding etc.


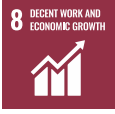
*The total investment of the project was assessed to Rs. 5900 Lakhs and TDB had sanctioned Term loan aggregating to Rs. 2500 Lakhs. M/s VEM Technologies has completed the project and commenced commercial operation from 31st December, 2019.*

### Commercialisation of the Product

The project was undertaken in Hyderabad. VEM Technologies Pvt. Ltd. was able to enhance the products by adding more features in existing versions of the development and commercialisation of RF Seekers. VEM Technologies Pvt. Ltd. has proven track record in build to specifications & build to print of various systems from the nose to the tail for all major categories of Missiles. The in-house infrastructure caters to the systems integration and medium to large section level integration activities. VEM Technologies is also the single largest production partner exporting major assemblies of LGBs (Laser Guided Bombs) over the years meeting the customer requirements both in terms of quality and quantities. Total 5 units have been sold in the year of commercialisation itself.

*Development and commercialisation of RF Seekers by VEM Technologies Pvt. Ltd. is sold in several Indian states and has also received international recognition including in Europe.*

### Impact of Funding

<b>35</b> People employed as a result of technology & Capacity development programmes	<b>SDGs Impacted</b>  
<b>Increased</b> market share after commercialisation	<b>Upgraded</b> Machinery
<b>Improved</b> Production processes & reduced cost of product after funding	

*"The support from entire team of TDB was very good. TDB funding supported the establishment of a dedicated Advanced Systems Division to develop and establish the RF seeker technologies in-house and establishing the infra required to manufacture and test at various stages the RF Seeker System. As the facility to develop and manufacture the RF Seekers under one roof at VEM Technologies, it was helpful by bringing down the huge cost involved in the imports of these RF Seekers and as well as making our nation self-sustaining. Right from day one we were permitted to present our understanding, technical competencies and our experience in the relevant technological fields and the approval and receipt of funds from TDB was an encouraging journey. VEM is thankful and indebted to TDB as an organisation which recognised and supported VEM's Technological strengths to bring out the RF Seekers' first of its kind of facility in the private defence sector itself is a great thing as a country to move forward in this arena. Thank you so much TDB. VEM Technologies look forward to bringing out many advanced technological products with the support of TDB in the coming years."*

**V. Venkata Raju**  
CEO & MD  
VEM Technologies Private Limited

## M/s Yashraj Biotechnology Limited

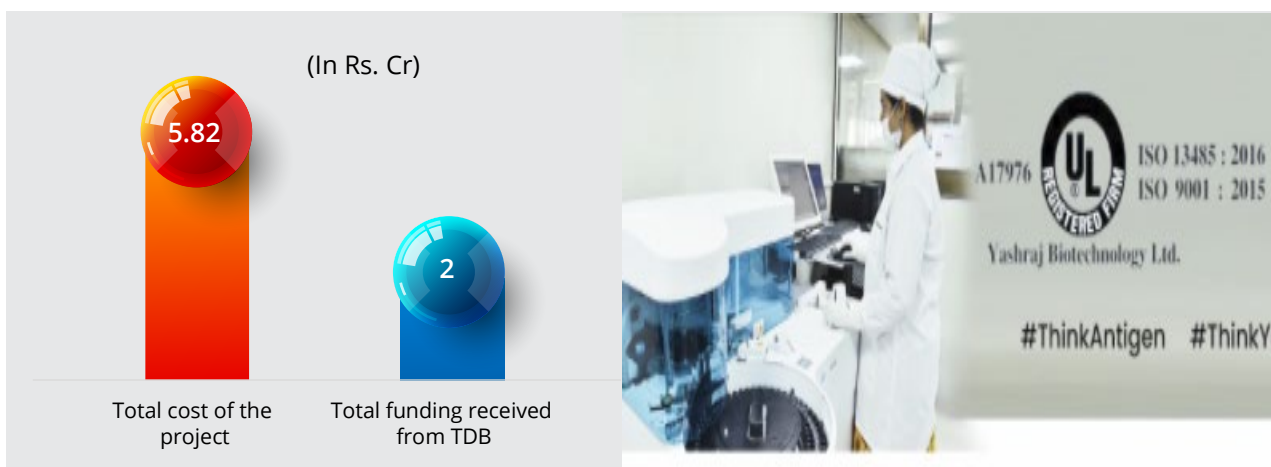
(Navi Mumbai, Maharashtra)



Yashraj Biotechnology Ltd. received funding of **Rs. 2 crore** on 24<sup>th</sup> February 2004

Yashraj Biotechnology Ltd. is the leading antigen manufacturer in India. The company is research and innovation driven, ISO 13485:2016, ISO 9001:2015 and OHSAS 18001: 2007 certified, established in 1999 at Navi Mumbai, Maharashtra, India. Yashraj Biotechnology has operations in Germany, USA and South Korea. Company's research, development and production-related activities encompass a whole range of native, recombinant and cell-derived antigens; and monoclonal antibodies.

