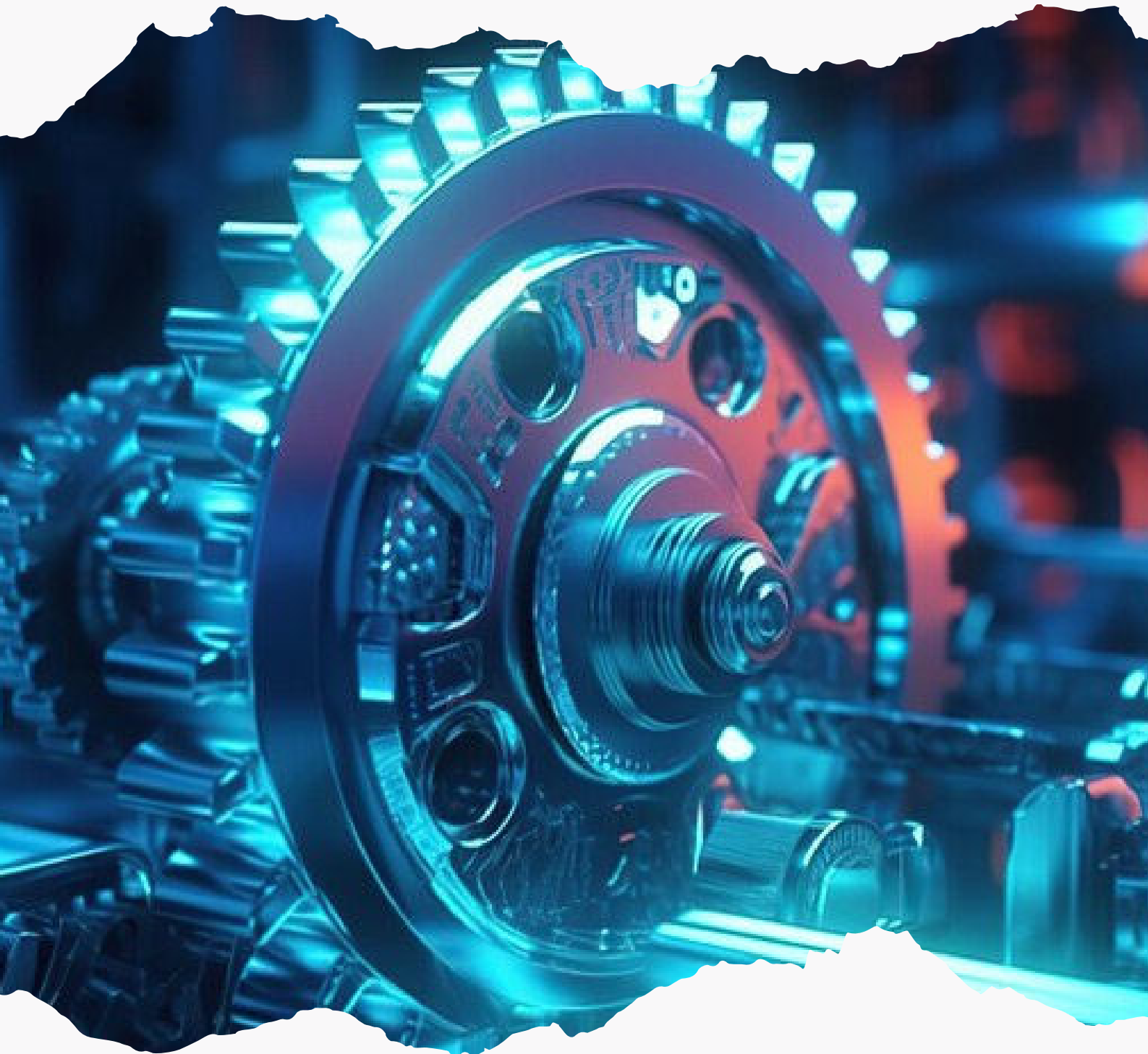


MECHANISTIC MARVEL

3rd EDITION
JUNE 2022



BUILDERS
ENGINEERING COLLEGE

BUILDERS ENGINEERING COLLEGE

An Entity of Kangeyam Group of Institutions

Approved by AICTE, New Delhi | Affiliated to Anna University, Chennai | ISO 9001:2015 Certified Institution | Accredited by NAAC | Recognized 2(f) status by UGC

EBET Knowledge Park, Nathakadaiyur, Kangeyam, Tirupur - 638 108, Tamil Nadu.

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PREFACE

The e-magazine is a quarterly magazine published by the mechanical department. In this edition poems from students, research papers from the faculty and articles on latest technological advancement are included.

In addition to it magazine also provides space for the inclusion of various technical and cultural activities happened in the department during past three months.

