ESTD - 1928

SNJB

# SNJB's
# LATE SAU. K. B. JAIN
# COLLEGE OF ENGINEERING

NEMINAGAR, CHANDWAD, DIST- NASHIK

NAAC ACCREDITED WITH "A" GRADE

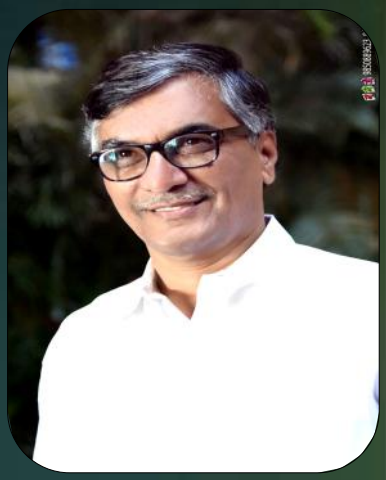
Founder

Poojya kakaji

## Department of Mechanical Engineering

# Yantra Veda

Year 2021-22



| Shri. Dineshji Lodha | Shri. Zumbarlalji Bhandari | Shri. Sunilji Chopda |
|---|---|---|

# Message from Honourable Management

We feel delighted to observe that yearly Technical Magazine "YANTRAVEDA" from department of Mechanical Engineering is to coming out in this year (A.Y.2021-22), thanks to efforts of the faculty and the students of the department. The "YANTRAVEDA" is truly the reflection of the interest of the students, involved in technical endeavors.

As a parting message to students of Mechanical Engineering, We wish them a pleasant and prosperous future and advise them to develop deep in their career and come out with the pearl of name and fame ,both for themselves and their future.

# Message from Principal

I am proud to announce the release of 'YANTRAVEDA' magazine's sixth issue. The magazine signifies the writer's penmanship and also allows them to share their ideas. I acknowledge the efforts of students and staff of Mechanical department who have taken the initiative to promote the writing and publishing skills of the students. This helps the students to share and express their ideas in an articulate manner. Students and staff achievements have also been presented which will be a motivational factor for the other students to achieve the standard of excellence. Glad to say that we have achieved our aim of turning this into reality. I would like to congratulate all the students, teachers, alumni and everyone involved in bringing out its 6th edition.

Wishing everyone loads of success and bright future.

**Dr. Mahadeo Kokate**

# Message from Head of Department

I am pleased to know that our students are successful in bringing their sixth issue of magazine 'YANTRAVEDA' for this academic year 2021-22. YANTRAVEDA, the departmental magazine has the prime objective of providing aspiring engineers a wide platform to showcase their technical knowledge and to pen down innovative ideas.

This magazine is intended to bring out the hidden literary talents in the students and teachers to inculcate strong technical skills among them.

I congratulate and thank all the students and faculty coordinator who have made untiring efforts to bring out this magazine. I wish them all the very best for releasing more such magazines in future.

**Dr. Santosh Sancheti**

SNJB

# LATE SAU. KANTABAI BHAVARLALJI JAIN COLLEGE OF ENGINEERING

NEMINAGAR, CHANDWAD, DIST- NASHIK

NAAC ACCREDITED BY "A" GRADE

ESTD - 1928

## DEPARTMENT OF MECHANICAL ENGINEERING

## VISION

- To impart quality technical education in the field of Mechanical Engineering for the benefits of society

## MISSION

- To provide quality education among the students through the curriculum and industrial exposure.
- To develop a learning environment leading to innovations, skill development and professional ethics through curricular and extracurricular activities for societal growth.

# PEO'S AND PSO'S

## Program Educational Objectives (PEOs):

**After industrial experience of 4 to 5 years, Mechanical Engineering graduates will be able to**

1. **Graduates will possess essential professional Mechanical Engineering skills to develop solutions for industrial and societal problems.**
2. **Graduates will engage and succeed in their professional careers through teamwork, professional ethics and effective communication.**
3. **Graduates will engage in lifelong learning, career enhancement and adapt to emerging technologies for the benefits of society.**

## Program Specific Outcomes (PSOs):

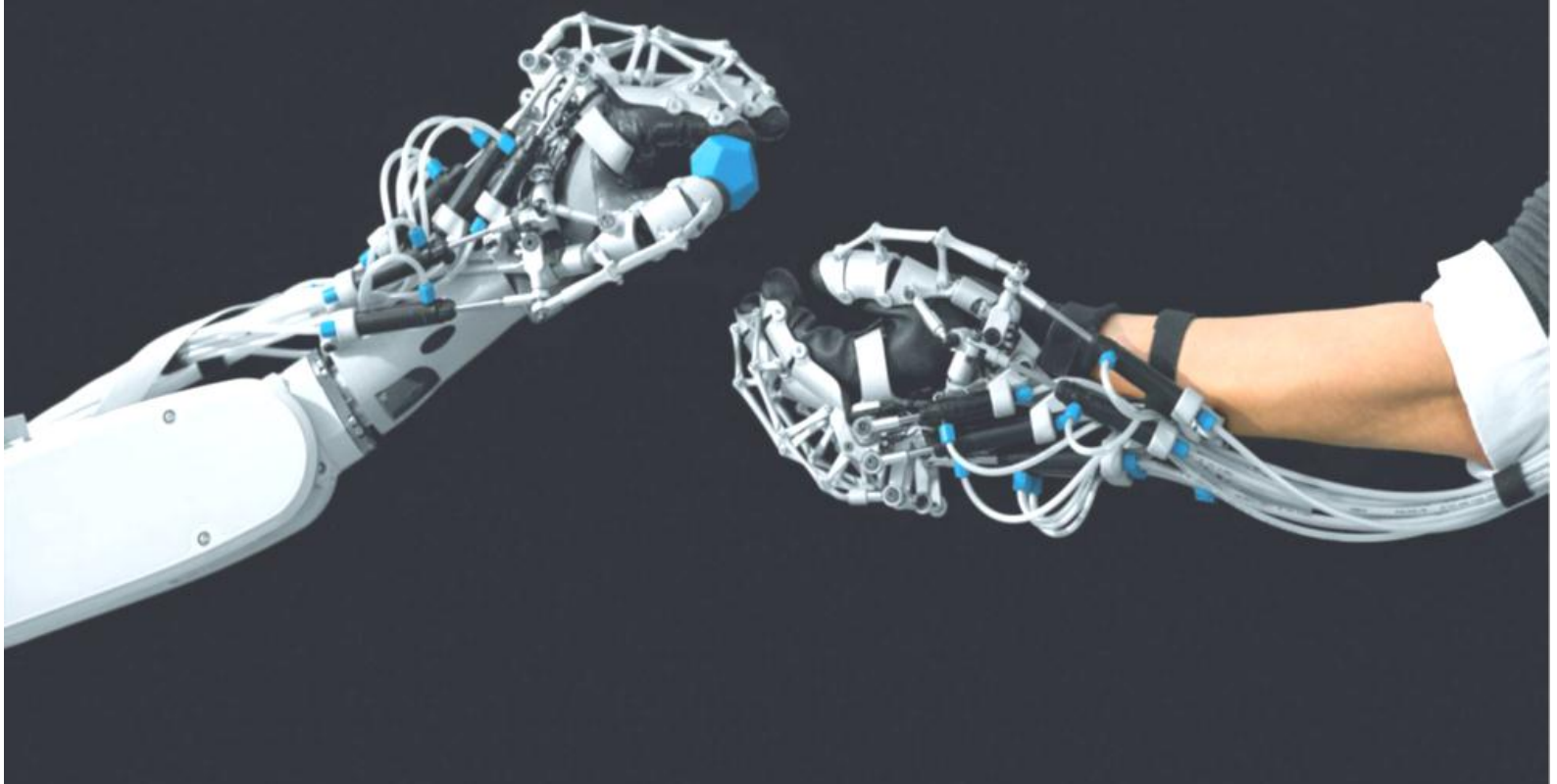
**After graduation, Mechanical Engineering graduates will be able to**

1. **Graduates will have an ability to identify, analyse, and develop appropriate solution(s) to Mechanical Engineering Problems.**
2. **Graduates will be able to use modern engineering tools for analysing and solving practical problems of industry and society.**
3. **Graduates will be able to learn and grow constantly, with good technical, spiritual, and ethical values with a zeal for life-long learning.**

**SNJB's Late Sau. K. B. Jain College of Engineering, Chandwad.**
**Department: Mechanical Engineering**

# INDEX

# Faculty Articles

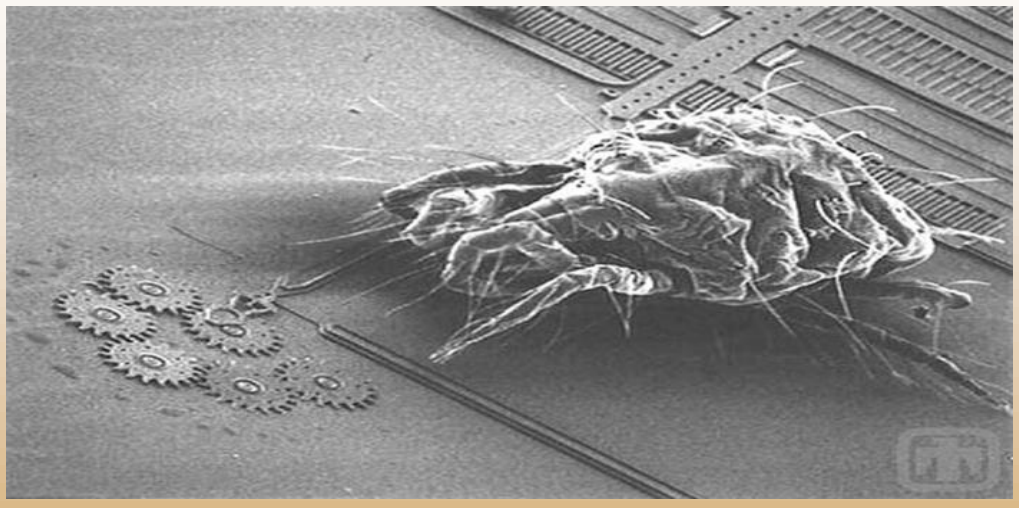


# Solar Powered Smart Dust

Abc

Some 20-30 years ago, micro-electromechanical systems (MEMS) emerged in industrial manufacturing in a major way. MEMS consist of any combination of mechanical (levers, springs, membranes, etc.) and electrical (resistors, capacitors, inductors, etc.) components to work as sensors or actuators.

The size of today's smartphones would be impossible without the use of numerous MEMS devices. Apart from accelerometers and gyroscopes, smartphones contain micro-mirrors, image sensors, auto-focus actuators, pressure sensors, magnetometers, microphones, proximity sensors and many more. Another example from everyday life is the use of MEMS as accelerometers in modern automobile airbags where they sense rapid deceleration and, if the force is beyond a programmed threshold, initiate the inflation of the airbag.



*A mite, less than 1 mm in size, approaching a micro scale gear chain.*
*(Image: Sandia National Laboratories)*

**What is smart dust ?**

Industrial ubiquity of MEMS, increasing computing power of chips, the miniaturization of lab-on-a-chip devices, and increased connectivity, combined with the emergence of nanotechnologies, gave rise to the concept of Smart dust sub-millimeter-scale autonomous computing and sensing platforms not larger than a grain of sand.