Yashraj Biotechnology is one of the biggest market segments for various biomarker antigens and antibodies.

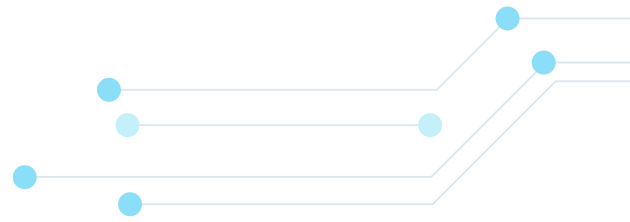


Technology Development Board (TDB) has entered into an agreement with M/s Yashraj Biotechnology Ltd. for the project on "Antigens and proteins from liquid bio-medical waste". The project received the loan assistance of Rs. 2 crore against the total project cost of Rs. 5.82 crore.

### About the Technology

The Company was formed in 1999, with a focus to promote a healthier world, through diagnostic products. In accordance with the same, the Company undertook a project to separate antigens and proteins from native sources by purification of bio medical waste such as ascetic/plural fluids, HBsAg+ve blood, etc. These antigens and proteins have diagnostic importance, which are used as the basic reagents for the preparation of controls, calibrators in diagnostic kits. We focussed on three products, CRP (C-reactive Protein), CEA (Carcino-Embryonic Antigen) and CA-125 (Ovarian Cancer antigen) for worldwide market, for which marketing tie-ups were made and initial trial batches from the In house R&D unit were accepted by customers. The Company with the help of TDB funding, managed to scale up production of the aforesaid antigens to commercial level.

The Company undertook another Project to develop a source of recombinant and cell derived antigens, and antibodies (polyclonal, monoclonal) for biomedical research and to develop in vitro diagnostic methods in the area of communicable and non-communicable diseases including cancers. Focus was on - Development of indigenous reagents (antigens and antibodies) for manufacturing of a wide variety of diagnostic immunoassays. Development of those RDT antigens are done by bacterial or E-Coli expressions. Development of humanized monoclonal antibody controls for diagnostic immunoassays obviating the need of human serum samples from patients for the same purpose. These will be particularly helpful in some infectious and auto-immune disorders. The Company was



successful in having developed various RDT products and commercialised the same in FY 15-16. The technology has resulted in a total of 5 publications. Many licence/collaborations resulted after receiving the TDB funding.

## Commercialisation of the Product

This project was undertaken in Turbhe, Navi Mumbai. Yashraj Biotechnology's vision is "Being the best in the field of diagnostics and making diagnostics affordable and easily available to common man". The company has used their own in-house R&D for the development of Native antigens, Recombinant Antigens, Monoclonal antibodies & cell derived antigens. It was entirely new to the market. It was commercialised in 2012.

*Biomarker antigens and antibodies by Yashraj Biotechnology Ltd has outreach not only in Indian states but also internationally, including in North America, Europe, China and Japan*

## Impact of Funding

**200** People employed as a result of technology

**05** Publications

**Improved** Production processes & reduced cost of product after funding

SDG Impacted



*"TDB contributions have been very important for the development of our organisation. Its contribution has directly and indirectly impacted our company in developing indigenous technology and also the development of various products, which for exporting to other developed nations like the U.S., Europe, etc. and earning valuable foreign exchange for the Nation. The overall experience working with TDB was very positive. TDB has excellent scientists. The TDB team understood the scientific importance of the projects and encouraged the development of indigenous technology. The decisions to finance the projects was taken based on acumen of the biotechnology and not mere financial aspects of the project. TDB should continue to encourage and support projects and organisations which promote innovation, development of indigenous technology and export-oriented projects, which earn valuable foreign currency for the country. TDB's funding for our first project came in the initial years of our Company. Investment in the right infrastructure, including equipment, building, technology, etc. is a key platform for any biotechnology company. Even though our company had made reasonable funding for setting up the infrastructure, getting the TDB's financial support in the initial years was very important for development and commercialisation of Antigens and Proteins".*

*TDB's value addition was not only providing funds at a lower interest rate, but also the vast ocean of technical knowledge. It has its Board or the Project Monitoring Committee. TDB has various technical experts on its panel, who during the course of interactions with the scientists in our technical team, provided their opinions and guided our young team over the years, on the key product developments, scientific processes, deviation analysis, etc. These inputs not only helped our technical team on the progress of the project, but also improved the technical skill sets and understanding of biotechnology for the team members. We would like to express our gratitude to TDB for the crucial support given to us for the two key projects, which has helped us to grow substantially.*

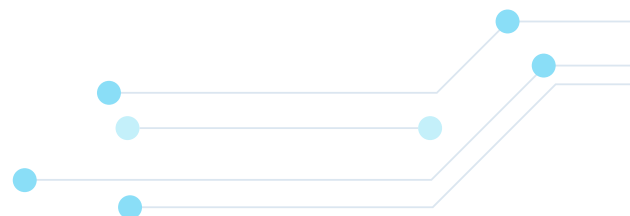
**Arvind Bhanushali**

CEO & MD, Yashraj Biotechnology Ltd.