The previous edition of this magazine was first initiative of the department towards publishing of department activities in electronic form and hence some typing /miscellaneous errors remained. This edition was far more crucially scrutinized and checked by some of the best faculties not of this department but also from through the college.

Hope this magazine becomes the reflection of mechanical department and will cater all the needs of readers.

Thank you!

Mr.C.SIVARAJ

Assistant Professor

Department of Mechanical Engineering

BEC.

MESSAGE BY CHAIRMAN

THIRU.N.RAMALINGAM

Chairman-BEC



Erode Builder Educational Trust (EBET) has been founded by a group of like-minded visionaries who felt the need for an apex academic and professional educational institution, committed to deliver through a number of institutes, schools and colleges, high standards of academic excellence for enriching lives through value based education. Builders Engineering College (Formerly Erode Builder Educational Trust's Group of Institutions) was founded in the year 2009 by EBETAs world evolves, all the people need to evolve for survival. To be evolved we provide a holistic environment and create opportunities.

As world evolves, all the people need to evolve for survival. To be evolved we provide a holistic environment and create opportunities. Our Institution attained the richest fame by the world-class Infrastructure, technological advancements, and human resources in a short span. The objective is to educate the rural young students to reach the dream destination. The tremendous support from all the stakeholders helped us to be successful in our vision.

MESSAGE BY CEO



Dr.C.VENKATESH
Chief executive officer

Students learn through academic and experiential learning. As a teacher, instilling the passion for learning lies in our hands. Let us travel together to attain the pinnacle of success.

BEC is approved by AICTE, New Delhi and affiliated to Anna University, Chennai. It is accredited by NAAC . The campus is eco-friendly and equipped with excellent infrastructure, qualified and well experienced faculty members who strive hard to attain academic excellence in higher education by empowering students with knowledge, wisdom and experience.

MESSAGE BY PRINCIPAL

Dr. S. GOPALAKRISHNAN
Principal



It gives me an immense pleasure in welcoming you to Builders Engineering College (BEC), Nathakadaiyur, Tirupur 638 108. BEC (Formerly Erode Builder Educational Trust's Group of Institutions) was founded in the year 2009 by Erode Builder Educational Trust (EBET) with a vision to impart quality higher education to rural aspirants through innumerable institutions. It has been promoted by a group of likeminded visionaries with the unique objective of offering value based education to the students for a prosperous career.

BEC is approved by AICTE, New Delhi and affiliated to Anna University, Chennai. It is accredited by NAAC. The campus is eco-friendly and equipped with excellent infrastructure, qualified and well experienced faculty members who strive hard to attain academic excellence in higher education by empowering students with knowledge, wisdom and experience.

MESSAGE BY HoD



Mr.S.RAVI
Head of Department

The Department of Mechanical Engineering was started in the year 2009 with an intake of 60 students in the UG programme. The department aims to develop mechanical engineers who are innovative, entrepreneurial and equipped to become global leaders in research and technology. The objective of the department is to graduate individuals who can design systems, components or processes to meet desired needs within the realistic constraints such as economic, environmental, social, health, safety and manufacturability.

FACULTY MEMBERS





S.SARAN
III YEAR



M.ABISHEK
III YEAR

EDITORS



S.SIVA SHANKAR
III YEAR



S.MOHAMED SHAHEEN
III YEAR

DEPARTMENT VISION

- To be a leading light in, and renowned for, Mechanical Engineering and Research.

DEPARTMENT MISSION

- To maintain state of the art research facilities to provide collaborative environment that stimulates students and faculty members with opportunities to create, analyse, apply and disseminate knowledge.

PROGRAM SPECIFIC OUTCOMES (PSOs):

- PSO1: Apply the knowledge gained in Mechanical Engineering for design and development and manufacture of multi-disciplinary engineering systems and projects.
- PSO2: Use the knowledge acquired to investigate research problems in mechanical engineering with due consideration for environmental and social impacts.

SALIENT FEATURES OF OUR DEPARTMENT:

- Exemplary Placement Record.
- Hands on Workshop on Trending Technology.
- Academic Incentives for Top Performers.
- Empowered Faculty Members and Grabbed National and International Awards.
- Strong Industry Tie-Ups.
- Smart Class Rooms & Learning Management Systems.
- Students are given Opportunity to Organize Major Events of the Department.
- National level Champions in Sports and Games.

MoU:

- Schwing Stetter India Pvt. Ltd., Chennai.
- Harita Techserv (TVS Group), Chennai.
- Trimble Solutions India Pvt. Ltd., Mumbai.
- Simem Constructions & Environmental Engineering Pvt . Ltd., Gujarat.

PROGRAM OUTCOMES:

- Apply the knowledge gained in Mechanical Engineering for design and development and manufacture of multi-disciplinary engineering systems and projects.
- Use the knowledge acquired to investigate research problems in mechanical engineering with due consideration for environmental and social impacts.