An individual smart dust particle in itself is a tiny sensor and computer, self-powered and wirelessly connected to a large network. Each particle can be left unattended and collects environmental data such as light, temperature, pressure, vibrations, the existence of toxins etc. and transmits this data wirelessly to larger, remote computer systems or, depending on the available computing power, processes it directly at the point of data collection.

A large number of these particles dispersed over an area would be left to interact with their environment and then communicate their findings to a host where the collected data is processed and analyzed.

Smart dust particles are the ultimate Internet of Things (IoT) devices. They are revolutionary because the sensors are small enough to be put anywhere and work wirelessly, sharing data. Smart dust will lead to ubiquitous autonomous artificial Intelligent computation near the end user, such as authentication, medical procedures and health care monitoring, sensing and tracking, industrial and supply chain monitoring, and defense applications.

**Smart Dust Concepts ?**

For instance, DARPA's SHIELD program plans to use micro-scale chips to track and authenticate the supply chain of IC chips for defense applications. The goal is to eliminate counterfeit integrated circuits from the electronics supply chain by making counterfeiting too complex and time-consuming to be cost effective. SHIELD aims to combine NSA-level encryption, sensors, near-field power and communications into a tiny chip capable of being inserted into the packaging of an integrated circuit.

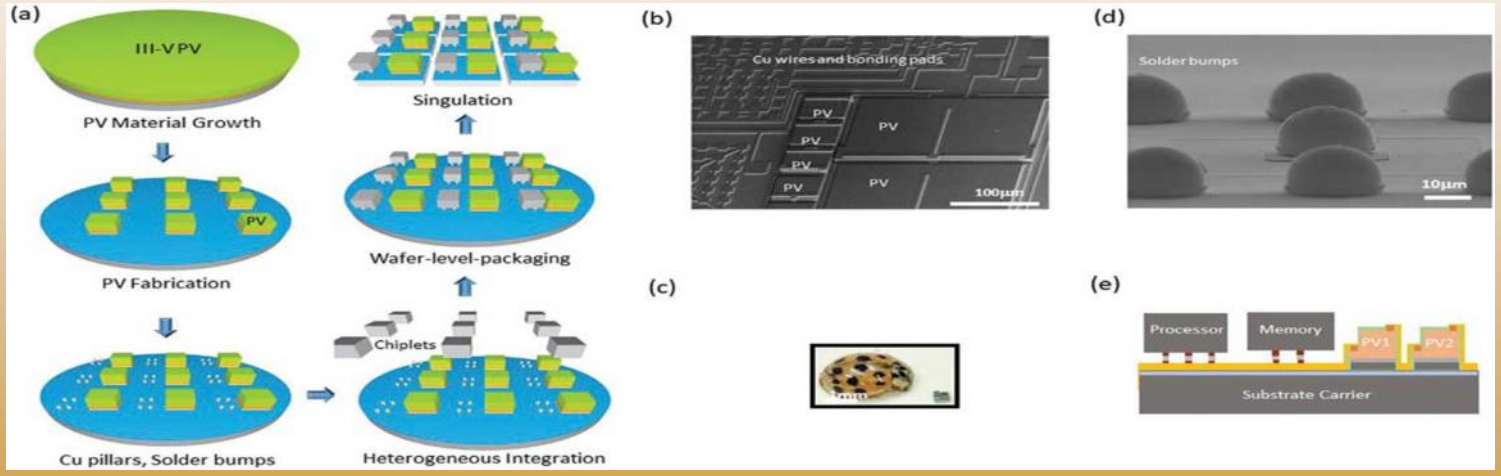
More advanced concepts even envision programmable smart dust that triggers an automatic response, for instance the triggering of an alarm signal when invisible micro-cracks are detected in a turbine blade.

Smart dust is a concept that has been proposed some 20 years ago. However, the main challenges researchers have been grappling with are the lack of enough power on the small footprint and the difficulties of integrating power systems into these highly scaled devices. Since the storage density of battery technologies has not followed Moore's law scaling trends, IoT systems need to rely on power conversion from outside sources such as thermal, vibrational, light, or radio waves.

"As nanoelectronics and packaging technologies evolve, though, now may be the right time that we start to rethink the solutions for these problems and advance towards more powerful small computer systems than what was originally proposed," says Dr. Ning Li, a researcher at IBM's T J Watson Research Center in Yorktown Heights, NY.

The ability to integrate various nanoelectronic chiplets such as processor, memory, and photovoltaic in an industrial-scale wafer-level-packaging process, unlocks the potential of large-scale manufacturing of these compact integrated systems with high performance and ultralow cost.

Wafer-level high-throughput processing of small footprint edge computers: a) Schematics illustrating processing steps including: III-V PV growth on SOI substrate, a PV mesa etched down to the buried oxide layer, PV cell fabrication and copper (Cu) interconnect, Cu pillar and solder bump formation for chip packaging, wafer level selective bonding of fabricated chips, including microprocessor, nonvolatile memory, sensors, etc., and chip singulation using deep Si reactive ion etching. b) Scanning electron microscopy image of SOI wafer carrier with integrated PV after fabrication



with Cu wire and pads for Cu pillar and solder bumps. c) A picture of the finished device taken together with a ladybug to illustrate its size. d) Scanning electron microscopy image of solder bumps. e) Cross-section schematic illustrating a packaged small computer system. (Reprinted with permission by Wiley-VCH Verlag)

As illustrated in the figure above, the researchers first grow photovoltaic materials on an SOI substrate, and then etched them into mesa structures all the way down to the buried oxide layer. The photovoltaic are fabricated with electroplated copper (Cu) Interconnect for series connection. The Cu pillars and solder bumps are then fabricated on bonding pads, connected by the Cu bonding pads. Then, the team bonded separately fabricated processor and memory chips onto the SOI carrier wafer in a wafer-level-packaging process. They used deep reactive-ion-etching for simulation with very low kerf loss.

A double benefit of the small size and thin layers of the photovoltaic cells on the chips is the simultaneous conversion of power and the reception of high-speed optical signals. We were able to show that the negative effect of material defects in the heteroepitaxial growth of III-V PV on Si becomes less significant as power density increases, favoring the approach of using directly grown III-V materials on Si substrate as integrated micro-PV at high power density," the IBM team explains. "Our III-V photovoltaic grown on Si shows multiple times higher efficiency and an order of magnitude higher output power density than prior Si micro-PVs due to better charge collection at high illumination intensity using III-V material grown on Si."

# Green Manufacturing

**Dr. R. G. Tated**

In this global world environment, resources and population are major problems. Environment is crucial one with and change in climate at any point leads to the imbalance of the earth. The ISO has proposed the new quality management system for products and even for Environment management system. The main era is to minimize the environmental damage due to industries. There is a need of new manufacturing process i.e. Green Manufacturing which is suitable and sustainable development strategy. The cost of energy and resources are constantly increasing due to rising demand and limited supply. Furthermore, price trends can hardly be forecasted, so companies aim to successfully produce within large price ranges of energy and resources. One strategy to accommodate price fluctuations consists of passing mark ups to the customer. However, a price mark-up may require that improvements be made to the product. Alternatively, stable prices may be facilitated with increased production efficiency, which can be achieved by reducing resource consumption and improving the organization of the manufacturing system.

This articles main objective is to bringing the attention of the manufacturer who are manufacturing the product with the mass production. We have seen that a lot of energy is using day by day and lots of waste is available, the waste are hazardous and can lead the human being to a termination point. Toxic hazards are really crucial for human being.

**Green Manufacturing**

In today's world the e-waste the major issue, green technology is the application of one or more of environmental science, green chemistry, environmental monitoring and electronic devices to monitor, model and conserve the natural environment and resources, and to curb the negative impacts of human involvement. The term is also used to describe sustainable energy generation technologies such as photovoltaic, wind turbines, bioreactors, Bio iltration, Bioremediation, Desalination etc. We don't always have time, or take time, to learn more, read fine print, decipher complex ingredients, and seek alternatives. The word "natural" has become an over-used and inaccurately used BUZZWORD in today's marketing; it's practically lost all value.

**Environmental Management Tools**

The environmental management tools include. Mass balance i.e. consideration of input and outputs of a process and to determine its effectiveness and wastage. Full cost accounting is related with the costs of materials, energy, labor, waste disposal and other sundry item cost. Product life cycle is also an important part of these tools less the life cycle less is the environment loss. The systematically engineering process of a product consists of three stages:

(1)conceptual, preliminary and detail design,

(2) production construction

(3)operational use and system support.

In the development of this study, the relevant cost functions are derived in sequence with a point view of systematical engineering process. Imposing extended producer responsibility on manufacturers is a means to achieve a critical leverage point between environment and business benefits. Manufacturers have the unique ability to facilitate product recovery and remanufacturing by designing their products for easier disassembly and reuse of component. Through the product life-cycle value design, the suitable materials are selected and those decisions (such as employing easily recyclable materials and avoiding the unusual materials, components and hazardous materials) can reduce the negative impacts on environment. The supplier's component life-cycle design cost, Y(MT) is a function of MT, where T is the product life cycle. Although there are many parameters influencing the design and production cost of a component, from the product design life point of view, it is appropriate to take it as a function increasing with product design life.

**Sustainable Manufacturing**

The concept of sustainability emerged from a series of meetings and reports in the 1970s and 1980s, and was largely motivated by environmental incidents and disasters as well as fears about chemical contamination and resource depletion. As pointed out in the 1987 Brundtland Report, Our Common Future David A. Dornfeld. Et.al.,(2013). The phrase sustainable manufacturing is sometimes used carelessly to describe the actions related to characterizing and reducing the environmental impacts of manufactur-

In spite of this caveat, this interpretation is likely to be maintained. A system might be thought of as unsustainable when society consumes resources and produces wastes at a rate that exceeds nature's ability to transform industry and society wastes into environmental nutrients and resources. Strictly speaking, sustainability can only be discussed in the context of a closed system, Manufacturing subsystems coexist alongside human, ecological, and natural subsystems. Therefore, sustainable manufacturing is a philosophy that cannot be considered independent of broader environmental and socioeconomic systems. Sustainable Manufacturing Fundamentals Manufacturing is a business function, and, as such, engineers are well-versed in establishing the economic value of engineering solutions for manufacturing. Measuring environmental and social performance presents a more challenging engineering and business task. Sustainability-related impacts result from operations and activities that manufacturing processes and systems employ to convert input materials and energy into marketable products. Material and energy are necessary inputs of manufacturing processes and systems; wastes and emissions, which are generally classified as outputs, are, in turn, inputs to other industrial and natural systems, where their impact is felt socially, environmentally, and economically.