## ANNEXURE

### Name of the Signature Companies and their Full Address of Project Location

Name of the Company	Full Address & Email Id
AKS IT Services Pvt Ltd	B-21, Sector-59, Noida- 201309 ashish@aksitservices.co.in
Anarobic Energy Pvt Ltd	Biogas Plant C/O 18 MLD Sewage Treatment Plant Jagjeetpur Haridwar 249408 anarobicenergy@gmail.com
Bharat Biotech International Ltd	Genome Valley, Shamirpet, Telangana lisa3985@bharatbiotech.com
Biocon Ltd.	20th KM, Hosur Road, Electronic City, Bangalore, India 560 100 siddhi.patil@biocon.com
Biogen Fertilizers India Pvt Ltd	Old No 41, NEW No 68, 28th Cross Street, Indera Nagar, Chennai, T.N. 600020 md.biogen@gmail.com
Biological E Limited	Plot No; 623-H, Road No: 35, Jubilee Hills, Hyderabad martin.reers@biologicae.com
<b>Birla Cellulosic (Grasim Industries Ltd)</b>	Birla Cellulosic Kharach, Tal Hansot, Dist-Bharuch, State-Gujarat, Pin- 394120 ashmita.panchal@adityabirla.com
Clutch Auto Ltd. (under liquidation)	Faridabad 12/4 Mathura Road, Haryana vijaykrishanmehta@gmail.com
Energos Technologies Pvt. Ltd	908, Sunshine Tower, Senapati Bapat Marg, Dadar West, Mumbai-400013 rajesh@energosccloud.com
Iatome Electric India Pvt Ltd	No.209, Renga Villas, New Dhamu Nagar, PN Palayam, Coimbatore 641037 office@iatome.in
Imco Alloys Pvt Ltd	129 damji shamji ind estste lbs Marg Vikhroli, Mumbai joydeepgupta00@gmail.com
Incredible Devices Pvt Ltd	D-77, Sector 80, NOIDA - 201305, Uttar Pradesh vikram@incredibledevices.in
Instapower Ltd	Roorkee, Uttrakhand hrvaish@instapower.com
Kan Biosys Pvt Ltd	917/17, Raveedeeep, Ganeshwadi Prin. K.R.Kanitkar Path, Pune 411004 sandeepakanitkar@kanbiosys.com
Lifecare Innovations Pvt. Ltd.	A-13, Iris Tech Park, Sohna Road, Sector - 48, Gurgaon, HR -122018 drjnverma@lifecareinnovations.com



Name of the Company	Full Address & Email Id
<b>MyLab Discovery Solutions Pvt Ltd</b>	Plot No. 99-B, Lonavala Industrial Co-operative Estate Ltd., Nangargaon, Lonavala, Pune, Maharashtra 410401, India keyur@mylabdiscoverysolutions.com
<b>Panacea Medical Technologies Pvt. Ltd.</b>	# 35 4 th phase , Malur Industrial Area , Malur , Karnataka gvs@panaceamedical.com
<b>Sahajanand Laser Technology Ltd</b>	E-30, GIDC Electronic Estate, Sector-26, Gandhinagar gaurav@sltl.com
<b>Silvan Innovation Labs Pvt Ltd</b>	No 177, 5th Main, 9th Cross, Indiranagar 1st Stage (Binnamangala 1st stage), Bengaluru, Karnataka – 560038 girikrishna@silvanlabs.com
<b>Soft Tech Engineers Limited</b>	SoftTech Towers, 1-Baner, Baner Road, Pune- 411045 vijay@softtech-engr.com
<b>Systemantics India Pvt Ltd</b>	#40, 36th Cross, 23rd Main, Jayanagar 4th T Block, Bengaluru 560041 harsha.lal@systemantics.com
<b>Tata Advanced Systems Limited</b>	42-43, Electronic City, Bangalore, 560 100 smcsaravanan@gmail.com
<b>Vayavya Labs Pvt. Ltd.</b>	G-4, Ground Floor, Sateri Nivas, CTS No.456/A, Belagavi, Karnataka, 590006 rkpatil@vayavyalabs.com
<b>Vehant Technologies Pvt Ltd</b>	B-73, Sector -57, Noida, Uttar Pradesh, India – 201301 payalm@vehant.com
<b>VEM Technologies Pvt Ltd</b>	# 8-48/1, Bachupally Industrial Area, Medchal District, Hyderabad-T.S. 500 090 sarma@vemtechnologies.com
<b>Yashraj Biotechnology Ltd.</b>	C 232, TTC Industrial Area, MIDC, Turbhe, Navi Mumbai- 400705 ospillai@yashraj.com