MECHANICAL ENGINEERING



FACULTY ARTICLES



Refueling the Engine

-Mr.M.SURESH
Assistant Professor

The diesel engine serves as the workhorse of the modern world. It is rugged, reliable, and powers most of the planet's freight-hauling trucks, earth-moving equipment, and farm machinery. Diesel engines have improved the quality of life and delivered energy access to billions of people, providing essential access to goods, transportation, and electricity. It's an incredible, essential technology for converting high energy-density, easily storable liquid fuels into work.

But diesel engine fuels cause unsustainable greenhouse gas impacts. According to the U.S. Energy Information Administration, diesel use accounted for about 26 percent of total U.S. transportation sector carbon dioxide emissions, the equivalent of about 10 percent of total U.S. energy-related CO₂ emissions in 2021. This negative impact arises from the fossil fuel diesel uses, rather than the engine design. Fuels cleaner than petroleum-based fuels exist and are being refined constantly, but greater flexibility on feedstock and fuel composition is needed.



- That challenge is an engineering opportunity. Free the diesel engine from petroleum-derived fuels—or even from fuels that are required to be chemically similar to diesel—so that it can operate on any fuel and it can meet its essential economic functions while greenhouse gas emissions are reduced.
- Achieving this was the goal of the thesis work of my co-founder, BJ Johnson, during our doctoral studies at Stanford University. Since establishing ClearFlame Engine Technologies in 2016 to launch the commercialization of this technology, we've shown it is possible to adapt diesel technology to operate on any fuel, regardless of cetane number, and in a way that conserves the same thermodynamic cycle, combustion process, and thus all the progress that has been built over a century of this incredible machine, and to do so in a way that preserves and promotes the increase in quality of life that access to energy provides.

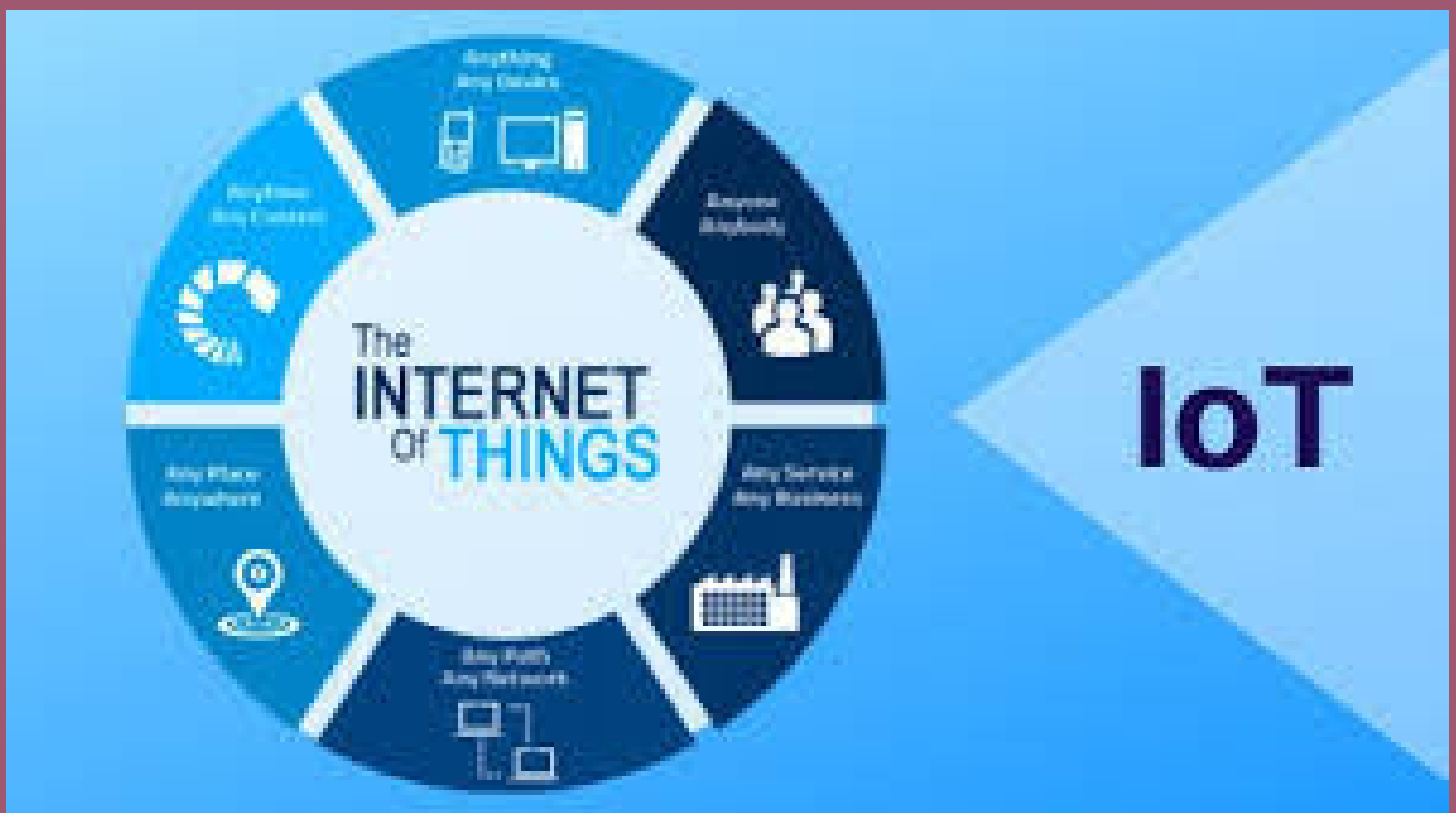
Internet of Things for Mechanical Engineers