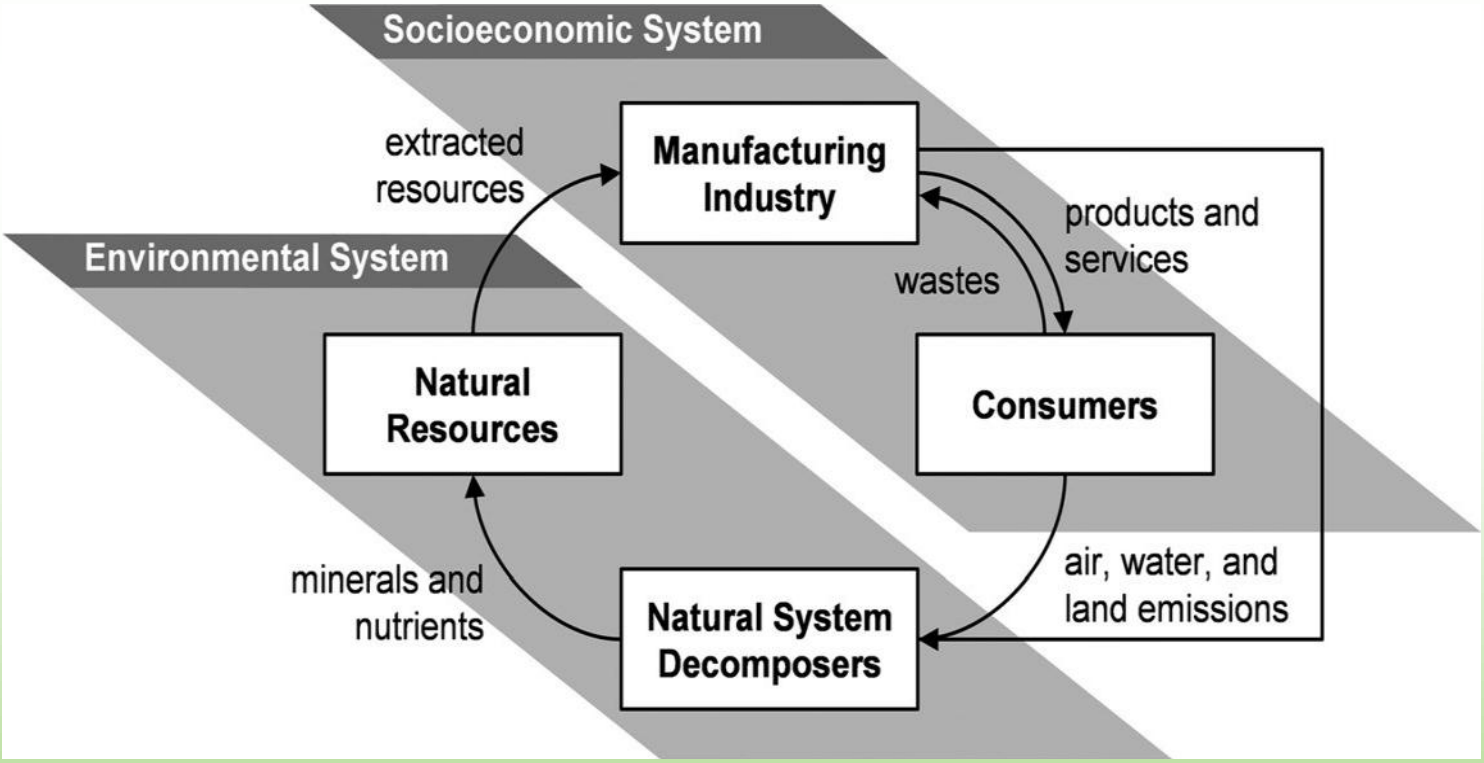
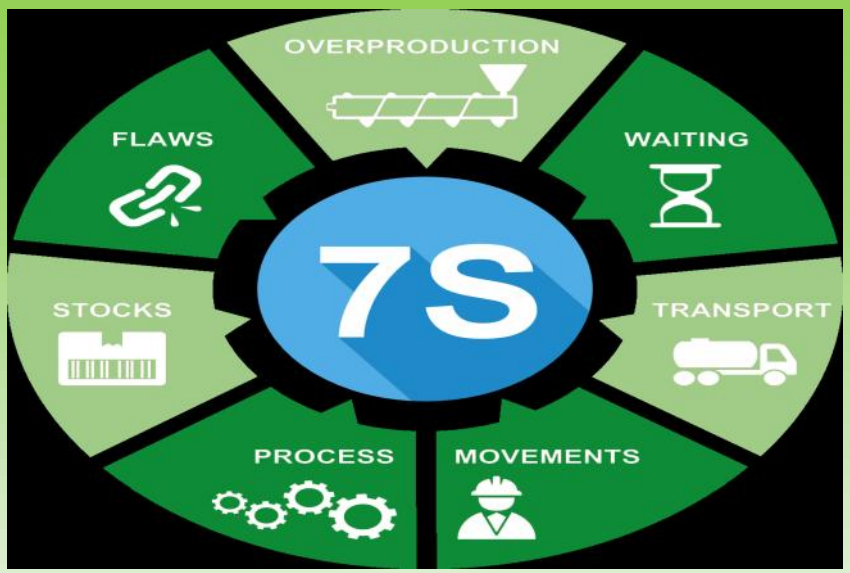



Fig. 1 The role of the manufacturing industry in a sustainable system .




**Sustainable Green operations**

Sustainable green operations As an innovative environmental management approach, GO serves to ensure the quality and environmental compliance of electronics manufacturers' inputs (e.g., electronics components and metals) and outputs (e.g., finished products, carbon emission, waste). GO emphasizes product-and process- oriented environmental practices to balance and improve financial performance as well as pollution reduction. Product-oriented environmental practice of GO, also referred to as product steward- ship, is concerned with reducing environmental burden with less use of hazardous and non renewable materials in products development, considering the environmental impact in product design, packaging, and material used. Specifically, it promotes recycling and reuse of product components with eco-design, and us in green cycle parts and packaging. Product stewardship of electronics manufacturers considers the environmental impact of products and their packaging from raw materials acquisition to end-of-life product disposal. Such practice is geared towards reducing the environmental damage arising from all product-related parts and components.

**Green supply chain management**

GSCM is defined to be the addition of green issues into supply chain management. In addition, state that GSCM supply chain involves from suppliers to manufacturers, customers and reverse logistics throughout the so called closed-loop supply chain. indicate there are various activities involving GSCM such as reuse, remanufacturing, and recycling which are embedded in green design, green procurement practices, total quality environmental management, environmentally friendly packaging, transportation, and various product end-of-life practices. In the global economy, the automobile industry transforms rapidly with the dramatic expansion of leading automobile manufacturers (e.g. Honda, Toyota, General Motor, Ford, Daimler Chrysler, Suzuki, Hyundai, and Fiat) into the Asia region Greening the automobile industry has been disputed in international energy and environmental policy studies. Green supply chain in automobile industry has become the main interest in many industrial fields. The evaluation and measurement of its performance is essential when environmental issues have been addressed all over the world However, there have been few studies exploring the issue of GSCM performance evaluation. Hence, applying green concepts into automobile manufacturing is essential to reduce environmental impacts, enhance market competition, and ensure regulation compliance claim that the automobile manufacturing industry in developing countries is a potential and promising industry because it creates a huge market, especially after entering WTO. However, automobile supply chains are lagging. For instance, indicate that Chinese automobile industry is quite nascent and the recycling of used cars is not paid enough attention to. Facing environmental burdens, the Chinese government has enacted tighten environment regulations Hence, Chinese automobile enterprises have started to study GSCM experiences from international partners Other example is that Malaysia government has not been addressed environmental issues, especially end-of-life vehicles recovery ). Since Malaysian automobile industry develops rapidly, GSCM forces local automobile manufacturers and government to become concern about their environmental burdens For these reasons, GSCM is emerging as an important approach to reduce environmental risks and brings economic benefit to manufacturers

**Green Application**

Fuel is the major issue in the world, the fuel used in our day to day life is non renewable and it will get finish soon because of this the need of new fuel is necessary. The only hope is Renewable energy i.e. solar, wind, tidal, bio diesel etc. which are green products. Therefore Sustainable energy can be used as fuel .Water purification is the another issue of human life as water is our most important need but due to population and due to chemical process the water is not hygiene for drink. The solar distillation process is very useful for the water purification process .

Air purification, the Basic and common green plants can be grown indoors to keep air fresh because all plants remove $CO_2$ and convert it into oxygen. Due to this the air pollution will reduce and the life on earth will get the more oxygen and less $CO_2$. Sewage treatment is conceptually similar to water purification. Sewage treatments are very important as they purify water per levels of its pollution. The more polluted water is not used for anything, and the least polluted water is supplied to places where water is used affluently. It may lead to various other concepts of environmental protection, sustainability etc. Solid waste management is the purification, consumption, reuse, disposal and treatment of solid waste that is undertaken by the government or the ruling bodies of a city/town.

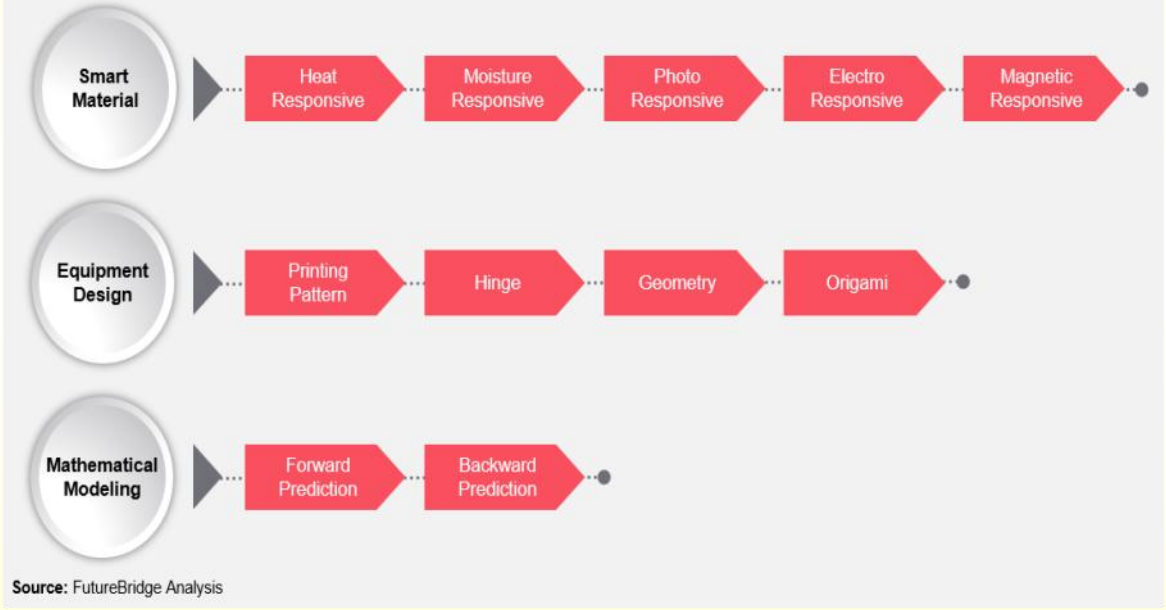
Energy conservation is the utilization of devices that require smaller amounts of energy in order to reduce the consumption of electricity. Reducing the use of electricity causes less fossil fuels to be burned to provide that electricity .

# 4D Printing Materials and Technologies

Prof. R.M.Sonar

As the 4D printing technology is still in its nascent stage, materials used for it are minimal. However, research and advancement in 3D printing are expected to provide new opportunities for 4D printing. The primary research areas currently in focus with respect to 4D printing are depicted in the Exhibit 3 below.