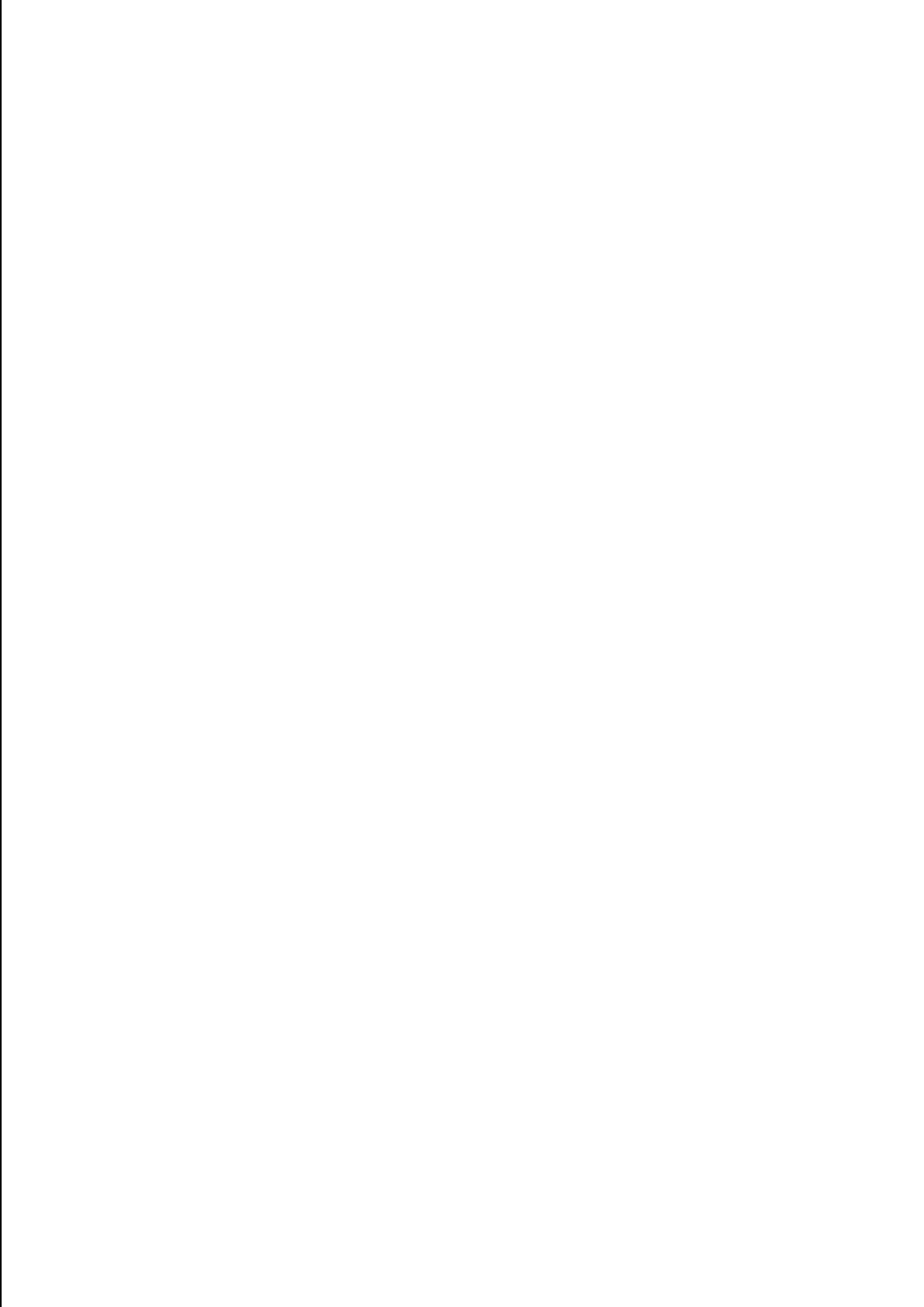


## Acknowledgements

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The Department is thankful to all the industries for their cooperation in providing valuable data without which this publication would not have been possible. This report also contains testimonials from the supported organization leaders, giving our readers a glimpse of their experience with TDB. Going forward, the present publication shall be immensely useful for evidence-based policy planning for scientific advancement.





*Prepared by*



**Confederation of Indian Industry**