-Dr.M.S.SENTHIL KUMAR
Professor

- The Internet of Things (IoT) is revolutionizing the field of mechanical engineering, transforming the way machines are designed, manufactured, operated, and maintained. By embedding sensors, actuators, and communication .
- protocols into mechanical devices, IoT enables real-time data collection, remote monitoring, and predictive maintenance, leading to improved efficiency, productivity, and safety.
- Key applications of IoT in mechanical engineering include:
 - 1.Smart Manufacturing: IoT-enabled sensors and actuators can monitor and control various parameters in manufacturing processes, optimizing machine performance, reducing downtime, and improving product quality.
 - 2.Predictive Maintenance: IoT devices collect real-time data on machine health, enabling predictive analytics to identify potential failures before they occur, preventing costly downtime and unplanned repairs.

3. Remote Monitoring and Control: IoT-connected machines can be monitored and controlled remotely, allowing for centralized management, troubleshooting, and optimization from anywhere in the world.

4. Asset Tracking and Management: IoT tags and sensors can track the location and status of valuable assets, improving inventory management, logistics, and asset utilization.



5. Condition Monitoring and Alerting: IoT-enabled sensors can monitor critical parameters such as temperature, pressure, and vibration, providing real-time alerts for potential hazards or anomalies.

6. Data-Driven Design and Optimization: IoT data can be analyzed to gain insights into machine behavior, enabling engineers to optimize designs, improve performance, and reduce energy consumption.

7. Smart Buildings and Infrastructure: IoT-connected HVAC systems, lighting, and security controls can optimize energy usage, improve occupant comfort, and enhance building security.

8. Smart Transportation: IoT-enabled vehicles and traffic management systems can optimize traffic flow, reduce congestion, and improve road safety.

9. Industrial Automation and Robotics: IoT integration with robotics and automation systems can enhance precision, efficiency, and flexibility in industrial processes.

10. Remote Diagnostics and Repair: IoT data can be used to remotely diagnose machine faults, providing technicians with the necessary information for efficient repair and maintenance.

The IoT is transforming mechanical engineering, creating new opportunities for innovation and efficiency across a wide range of industries. As the technology continues to evolve, we can expect to see even more transformative applications of IoT in the years to come.

New Industrial Policy of Tamil Nadu

-Mr.S.P.SUNDARESWARAN

Assistant Professor

The State Cabinet meeting which was chaired by the Chief Minister of Tamil Nadu, Edappadi K Palaniswami, cleared the 34 major investment proposals with a total investment of Rs 52,257 crore.

Highlights

- These new Industrial Policy have the potential to create 93,935 jobs.
- These investments will be done in the sectors including automobiles & auto components, electronics, solar cell manufacturing and including electric vehicles.
- The Cabinet also cleared the Tamil Nadu Industrial Policy, 2021.
- These incentive packages have been formulated in such a way that it will suit the requirement of each investor.

Industrial Policy of Tamil Nadu

Tamil Nadu has always been the forefront of economic growth in India. The Government of Tamil Nadu has made significant growth in the field of automobiles, textile, engineering, Information Technology, leather, electric hardware and hi-technology industries over time.

- To maintain the pace the Government has formulated Tamil Nadu Industrial Policy which the aim of providing the necessary infrastructure in order to ensure the sustained industrialisation in Tamil Nadu.



Objectives of the industrial policy

1. Obtaining boost the average growth rate of manufacturing sector.
2. Achieving the sustainable industrial development.
3. Providing employment opportunities in the state.
4. Enhance the growth of high technology (Hi-Technology) industries such as aerospace and nanotechnology.

Rare Mineral Found in Antarctica

-Dr.N.SATHISH KUMAR
Associant Professor

- A rare maritime mineral, Jarosite, has been found in the Antarctica ice. It was discovered after drilling deep into Antarctic ice.
- The recently discovered mineral was examined and it was found that it was formed in pockets within the ice. This supports the theory of presence of jarosite on MARS in as similar manner. It signifies that, the minerals are able to form in thick deposits on mars because the planet is a lot dustier than Antarctica.