**EXHIBIT 3: Major Research Areas in 4D Printing**




**Source:** FutureBridge Analysis

Smart Material is one of the highly focused research areas in 4D printing, wherein the deformation mechanism of various materials is synthesized as per their responses to various external stimuli. Equipment Design deals with developing advanced printer technology, which can print multiple materials congruently. Currently, researchers use direct inkjet cure, fused deposition modeling, stereo lithography, laser-assisted bio-printing, and selective laser melting methods for 4D printing. Research on Mathematical Modeling is essential in understanding the functional structures of 4D printed objects. It predicts the deformation (forward) and formation (backward) process of an object triggered by stimuli.

## Material Selection

Materials for 4D printing are classified based on their environment or the external stimuli they react with. Current classes of smart materials are currently classified into the below categories:

### Thermo Responsive Materials

These materials work on the mechanism of the Shape Memory Effect (SME). They are classified into Shape Memory Alloys (SMA), Shape Memory Polymers (SMP), Shape Memory Hybrids (SMH), Shape Memory Ceramics (SMC), and Shape Memory Gels (SMG). Most of the researchers prefer SMPs as it becomes easy to print on these materials. They form and deform when heat or thermal energy is applied as a stimulus.

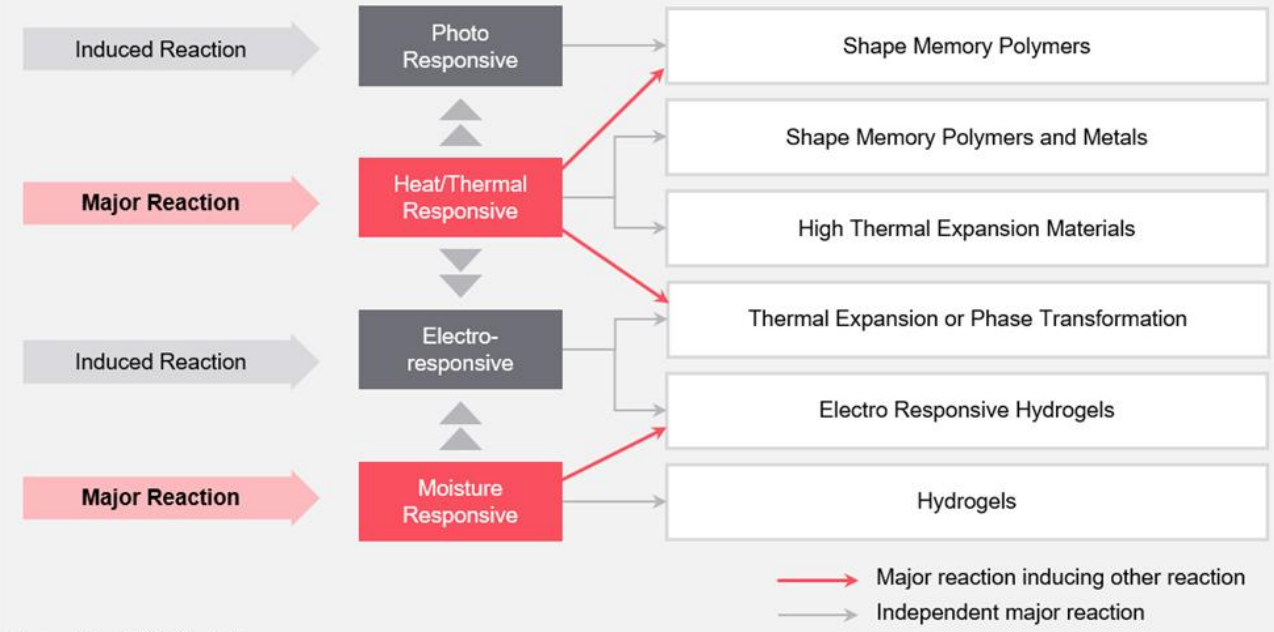
### Moisture Responsive Materials

Materials that react when in contact with water or moisture are classified under this category. Such materials are widely preferred by researchers, as water is available in abundance, and it can be used in a wide range of applications. The hydrogel is one of the smart materials that fall under this category as it reacts vigorously with water. For instance, hydrogels can increase its size by up to 200% of its original volume, when it comes in contact with water.

### Photo/Electro/Magneto Responsive Materials

These materials react with light, current, and magnetic fields. For instance, when photo responsive chromophores are infused with polymer gels at specific locations, they swell up absorbing light when exposed to natural light. Similarly, when current is applied to an object containing ethanol, it evaporates, thereby increasing its volume and expanding the overall matrix. Magnetic nanoparticles are embedded into the printed object to gain magnetic control of the object.

**EXHIBIT 4: Smart Materials and their Responsive Stimulus**




**Source:** FutureBridge Analysis

## Applications of 4D Printing

The idea of the pre-programmed intelligent object (created using smart materials) would seem to have several applications in various industries. However, being a novel technology, most of the applications are currently in the research & development phase. Major end-use applications of 4D printing technology are expected to arise from healthcare, automotive, aerospace, and consumer industries. However, the potential of 4D printing is expected to impact other industries as well, such as electronics, construction, industrial, etc., in the near future.

**EXHIBIT 5: Current Product Research in 4D Printing**

| Serial No. | Industry | Company/ Research Agencies | Description | Product |
|---|---|---|---|---|
| 1 | Aerospace | NASA | NASA developed a flexible metal fabric, which could be used as a shield in spacecraft antennas or astronaut spacesuit. | Space Chain Mail |
| 2 | Healthcare | University of Michigan's CS Mott Children's Hospital | The developed 4D printed airway splints can automatically expand up to double their size as per the need (children growth). | Airway Splint |
| 3 | Fashion and Apparel (Consumer Appliances) | Christophe Guberan (Product Designer) + MIT | Collaboration to develop a self-assembling shoe to eliminate the complex and labor-intensive production process. | Self-assembling Shoe |
| 4 | Aerospace | Airbus + MIT | The collaboration is to develop an inlet component to cool the engine by automatically controlling the airflow. This would help them achieve lighter and faster fuselage. | Programmable Carbon Fiber Inlet Component |
| 5 | Automotive | BMW + MIT | Both these companies have developed an inflatable material, which can change shape and size when triggered by air pulses. | Self-inflatable Silicone Material |

**Source:** FutureBridge Analysis

The self-inflatable material developed by BMW, in collaboration with MIT (as shown in the above table) has garnered the interest of several experts. The material, made of silicone inflates when triggered by air pulses, could be the future of pneumatics. Apart from the examples given above, there are several other research & development activities undertaken by key players in the 4D printing industry. For instance, some of the applications in the healthcare industry include 'Targeted Drug Delivery,' 'Fabrication of Stents' for minimal surgical invasion, Development of Shape Changing 'Splints,' etc. The development of 'Soft Robotics' and 'Hydraulic and Pneumatic Actuators' are some of the key applications in this industrial domain. The construction of self-healing roads and bridges could be potential applications in the construction industry.

The following *Exhibit 6* below explains the possible impact timeline of 4D printing on various applications across industries.

**EXHIBIT 6: Potential Product Development of 4D Printing**

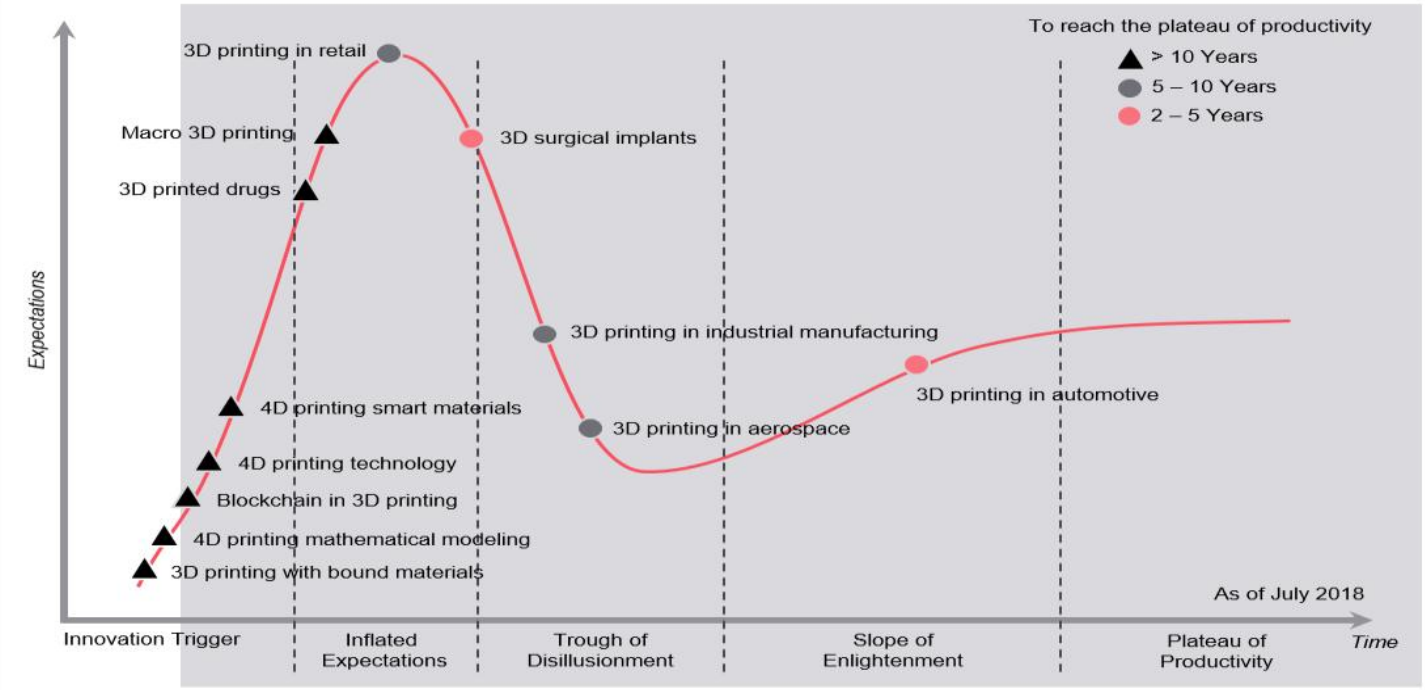
| Serial No. | Industry | Near-term Future Products | Mid-term Future Products | Long-term Future Products |
|---|---|---|---|---|
| 1 | Electronics | Smart Sensors | Adaptable Sensors | Nanotechnology |
| 2 | Healthcare | Artificial Tissues | Bio Prints | Artificial Organs |
| 3 | Industrial Machinery | Building and Pipes | Machines and Equipment, Reverse Engineering | |
| 4 | Automotive and Aerospace | | Space Vehicles | Automotive Body Parts |
| 5 | Consumer Appliances | Fashion and Lifestyle (4D Printed Dress, Shoes, etc.) | Home Appliances | |

**Source:** FutureBridge Analysis

## Technology Maturity of 4D Printing

The *Exhibit 7* below showcases the current phase of technological developments in 4D printing. Being in the innovation trigger phase, the technology has certainly created a lot of hype; however, it will take more than 10 years to reach the plateau of productivity.