DRDO Biodigester Mk II technology in metro rail

-Mr.K.VIGNESHWARAN
Assistant Professor

The Defence Research and Development Organisation recently signed a memorandum of understanding with the Maha Metro. Maha Metro is Maharashtra metro rail Corporation. It is a joint venture company of the Government of India and Government of Maharashtra.

The agreement will render technical support to implement the advanced biodigester Mk II technology to treat human waste in Metro Rail Network. The Indian Railways has already installed more than 2.4 Lakh biodigester in its passenger coaches.

DRDO recently demonstrated a customised version of bio digester to treat human waste generated from the houseboats in the Dal lake. Around hundred units of biodigester are to be procured for civil Habitat around the lake to minimise water pollution. This project is being monitored by a committee of experts constituted by the High Court of Jammu and Kashmir.

The biodigester technology was basically developed by DRDO for the Indian armed forces in high altitude Himalayan regions.

The biodigester technology degrades and converts human waste into usable water and gases. The generated gas is used for cooking and water for irrigation purposes. This is done in an eco-friendly manner



The biodigester technology involves bacteria that feed upon fecal matter. The fecal matter is dumped into a tank along with the bio digesting bacteria. The bacteria through anaerobic process will degrade the fecal matter. During the process water and methane gas are released. It is the process that occurs in the absence of free or combined oxygen.



STUDENT ARTICLES



ISRO decade plan

-D.GOPAL
II-YEAR

The Indian Space Research Organization recently released the plan for the decade. The plan included reusable satellite launch vehicle, heavy lift rocket and semi-cryogenic engine.

ISRO is to complete its moon mission Chandrayaan-3, the solar mission Aditya-L1 and first Indian Data Relay Satellite in the decade 2021-2030. Also, the space agency will complete the first developmental flight of the Small Satellite Launch Vehicle. The Liquid Propulsion Systems Centre will help to boost the Semi-Cryogenic Propulsion capability. With this, the Indian rockets will be able to carry 5.5 tonnes to the Geostationary Transfer Orbit.

The Aditya-L1 mission is the first Indian scientific expedition to the sun. the Aditya space probe will be placed at a point in space called the L1 Lagrange point and hence the name Aditya-L1 mission. The mission will study the photosphere, chromosphere, corona of the sun.



It is the planned third lunar mission of the ISRO. It is very much similar to Chandrayaan-2. Under Chandrayaan-2 mission, the lander failed to land on the lunar surface as it crashed towards the ground. The Chandrayaan-3 is thus a mission repeat. The Chandrayaan-3 is to include only Rover and lander. It will not have an orbiter.

India is to launch India Data Relay Satellite System series to track the space assets and enable communication between space-to-space assets. The IDRS is important to track the Indian satellites and stay in touch with them. ISRO has planned to launch three of the satellites in the series. Each satellite will cover a third of the earth.

The Punishment for Being Poor

-P.VIGNESH
II-YEAR

We've all been taught that India is a welfare state, that it strives to protect its citizens first and foremost, to provide equal opportunities to all and to secure the social, economic and political interests of the weaker sections of its society.



workers and casual labourers of our country are far beyond the fringes of society. For many today, the weaker sections of the society are rather the industrialists and businessmen whose hefty pockets suddenly have holes. Beyond the regular, seemingly heartfelt and audacious public statements and addresses given by our elected representatives regarding the plight of these stranded workers, they have remained indifferent and passive. What triggered this article was the news of fourteen migrant workers who were run over by a cargo train in Aurangabad, Maharashtra. These workers, who were walking home to Madhya Pradesh, had fallen asleep on the tracks no doubt due to extreme exhaustion.

Between comments of 'they shouldn't have slept on the track in the first place,' and 'extremely anguished,' we lack a deeper empathy of understanding the lives of these daily workers who have been denied basic rights. While there are already enough such workers in different states who are absurdly being subjected to immense suffering and trauma because they are poor, preparations are also being made by certain states to ensure the extension of their hardships under the guise of recovering the economy. There have been shocking reforms made to the labour laws in the past week. They have been contested and are yet to be formalised, but proposing them in the very first place tells us a great deal about where our priorities lie. In order to recover from India's economic slump which has troubled the dear sleep of many, the government of Uttar Pradesh has proposed to make defunct some of its labour laws related to occupational safety, health and working conditions of workers, and trade unions for the next three years. Rajasthan, Punjab, Himachal Pradesh.

Gujarat have increased working hours from 8 hours/day to 12 hours/day, with more leeway for overtime. Even if these are offered on a voluntary basis to the workers, it is cunning to offer it at all, because the workers who are desperate to earn money will inevitably take up a 12-hour job, putting their health and well-being at risk. There seems to be a twisted logic at the core of all these amendments.

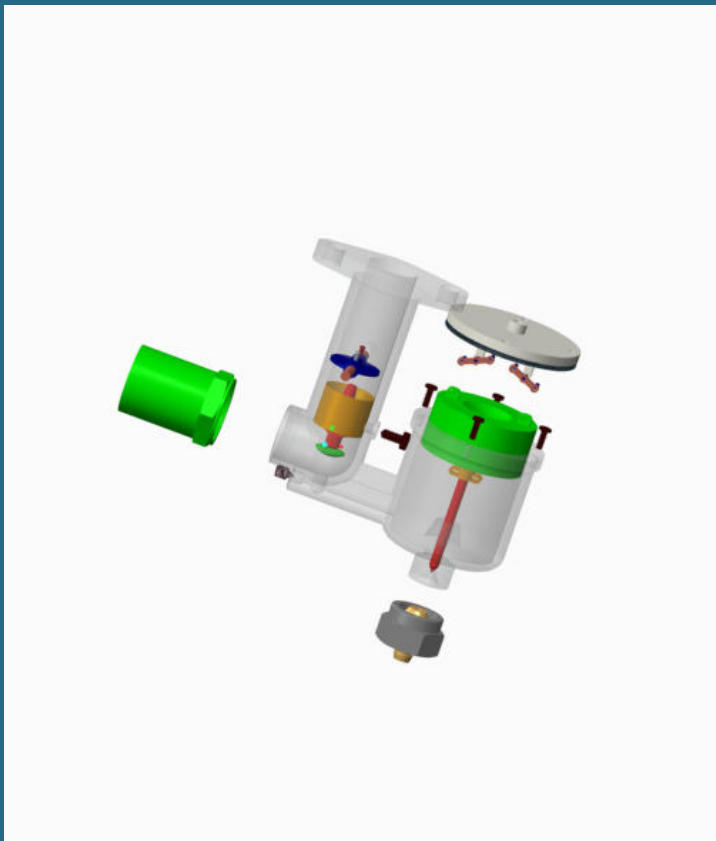
because these migrant labourers are the working hands of the industrialists (without whose functioning the economy has clearly taken a massive hit), they must be worked harder and longer in the near future, rather than ensuring satisfactory provisions, benefits and wages for them. Sometime during this migrant workers crisis, the Karnataka government cancelled the trains that were arranged to take migrant workers from Bengaluru to their home states, after becoming an audience to 'prominent builders' who expressed great worry over an imminent labour exodus. As some migrant workers themselves have painfully stated, " Jis shehar ko humne banaya, uss hi me kaid hume karaya ." (We have been made prisoners in a city we have built). A few days later, the government reversed its decision after facing public outrage. Meanwhile, the Orissa High Court passed an order asking the state government to ensure the entry of all returning migrants into the state on the condition that they have been tested negative for the virus, and have test reports to prove it.

Testing in India is already severely limited, and it is appalling to put an irresponsible condition like this for migrant workers (who belong to their state!) who do not have access to and cannot afford private tests.

Amidst all these disheartening headlines, we read about how India is undertaking the world's largest "repatriation mission" for all of its citizens stranded abroad. Workers in our own country are being denied transport, being charged higher fares than their salary even, forcing them to walk hundreds of kilometres under the summer's ruthless gaze to reach their homes, only to be trampled, starved, or dehydrated to death. Never before has the disparity between the rich and the poor shown itself so clearly. The workers who have built our homes and high-rise buildings have no roof over their heads, and our petty complaints of having to wash our utensils and clean our own houses are no comparison with those of the migrant workers, who aren't sure what will kill them first: the virus, starvation, or the negligence of our leaders.