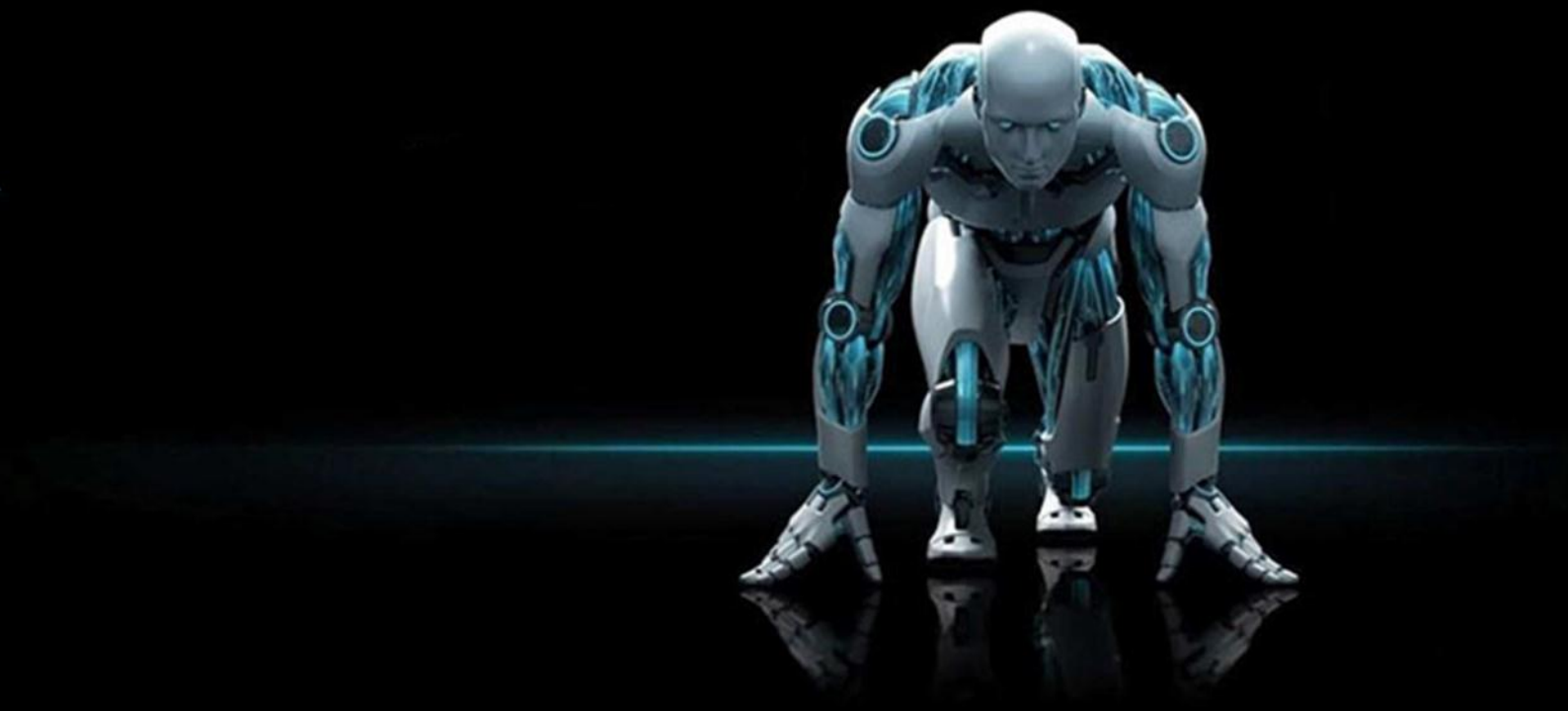
**EXHIBIT 7: Technology Hype Cycle of 3D vs. 4D Printing**




**Source:** Gartner Hype Cycle, 2018 and FutureBridge Analysis

The hype cycle also pinpoints that several advancements in 3D printing are still in the innovation trigger and inflated expectations phases of the lifecycle. This implies that 3D printing has a long way to go, and 4D printing being the successor of 3D printing could be slow in its progress. However, it is not mandatory that advancements in 4D printing should always follow 3D printing. Apart from the capabilities of a 3D printer (its ability to print multiple materials congruently and to print on several axes), other research areas focusing on smart materials and mathematical modeling does not overtly depend on 3D printing.

# Student Articles



# Autonomous Vehicle


**Mr. Shubham Bhambar, BE**

Autonomous vehicles also commonly known as driverless or self-driving vehicles, are automobiles that require no human involvement for operating or controlling them. In recent years, advancement in automated vehicle concepts has progressed but still some human input is required, depending upon the level of automation. Experts anticipate that automobiles will be capable of driving themselves within 2-3 years. This article describes current status, recent trends and research of self-driving vehicles in the automobile industry. A detailed analysis of the technologies used by automated vehicles to sense their environment and the level of automation in such vehicles is also included. The expected short-term and long-term, positive and negative, beneficial and harmful impacts of driverless technology such as greenhouse gas emission, energy consumption etc. are assessed. As widespread adoption of self-driving vehicles is considered to be inevitable, therefore requirement of certain technical and legal guidelines will be essential for safe and tension-free travel. The potential concerns regarding autonomous vehicles must be discarded with safe policies and technologies.

Automated vehicles have been generating significant attention and discussion, recently with almost every automobile company trying to develop their respective autonomous vehicle concept and are successful in achieving some levels of autonomy and are planning to start production of driverless vehicles in few years. Even though people have mixed feelings of excitement and insecurity regarding the driverless concept but will either accept or reject it on the basis of the impacts of autonomous vehicles. Researchers and analysts have already started considering the effects of autonomous vehicles on carbon emission, number of cars per person, etc. and are providing their views on vehicle automation. Self-driving[2] cars will need to outperform human driving capabilities for securing a larger consumer market. But surely, it will have a huge impact on the timeline of transportation and a landmark in human inventions.

The automotive industry is rapidly evolving and now with the concept of self-driving cars, all the companies are focused on developing their own driverless cars[3]. Even the companies which are not into 'mainstream automobile' like google and uber are also investing and researching extensively in autonomous vehicles.

- Apple is also developing its self-driving car project "Titan".
- The concept of electric cars is already in practical use. Tesla and General Motors have successfully launched their respect electric cars in the market and are available to the consumers. But the autonomous vehicles[4] are still in research but cars with some levels of autonomy are available like Tesla autopilot and GM super cruise control.
- An MIT spin-off called iSee is developing and testing autonomous driving system using artificial intelligence. Also, an object detection system called YOLO (you only look once) developed by Joseph Redmon is being used in driverless vehicle concept.
- Component maker Faurecia has envisioned the cockpit for the autonomous car. When autonomous mode is selected, the steering wheel folds away and the screen behind it slides to the center of the dashboard.
- Waymo, the subsidiary of parent company of google is a self-driving technology company which is successfully testing its concept car.
- Waymo has also announced to launch self-driving trucks for delivering goods.
- Companies are launching concept cars like Aston Martin launched its concept car Lagonda Vision Concept, which is a luxurious electric, level 4 autonomy car.
- Renault has launched its autonomous concept car called SYMBIOZ which drives in manual or level 4 autonomous mode.

Many more advances are being done in this field rapidly but the aforementioned points are mentioned to show the seriousness and enthusiasm regarding vehicle automation.

**LEVELS OF AUTOMATION**

The classification of automated vehicles is done with dividing them on the basis of extent of automation. The first classification was given by National Highway Traffic Safety Administration (NHTSA), USA[6] in 2013. But in 2016, SAE presented its classification of six levels of automation which was set as the international standard for all automated vehicles.

LEVEL 0: NO AUTOMATION

Vehicles in which all the controlling operations are in driver's hands. The piloting, braking, acceleration, deceleration and emergency braking is done solely by the driver. Vehicles with basic warning systems like coolant temperature, oil pressure etc. also fall in this category.

LEVEL 1: DRIVER ASSISTANCE

Some specific control functions that assist the driver in operating are included in level 1 cars. The driver is responsible for all operations but vehicle provides assistance if he utilizes it. Lane Keeping Assistance (LKA) steers the vehicle into a particular lane and Adaptive Cruise Control (ACC) is also an automated system which regulates speed and the driver steers. All the automated[8] systems work independently and still require some input from the driver. Nowadays, this level of automation is seen in most cars like Honda civic, jeep, BMW.

LEVEL 2: PARTIAL AUTOMATION

In partial automation, the vehicle has control of the vehicle in terms of steering, acceleration/deceleration and braking but the driver must monitor the driving and should be ready to take control at any time in case the automated systems are unable to perform [9]. Level 2 automated cars are available in market and include two or more combined automated functions.

LEVEL 3: CONDITIONAL AUTOMATION

In limiting self-driving, the vehicle is in full control and alerts the driver to retake control in situations which require driver assistance. The driver can take his 'eyes off' the road and should take control when the system needs it[10]. Vehicles with level 3 automation usually use RADAR technology for sensing their surroundings. Tesla autopilot system, General Motors super cruise technology and Audi A8 have level 3 automation.

LEVEL 4: HIGH AUTOMATION

Vehicles in this level are capable of handling immediate response like emergency braking. Driver attention is not required and need not be in the driver seat. But driver can take control in unusual environment conditions. Google car prototypes fall under this category.

LEVEL 5: FULL AUTOMATION

No human involvement is required. The vehicle will not allow the passenger to take control of the operations. Robotic taxi will fall under this category.

**IMPACTS AND APPLICATIONS**

Autonomous cars[17,18] would cause a decrease in number of accidents as it does not get distracted nor gets tired and also is packed with safety features like ABS and airbags. The driving will be free from human errors and will safe huge losses of life and money.

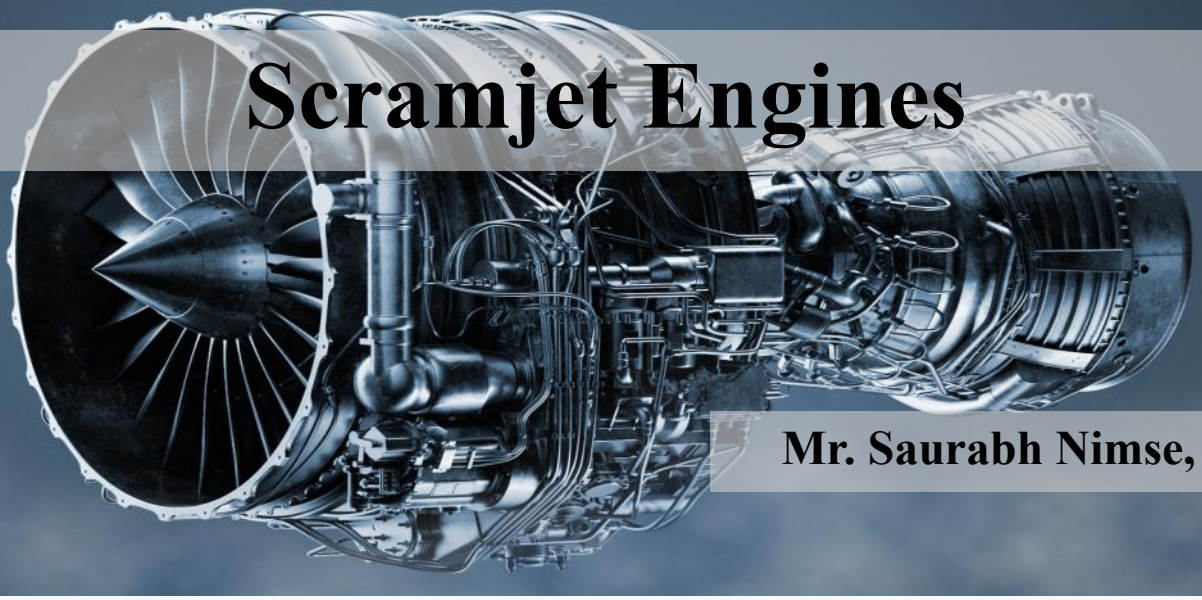
Also, cases of road rage will reduce effectively. Drivers will have time for anything else other than driving which could be used for relaxing, working or for entertainment, thus adding up to the revenue of telecom industry for example, if internet is used while raveling therefore improving economy. The speed limit can be increased as there is no chance for the computer systems to get distracted. This will reduce the time taken in a journey thus reducing traffic and the journey will be smooth and jerk free due to automated driving[21].

The efficiency of engines will increase as automated cars would drive the car in most efficient parameters, unlike humans who sometimes lug the engine or revving the engine unnecessarily. The computer system in automated cars would cause maximum fuel efficiency as it does not drive aggressively and there will be no wear and tear of clutch or gears due to less unessential gear-shifts[22]. Autonomous vehicles will have a huge impact on driver related jobs as it would no longer require drivers. It can cause loss in economy therefore, tackling this issue will be very important. Therefore, adoption of autonomous vehicles must be gradual so that it does not create a lacuna of unemployment. Parking space will be reduced as the cars can be parked very close together and the freed spaces can be used for public parks and community centers. The crimes[23] related to violation of traffic rules would decrease drastically. Also managing traffic flow would be very easy. Emissions released by automated vehicles will be increased or decreased depending upon the human behavior. Either the driverless concept would cause increase in energy consumption or would dramatically decrease it. People may tend to go on long drives or trips to far-away places as they would not have to drive and commuting in cars would become easy and tension-free. Also, if people rather pick the self-driving taxis, it would reduce pollution and energy consumption.

**MAJOR APPLICATIONS:**

- Driverless cars can be used as regular cars for driving from home to work.
- Autonomous vehicles can be used as self-driving taxis, where the passengers just have to input the destination. Uber[24,25] has already started trials for driverless vehicles offering lifts to customers.
- The delivery trucks deliver goods across countries travelling via long and dangerous routes, in harsh road and weather conditions. Self-driving trucks would be very essential for delivering through such conditions.
- It can be used by older people, people with disabilities and people who do not know how to drive.

# Scramjet Engines



Mr. Saurabh Nimse, BE

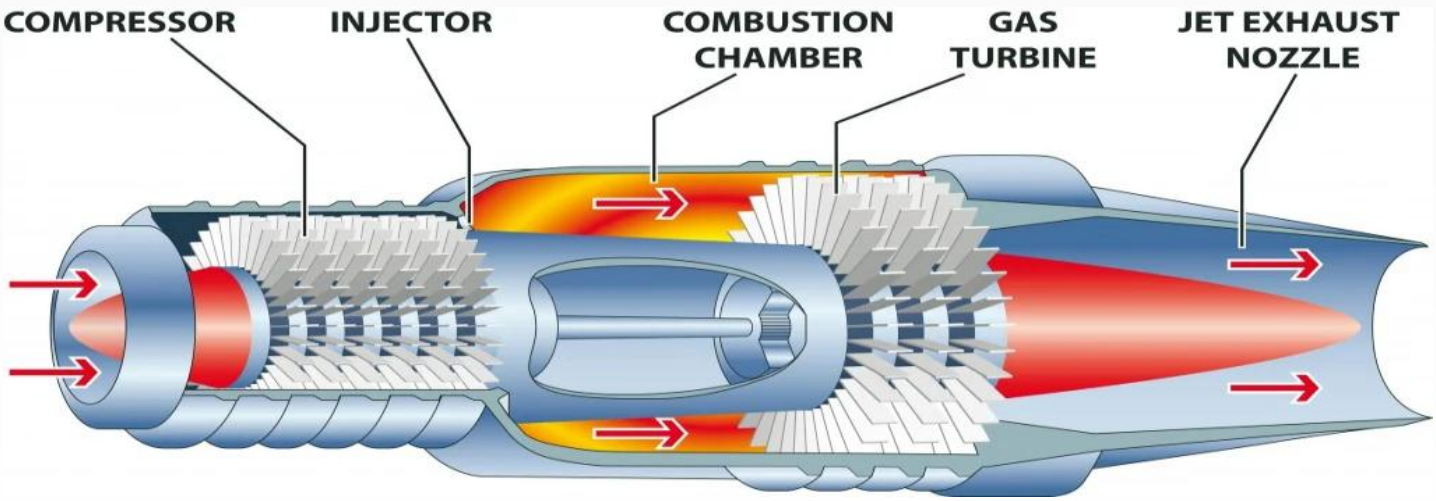
A **scramjet** (**supersonic combustion ramjet**) is a variant of a ramjet air breathing jet engine in which combustion takes place in supersonic airflow. As in ramjets (AEHS Report on Lorin Ramjets), a scramjet relies on high vehicle speed to compress the incoming air forcefully before combustion (hence *ram*jet), but whereas a ramjet decelerates the air to subsonic velocities before combustion; using shock cones, a scramjet has no shock cone and slows the airflow using shockwaves produced by its ignition source in place of a shock cone. This allows the scramjet to operate efficiently at extremely high speeds.

**Design Principles**

Scramjet engines are a type of jet engine, and rely on the combustion of fuel and an oxidizer to produce thrust. Similar to conventional jet engines, scramjet-powered aircraft carry the fuel on board, and obtain the oxidizer by the ingestion of atmospheric oxygen (as compared to rockets, which carry both fuel and an oxidizing agent). This requirement limits scramjets to suborbital atmospheric propulsion, where the oxygen content of the air is sufficient to maintain combustion.

The scramjet is composed of three basic components: a converging inlet, where incoming air is compressed; a combustor, where gaseous fuel is burned with atmospheric oxygen to produce heat; and a diverging nozzle, where the heated air is accelerated to produce thrust. Unlike a typical jet engine, such as a turbojet or turbofan engine, a scramjet does not use rotating, fan-like components to compress the air; rather, the achievable speed of the aircraft moving through the atmosphere causes the air to compress within the inlet. As such, no moving parts are needed in a scramjet. In comparison, typical turbojet engines require multiple stages of rotating compressor rotors, and multiple rotating turbine stages, all of which add weight, complexity, and a greater number of failure points to the engine.

Due to the nature of their design, scramjet operation is limited to near-hypersonic velocities. As they lack mechanical compressors, scramjets require the high kinetic energy of a hypersonic flow to compress the incoming air to operational conditions. Thus, a scramjet-powered vehicle must be accelerated to the required velocity (usually about Mach 4) by some other means of propulsion, such as turbojet, rail gun, or rocket engines. In the flight of the experimental scramjet powered Boeing X-51A, the test craft was lifted to flight altitude by a Boeing B-52 Stratofortress before being released and accelerated by a detachable rocket to near Mach 4.5. In May 2013, another flight achieved an increased speed of Mach 5.1.While scramjets are conceptually simple, actual implementation is limited by extreme technical challenges. Hypersonic flight within the atmosphere generates immense drag, and temperatures found on the aircraft and within the engine can be much greater than that of the surrounding air. Maintaining combustion in the supersonic flow presents additional challenges, as the fuel must be injected, mixed, ignited, and burned within milliseconds. While scramjet technology has been under development since the 1950s, only very recently have scramjets successfully achieved powered flight.




**Basic Principles**

Scramjets are designed to operate in the hypersonic flight regime, beyond the reach of turbojet engines, and, along with ramjets, fill the gap between the high efficiency of turbojets and the high speed of rocket engines. Turbo machinery based engines, while highly efficient at subsonic speeds, become increasingly inefficient at transonic speeds, as the compressor rotors found in turbojet engines require subsonic speeds to operate. While the flow from transonic to low supersonic speeds can be decelerated to these conditions, doing so at supersonic speeds results in a tremendous increase in temperature and a loss in the total pressure of the flow. Around Mach 3–4, turbo machinery is no longer useful, and ram-style compression becomes the preferred method.[34]

Ramjets use high-speed characteristics of air to literally 'ram' air through an inlet diffuser into the combustor. At transonic and supersonic flight speeds, the air upstream of the inlet is not able to move out of the way quickly enough, and is compressed within the diffuser before being diffused into the combustor. Combustion in a ramjet takes place at subsonic velocities, similar to turbojets, but the combustion products are then accelerated through a convergent-divergent nozzle to supersonic speeds. As they have no mechanical means of compression, ramjets cannot start from a standstill, and generally do not achieve sufficient compression until supersonic flight. The lack of intricate turbo machinery allows ramjets to deal with the temperature rise associated with decelerating a supersonic flow to subsonic speeds, but this only goes so far: at near-hypersonic velocities, the temperature rise and inefficiencies discourage decelerating the flow to the magnitude found in ramjet engines.[34]

# Smart Materials

Mr. Shubham Thete, TE

Different varieties of materials and methods have been used with a considerable effect on economy as well as environment. Hence the capability to make numerous environmental friendly and economic choices with effecting the structural integrity, longevity, efficiency of material, cost and industrial ethics is of the major importance. A great
attention has been given to use of inventive smart materials which offer creative solutions to repair and maintenance of the structures. The aim of the research in smart materials is to find advanced materials with multipurpose characters. It will bring fundamental change in approach in the design and performance of building creating a new revolt in one built environment.
The term “smart material” describes a group of material with unique properties. These are the materials that can significantly change their thermal, optical, mechanical and electromagnetic properties in a controllable and predictable manner in response to their environment. The materials correspond to the variation in heat, electricity and magnetic
waves. Source of the smart materials do not possess the shape change property, but they exhibit certain properties like electro and magneto rheological fluids. Upon the application of external magnetic or electric field the fluids can change the viscosity over many orders of magnitude. Smart materials have its potential applications wide spread in the construction industry. These materials are characterized by high strength, toughness, durability and high resistance to corrosion by chemicals and abrasion.

**TYPES OF SMART MATERIALS**

Smart materials are classified into following types: -

- Shape memory alloys
- Piezoelectric sensors
- Magneto restrictive materials
- Ferromagnetic sensors

1**. SHAPE MEMORY ALLOYS**: -

Shape memory alloys are the unique class of metal alloys that can regain permanent strains when heated above certain temperature. Smart memory alloys possess unique properties such as shape memory and super elasticity. Shape memory alloys helps the alloys to return to their original shape when heated whereas super elasticity allows huge deformation with limited strain. Shape memory alloys has two phases: -

1. High temperature phase called austenite
2. Low temperature phase called martensite

When alloy repeatedly undergoes phase changes they have the superior energy dissipation capacity when compared to the normal metals. Shape memory alloys has wide range of applications such as in strengthening and repair of structures and reducing permanent deformation. Nickel-titanium shape memory alloys are most widely used. Shape memory alloys can be included into other elements like concrete beams. Permanent deformation can be reduced by including shape memory alloys in concrete structures.