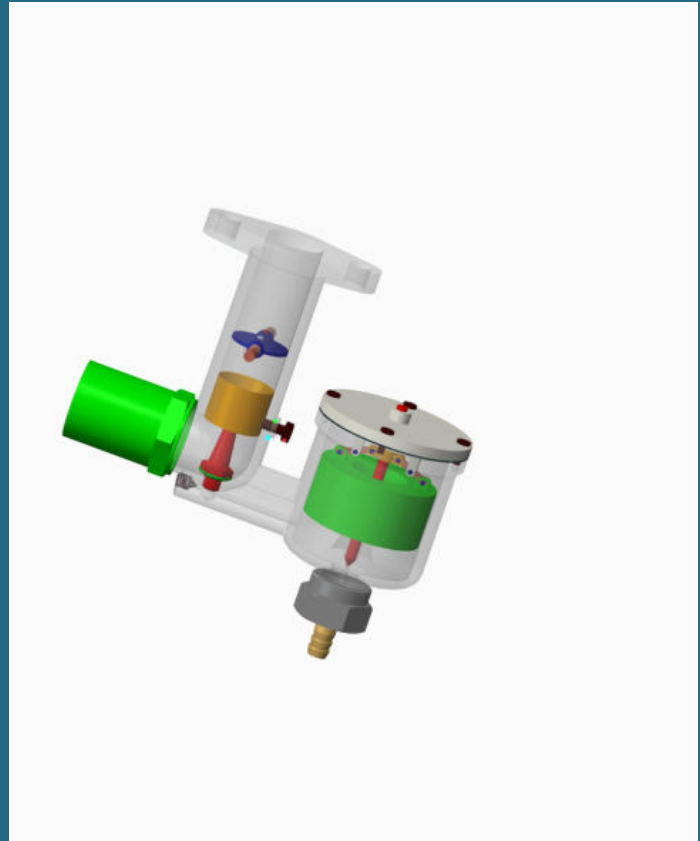


CARBURETTOR EXPLODED VIEW

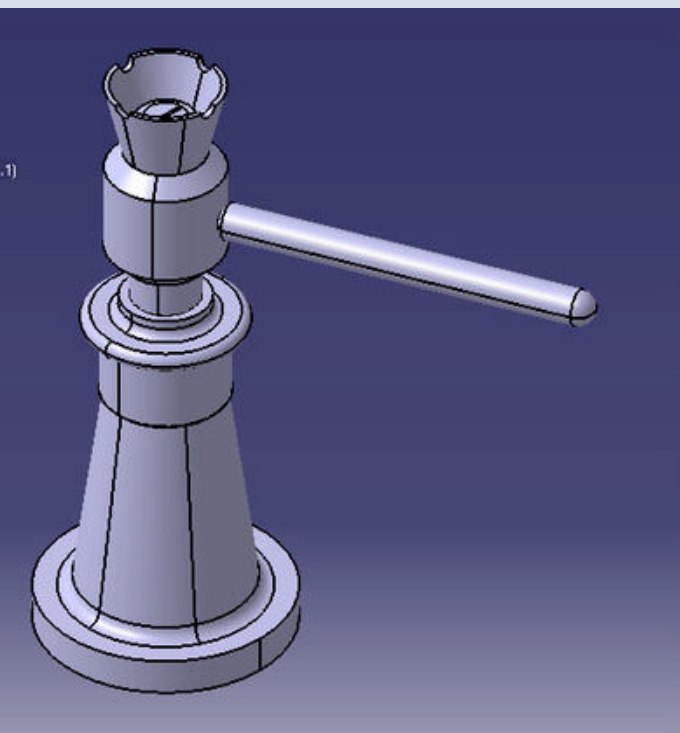


A.MUTHUMANI
II-YEAR

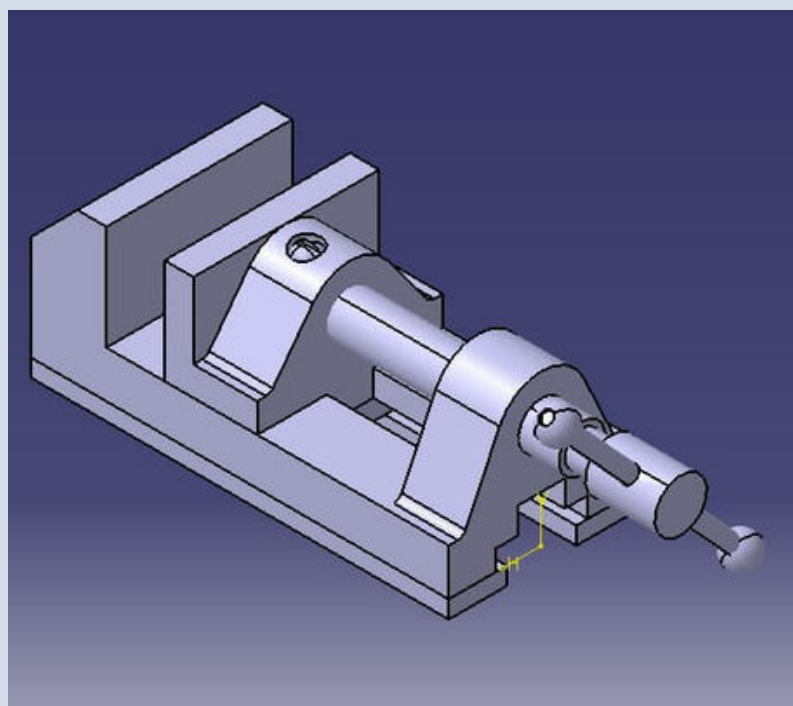
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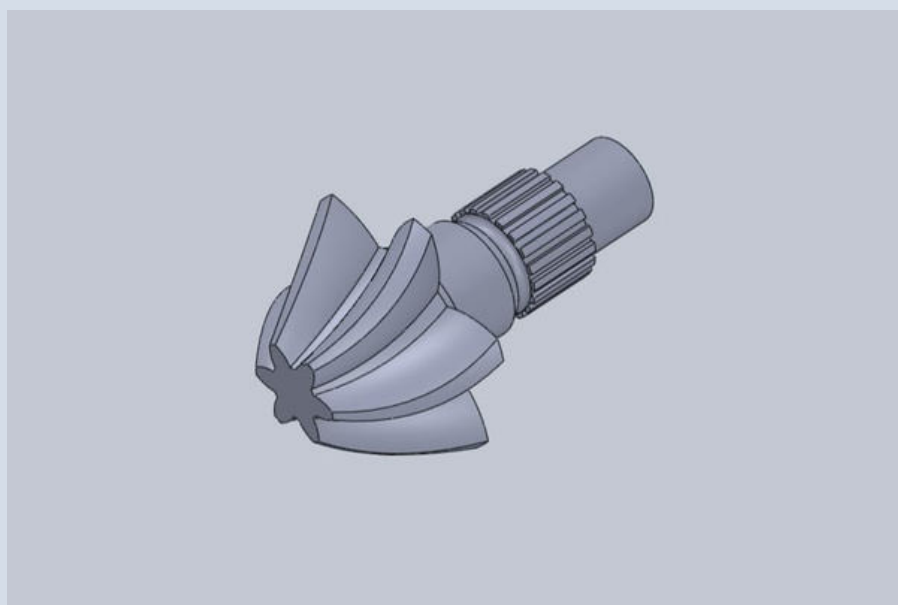
L.K.ADITIYA
II-YEAR