2. **PIEZOELECTRIC SENSORS**: -

Piezoelectric sensors are the devices that utilize the piezoelectric effect to measure the variations occurring in acceleration, pressure, temperature, strain by converting them to electric charge. Piezoelectric sensors are considered as one of the mature technologies with advanced reliability. The application of this type of materials include the regulation of the vibrations that are related with the plates in smart structures. Piezoelectric sensors also assist in the eradication of different types of noise produced. It is also being used as antennas and reflectors to maintain the accuracy in dimensions to obtain precise results.

3. **MAGNETO RESTRICTIVE MATERIALS**: -

Magneto restrictive materials are the materials which possess ferromagnetic properties that cause them to modify their shape or dimensions during the magnetism process. Magneto restrictive materials undergo stretching and shrinkage when magnetic field is applied.

The mechanism of magnetism can be explained at the atomic level. Under the magnetic field the magnetic domains rotate causing change in dimension. The unique property of the magneto restrictive material is that the magnetic energy and kinetic energy are interchangeable and can be used to build actuators and sensors. The applications of this include elastic waves behaving like a transducer to detect the defect and the depth of concrete structures. It also includes monitoring of the emission wave in structures to evaluate the position and propagation of the cracks.

4. **FERROMAGNETIC SENSORS: -**

Ferromagnetic sensors basically work by detecting. Amorphous ferromagnetic material is a type of magnetic material and is most suitable. Ferromagnetic sensors can be developed without electric contact between the measuring device and the sensor. Materials with Iron, Cobalt or Nickel content are generally ferromagnetic. In magnetic drug delivery magnetizable particles are injected into the blood stream and these magnets concentrate on disease locations. These sensors also provide vehicle detection.

**APPLICATIONS**

1. SMART CONCRETE: -

Smart carbon fibres are added to the conventional concrete mixture. This electrical network of conductive carbon fibres works as a distributed sensor network. This modification makes the concrete capable of detecting tiny deformations and stresses. The change can be detected by the help of electric probes places on the external surface of the structure. In a similar manner the smart concrete can be used to detect the underground stress that occur prior to earth quakes, to monitor building occupancy and to monitor traffic flow during the emergencies.

2. SMART BRICKS: -

The conventional bricks are stuffed with the sensors, signal processors and wireless communication links in order to act like warning system during natural calamities like storms, earthquakes, hurricanes. The sensors include detectors for moisture, humidity, sound, chemicals, stress and forces. When the brick is built into a wall it could be helpful in monitoring the building's temperature, vibration and movement and to send information about safety of building during fire accidents.

3. SMART GREEN ROOFS: -

Smart green roofs are used to give protection and covering to the building, to absorb storm water, to control temperatures by using inexhaustible source of energy like vegetated green roofs. If widely used these roofs could reduce management costs. Smart green roofs increase the life of roof decks and improve productivity of solar panels.

Smart green roofs require manual protection for the roofs to remain healthy. Various sensors are mounted on the roofs and the accessibility of the data from the sensors allows to track the function of the roof remotely and it also tells when maintenance is required. Solar powered sensors are most commonly used.

4. SMART SHADE: -

The smart shade employs the thermodynamics of zinc and steel which controls the amount of sunlight penetrating into building's interior with the help of elastic shape memory alloy wires. This also controls the level of carbon dioxide in the room. The temperature inside the building can be controlled by these materials. Mechanism of expansion and contraction of these materials will increase the temperature in winter and decrease the temperature in summer.

5. SMART STRUCTURE FOR SEISMIC PROTECTION: -

The resonance created by high winds and seismic activity will affect the high raised building and long bridge, in order to balance the resonance effect dampers should be provided during the design. If the dampers are not provided in place buildings and bridges may fail anytime during earthquake. Depending upon the size of the building dampers should be designed. Dampers are the device which senses the seismic wave. These waves can be migrated to ground or else it can be carried to the top floor.

**MERITS AND DEMERITS**

**MERITS: -**

1 .Smart materials are eco-friendly.
2. It has longer durability compared to other materials.
3. Less time and expenses in inspections.
4. The response of structure can be monitored remotely.
5. High energy density.
6. It works like a living system.
7. Determination of aromas in air by measuring resistance and capacitance.

**DEMERITS: -**

1. Smart materials are Non- bio-degradable.
2. Installation cost of smart materials are expensive.
3. Its long-term effects are unknown.
4. It causes global crisis.
5. It cannot be used for truly static materials.

## VI. WHY SMART MATERIALS?

1. Smart materials increase durability.
2. By including smart materials resistance to abrasion, corrosion and fatigue is increased.
3. Efficient cost.
4. Smart material like green roofs are environment friendly.
5. It requires less maintenance.
6. It's ability to self-sensing, self-rehabilitation, self-vibration damping, self-structural health monitoring and self-healing
are lead characteristics.
7. Smart materials can change their properties in response to an external stimulus.

# Dream Company

# Ashok Leyland

Ashok Leyland is an Indian multinational automotive manufacturer, headquartered in chennai. It is owned by the Hinduja Group. It was founded in 1948 as Ashok Motors and became Ashok Leyland in the year 1955. Ashok Leyland is the second-largest manufacturer of commercial vehicles in India, the third-largest manufacturer of buses in the world, and the tenth-largest manufacturers of trucks.

With the corporate office located in Chennai, its manufacturing facilities are in Ennore (Tamil Nadu), Bhandara (Maharashtra), two in Hosur (Tamil Nadu), Alwar (Rajasthan) and Pantnagar (Uttarakhand).Ashok Leyland also has overseas manufacturing units with a bus manufacturing facility in Ras Al Khaimah (UAE), one at Leeds, United Kingdom and a joint venture with the Alteams Group for the manufacture of high-press die-casting extruded aluminum components for the automotive and telecommunications sectors. Operating nine plants, Ashok Leyland also makes spare parts and engines for industrial and marine applications.

Ashok Leyland has a product range from 1T GVW (Gross Vehicle Weight) to 55T GTW (Gross Trailer Weight) in trucks, 9 to 80-seater buses, vehicles for defense and special applications, and diesel engines for industrial, genset and marine applications. In 2019, Ashok Leyland claimed to be in the top 10 global commercial vehicle makers. It sold approximately 140,000 vehicles (M&HCV and LCV) in FY 2016. It is the second largest commercial vehicle company in India in the medium and heavy commercial vehicle (M&HCV) segment, with a market share of 32.1% (FY 2016). With passenger transportation options ranging from 10 seaters to 74 seaters (M&HCV = LCV), Ashok Leyland is a market leader in the bus segment. In the trucks segment Ashok Leyland primarily concentrates on the 16 to 25-ton range and has a presence in the 7.5 to 49 ton range.

Ashok Motors was founded in 1948 by Raghunandan Saran. He was an Indian freedom fighter from Punjab. After Independence, he was persuaded by India's first Prime Minister Nehru to invest in a modern industrial venture. Ashok Motors was incorporated in 1948 as a company to assemble and manufacture Austin cars from England, and the company was named after the founder's only son, Ashok Saran. The company had its headquarters in Chennai, with the manufacturing plant in Chennai. The company was engaged in the assembly and distribution of Austin A40 passenger cars in India

# PLANT


ASHOK LEYLAND
ASSEMBLY PLANT
Grand Opening of
ASHOK LEYLAND
BANGLADESH ASSEMBLY PLANT
IFAD AUTOS LTD.
INDUSTRIAL PARK
IFAD
ASHOK LEYLAND


Automotive Horizon


ASHOK LEYLAND
LIGHT VEHICLES

# PRODUCTS


ASHOK LEYLAND


Sachin parvatikar
2016
ASHOK LEYLAND
EURO 6


ASHOK LEYLAND
PARTNER

# ACHIEVEMENTS


**India International Science Festival 2021**
**Organized by**
**Department of Science and Technology**
**Ministry of Earth Sciences**
**Government of India**
Project from Mechanical Department
Qualified for Grand Final.
India International Science Festival 2021
**Project Title:- Smart Vegetable Planter**

SNJB's
LATE SAU K.B. JAIN
COLLEGE OF ENGINEERING
CHANDWAD

DEPARTMENT OF MECHANICAL ENGINEERING

# SAE BAJA 2022

## TEAM
## THE CREW

WE FEEL PROUD TO ANNOUNCE THE RESULT OF THE VIRTUAL ROUND OF THE INTERNATIONAL EVENT OF M-BAJA 2022

ALL INDIA RANK **16th**

# Congratulations


SPARTANS
1
WINNER
AIR -1
Design Evaluation
Cost Evaluation
Best In-House
CHAMPION
The Spartans
EDGELINE
EDGELINE GO-KART
CHAMPIONSHIP 2021
"THE SPARTANS"
WARHAMMER 2.0
Captain - Chaitanya Thakur
Rider - Tushar Kumbharde

# News

दिव्य मराठी नाशिक' जिल्हा पुलआउट 13-02-2022

## 'द स्पार्टन्स' संघास राष्ट्रीय स्पर्धेत चॅम्पियनशिप

प्रतिनिधी | चांदवड

डी. वाय. पाटील स्कूल ऑफ इंजिनिअरिंग, पुणे यांच्या सौजन्याने घेण्यात आलेल्या 'ऐजलाइन गो-कार्ट चॅम्पियनशिप २०२०-२१' या राष्ट्रीय स्पर्धेत येथील स्व. कांताबाई भवरलालजी जैन अभियांत्रिकी महाविद्यालयातील 'द स्पार्टन्स' या विद्यार्थ्यांच्या संघाने दमदार कामगिरी दाखवत राष्ट्रीय स्तरावर चॅम्पियनशिप पटकावल्याची माहिती प्राचार्य डॉ. एम. डी. कोकाटे यांनी दिली.

ऑनलाइन प्लॅटफॉर्मवर झालेल्या या स्पर्धेत देशभरातून २० संघ सहभागी झाले होते. अतिशय अटीतटीच्या झालेल्या या स्पर्धेत संघ 'द स्पार्टन्स'ने २८ हजार रुपये रोख रकमेसह डिझाइन इव्हॅल्युएशन, कॉस्ट इव्हॅल्युएशन, बिझनेस आणि बिल्ट कॉलिटी यासारख्या खडतर चाचण्यांना तोंड देत स्पर्धा जिंकली. या संघाला प्रा. डी. डी. संचेती यांनी मार्गदर्शन केले. संघात

'ऐजलाईन गो-कार्ट चॅम्पियनशिप २०२०-२१' या राष्ट्रीय स्पर्धेत चॅम्पीयनशिप पटकावलेल्या चांदवड अभियांत्रिकी महाविद्यालयातील 'द स्पार्टन्स' या विद्यार्थ्यांच्या संघाची गो-कार्ट कार.

कॅप्टन चैतन्य ठाकूर व रायडर तुषार कुंभार्डे यांच्यासह सोळा विद्यार्थ्यांचा समावेश होता. विद्यार्थ्यांनी बनवलेल्या गो-कार्ट या कारची इंजिन क्षमता १२५ सीसी तर वेग ताशी ७५ किलोमीटर आहे. या कारचे वजन १०० किलोग्रॅम इतके आहे. या कारचे संपूर्ण डिझाइन महाविद्यालयाच्या वर्कशॉपमध्येच करण्यात आले. या कारसाठी जैन ऑटोमोबाइल्सचे तांत्रिक सहाय्य व मालेगावच्या एम. बी. केमिकल्सचे आर्थिक सहाय्य लाभले.

यशस्वी विद्यार्थ्यांचे संस्थेच्या विश्वस्त समितीचे अध्यक्ष बेबीलाल संचेती, विश्वस्त समितीचे उपाध्यक्ष व महाविद्यालयाचे समन्वयक दिनेशकुमार लोढा, सेक्रेटरी जवाहरलाल आबड, प्रबंध समितीचे अध्यक्ष अजितकुमार सुराणा,उपाध्यक्ष अरविंदकुमार भन्साळी, महाविद्यालयाचे समन्वयक झुंबरलाल भंडारी, सुनीलकुमार चोपडा, प्राचार्य डॉ. एम. डी. कोकाटे, उपप्राचार्य डॉ. एम. आर. संघवी, विभागप्रमुख डॉ. एस. डी. संचेती, सर्व विभागप्रमुख, प्राध्यापक, शिक्षक व-शिक्षकेतर कर्मचाऱ्यांनी अभिनंदन केले.

लोकमत

## चांदवडच्या अभियांत्रिकीत इनक्युबेशन सेंटरचे उद्घाटन

चांदवड : येथील स्व.सौ. कांताबाई भवरलालजी जैन अभियांत्रिकी महाविद्यालयातील स्टार्टअप अँड इनोव्हेशन सेल आणि नवयुवक आंत्रप्रेनर्स, मुंबई यांच्या संयुक्त विद्यमाने 'एसएनजेबी आयडिएशन चॅलेंज' व 'इनक्युबेशन सेंटर'चे उद्घाटन ऑनलाइन पद्धतीने करण्यात आले. संस्थेचे तांत्रिक सल्लागार डॉ. आर.जी. तातेड यांनी 'एसएनजेबी आयडिएशन चॅलेंज'बद्दलचा परिचय करून दिला.

एसएनजेबी आयडिएशन चॅलेंजचे उद्घाटन विश्वस्त समितीचे उपाध्यक्ष दिनेशकुमार लोढा यांच्या हस्ते करण्यात आले. तर, इनक्युबेशन सेंटरचे उद्घाटन प्रमुख पाहुणे नवयुवक आंत्रप्रेनर्सचे व्यवस्थापकीय संचालक गौरव मिश्र यांच्या हस्ते करण्यात आले. या कार्यक्रमासाठी बनविलेल्या ब्लॉगचे उद्घाटन समन्वयक झुंबरलाल भंडारी यांच्या हस्ते करण्यात आले. या उपक्रमाला दि. १२ जानेवारीपासून सुरुवात करण्यात आली आहे.

हा उपक्रम १६ आठवड्यांचा राहणार आहे. एसएनजेबी परिसरात एकूण १२ हजार विद्यार्थी शिक्षण घेत आहेत. उद्घाटनप्रसंगी प्राचार्य, शिक्षकवर्ग आदी ऑनलाइन उपस्थित होते. या कार्यक्रमप्रसंगी संस्थेच्या विश्वस्त समितीचे अध्यक्ष बेबीलाल संचेती, उपाध्यक्ष व महाविद्यालयाचे समन्वयक दिनेशकुमार लोढा, सेक्रेटरी जवाहरलाल आबड, प्रबंध समितीचे अध्यक्ष अजितकुमार सुराणा, उपाध्यक्ष अरविंदकुमार भन्साळी, सुनीलकुमार चोपडा , पी.पी. गाळणकर आदींनी मार्गदर्शन केले. (वा.प्र.)

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## विद्यार्थ्यांच्या संशोधनात्मक संकल्पनांना मिळणार वाव

### एसएनजेबी आयडीएशन चॅलेंज व इनक्युबेशन सेंटरचे उद्घाटन

प्रतिनिधी | चांदवड

येथील स्व. सौ. कांताबाई भवरलालजी जैन अभियांत्रिकी महाविद्यालयातील स्टार्टअप अँड इनोवेशन सेल आणि नवयुवक आंत्रप्रेनर्स, मुंबई यांच्या संयुक्त विद्यमाने येथील एसएनजेबी संस्थेत 'एसएनजेबी आयडीएशन चॅलेंज' व 'इनक्युबेशन सेंटर'चे उद्घाटन ऑनलाइन करण्यात आले.

संस्थेचे तांत्रिक सल्लागार डॉ. आर. जी. तातेड यांनी 'एसएनजेबी आयडीएशन चॅलेंज 'बद्दलचा संपूर्ण परिचय करून दिला. एसएनजेबी आयडीएशन चॅलेंजचे उद्घाटन संस्थेच्या विश्वस्त समितीचे उपाध्यक्ष दिनेशकुमार लोढा यांच्याहस्ते करण्यात आले. तर इनक्युबेशन सेंटरचे उद्घाटन प्रमुख पाहुणे नवयुवक आंत्रप्रेनर्सचे व्यवस्थापकीय संचालक गौरव मिश्रा यांच्याहस्ते करण्यात आले. तसेच या कार्यक्रमासाठी एक ब्लॉग बनविण्यात आला आहे. त्या ब्लॉगचे उद्घाटन महाविद्यालयाचे समन्वयक झुंबरलाल भंडारी यांच्याहस्ते करण्यात आले. यावेळी त्यांनी विद्यार्थ्यांकडून निर्माण झालेल्या कल्पनांचे समाजासाठी उपयुक्त उत्पादनांमध्ये रूपांतर करण्याचा आशावाद व्यक्त केला. दिनेशकुमार लोढा यांनी इन्क्युबेशन सेंटरचे महत्त्व आणि त्यामध्ये उपलब्ध असलेल्या सुविधांवर प्रकाश टाकला. यामुळे मोठ्या संधींची दारे खुली झाली असून विद्यार्थ्यांनी त्याचा लाभ घेण्याचे आवाहन त्यांनी केले. गौरव मिश्रा यांनी शालेय विद्यार्थ्यांसाठी अशा प्रकारचा उपक्रम राबविणारे हे एकमेव महाविद्यालय असल्याचे सांगीतले. कार्यक्रमाचे संयोजक म्हणून प्राचार्य डॉ. एम. डी. कोकाटे, उपप्राचार्य डॉ. एम. आर. संघवी, स्टार्टअप अँड इनोवेशन सेलचे प्रमुख प्रा. पी. एम. बोरा यांनी काम पाहिले. या उपक्रमास दि. १२ जानेवारी २०२२ पासून सुरुवात केली असून हा उपक्रम १६ आठवड्यांचा राहणार आहे. सुमारे १२ हजार विद्यार्थी शिक्षण घेत असून या उपक्रमात विद्यार्थ्यांकडून नवीन संशोधनात्मक संकल्पना घेण्यात येणार आहेत. त्यातून उत्तम संकल्पनांची निवड करून त्यांना पारितोषिके देण्यात येणार आहे,

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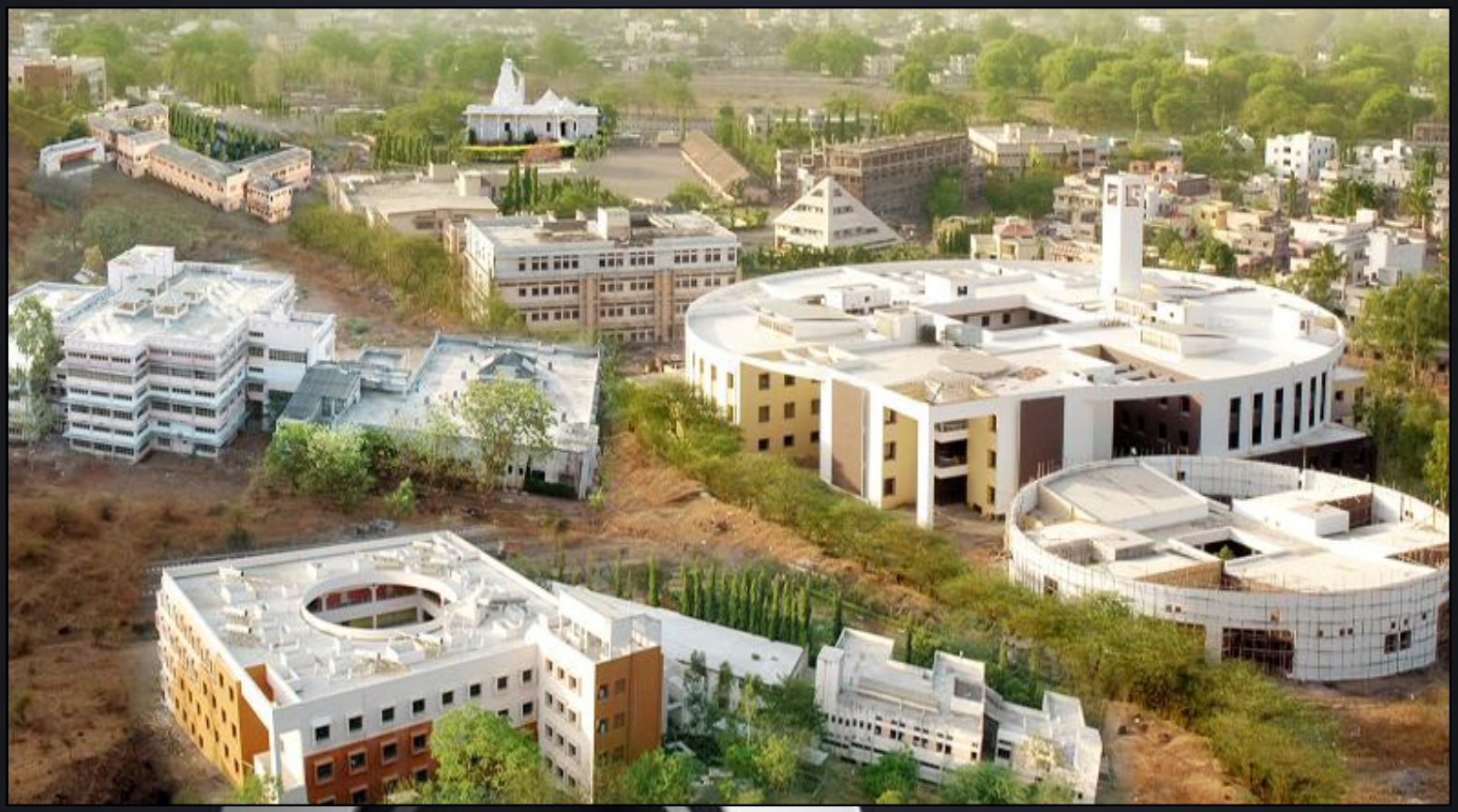

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