S.SABARINATHAN
II-YEAR



S.MADHAN KUMAR
II-YEAR



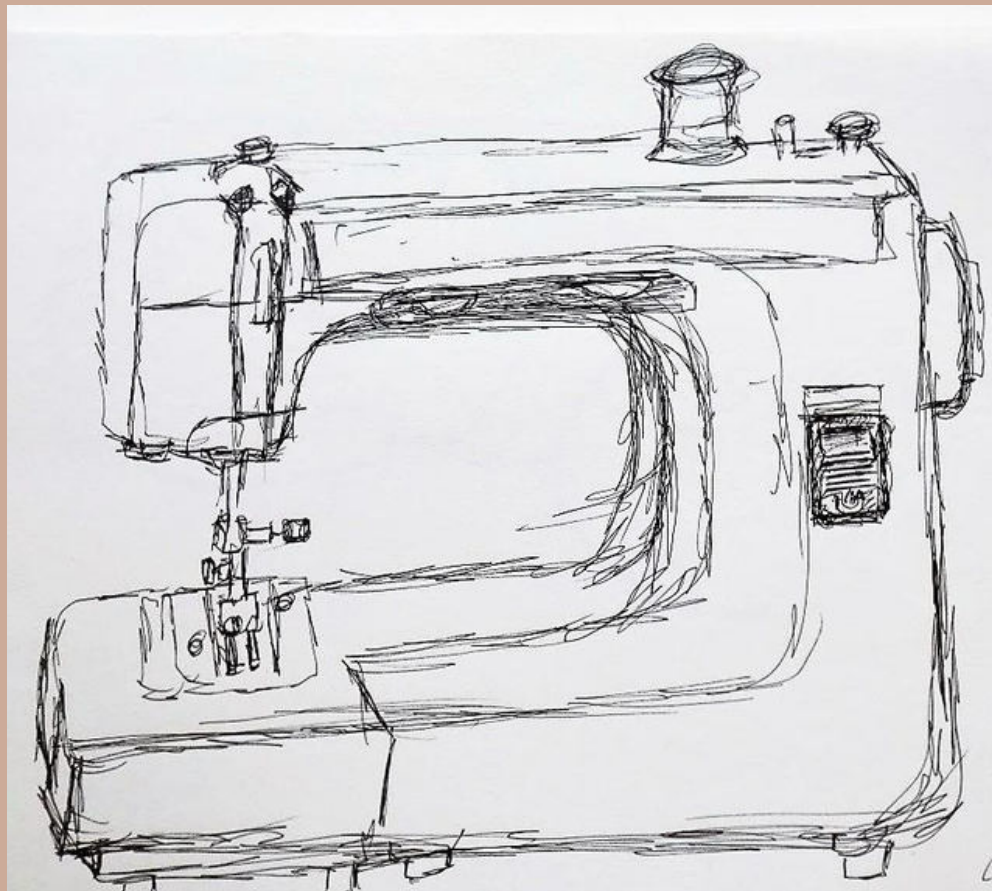
D.GOPAL
II-YEAR

ART



A.HARISH
II-YEAR

R.VISHNU
II-YEAR





Thank You!!

