Annual Newsletter from Mechanical Engineering Department , Assam Engineering College, Jalukbari

Yantrik Oyantrik

5th Edition [2020-21]

যান্ত্রিক অযান্ত্রিক

পঞ্চম সংখ্যা (২০২০-২১)

HOD's message
Department of Mechanical Engineering, AEC
2020-21

While looking back to the year 2020, we were in a perplexed state of mind because of the chain of events that had taken place during the year due to COVID-19 pandemic though we are gradually recovering from it at the moment. There was abrupt halt to the busy schedule of our daily life due to sudden lockdown and we have been compelled to adapt ourselves to the new lifestyle – the online mode which is being still practiced to a large extent, but it was a big hurdle for everybody to overcome, because whether offline or online, the show must go on for sustainability of the system and no amount of indolence was possible for probable repentance at future period.

Because of the forced imposition of online system of interaction, people are gradually developing a liking for the same, particularly where it can of advantage and benefit in certain forms. The present version of *Yantrik-Oyantrik 2021*, the annual newsletter of the Mechanical Engineering Department is a result of the catastrophe and it has been unanimously decided at the department to publish it online, with the active assistance of Dr. Kalyan Kumar Das as the Editor supported by the young group of faculties of the department. As the Foundation Day program on 25th January is still uncertain, the present technique shall override all difficulties of publication. In future also, the practice shall continue and a few hard copies may be circulated among the enthusiasts in the parade ground. No doubt, the charm of opening the package of newsletter in a sunny winter morning in front of the congregation in the parade ground is altogether different.

The sudden lockdown of the country emptied the streets. Being indoors all the time, there was a queer feeling of war like situation, deprivation of daily essentials and queue at ration shops opened for brief period. The break in the normal life seemed to be more tormenting than COVID-19 which was initially intimidating. However, the gradual unlock process in phases greatly relieved the people. However, it was well experienced how painful life would become during such incarceration.

The academic activities were being performed online. The regular academic classes turned into virtual meet of faculty and students through internet, which could not have been possible few years ago. There was exchange of class material by way of notes and lectures, while practical experiments were not possible in real sense. As such, new techniques had to be devised for all the performances – both theory and practice. More important was the continuous delivery of knowledge and assessment, and the outcomes must be ready irrespective of any disaster. All faculties and staff played to the best of their capability. Yet it is greatly felt that nothing compares with physical classes, particularly in the engineering profession where a mutual bond occurs between the teacher and the students during face-to-face interaction, and this effect of mutual interaction continues to influence the students, perhaps in

the long run of their professional life for overcoming challenging tasks. Hence, the sooner the college reopens for full-swing normal offline activities is the better.

On the other hand, students also cannot be pressurized for achieving their targets due to multiple reasons and such undesirable slackness must have its own consequences – which is irrecoverable loss for the student fraternity. Hence it is well understood there is no substitute for physical mode of learning and the huge investments made in the development of resources and infrastructure of engineering colleges for building human capital makes proper sense.

In considering the exam results, university was bound to declare it without physical end semester exams, as it had no alternatives. The intermediate semester results were based upon the previous semesters, as such the results were static, giving no scope for anyone for improvement.

Despite such hurdles, some of the issues of self-learning by way of compulsory internship and practical training were properly handled by the students and I am happy that almost all students did such exercises at proper places, leaving no scope for any remorse.

During the period of online activities, few webinars had been held very successfully by Dr P Kakoti and Mr. P K Choudhury with the assistance of all other faculties on very relevant issues of energy, environment and professional ethics, well attended by large number of participants. Other remarkable activities were collaboration with Godrej appliances and the development of new laboratories such as HVAC/Refrigeration, Advanced manufacturing, Cut model lab. Also, there were some additions in ASTU funded research projects by many of the young faculties - which is a new and positive sign of improvement.

Finally, I wish to extend my best wishes to all for a new beginning and pray before the almighty to relieve us from all the nightmares.

Dr. Ranjit Kumar Dutta
Professor & HOD
Department of Mechanical Engineering
AEC Guwahati

YANTRIK-OYANTRIK

This is the annual newsletter of the Department of Mechanical Engineering. Published every year on 25th January, the foundation day of the College. It highlights the activities, events and achievements of the department to the stake holders and to the public at large. This is the fifth edition of this newsletter.

2020-21

Fifth Edition

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In this Issue

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AEC's Vision:

To be an institution for promoting and supporting sustainable development.

AEC's Mission:

- To prepare technical manpower with knowledge, skills and values of sustainability.
- To take up relevant problems of society & industry as projects, research themes for study and to provide technological solutions.

DEPARTMENT PROFILE

The Department of Mechanical Engineering was established in the year 1957. It was the second department of Assam Engineering College Guwahati offering UG course in Mechanical Engineering (ME). The department's long history is resplendent with significant service to the nation and the world. The alumni of the department are well placed in the society throughout the globe bringing laurels to the department and the institute.

In the year 1998, the UG course in Industrial & Production Engineering (IPE) was introduced. Subsequently, from the year 2007 PG and PhD courses in Mechanical Engineering were offered. The current intake in UG (ME) and UG (IP) is 60 and 20 respectively. While the intake in PG (ME) is 18.

Department's vision:

To build professionally competent Mechanical Engineers capable of contributing towards development of the nation and betterment of the society.

Department's Mission:

M1. To generate academic atmosphere conducive for developing soft skills, teamwork, leadership & entrepreneurship upheld by professional ethics and committed to development of the nation.
M2. To provide high quality education for undergraduate programme in Mechanical Engineering and for higher study by adopting strategic approach in curriculum design and teaching methodology.
M3. To promote acquisition of new knowledge and skill by collaborating with institutes of excellence and industries.
M4. To generate new knowledge by creative thinking and innovative research targeted at the needs of the society and also North East India.

Program Educational Objectives (PEO)

1. Graduate engineers will develop effective technical expertise in Mechanical Engineering upholding ethical & moral values in practice and public life.
2. Graduate engineers will apply their innovative thinking and problem-solving capability in social and professional life, exhibiting leadership by communication and teamwork.
3. Graduate engineers will be proficient in continuing their higher studies, professional development courses and research.
4. Graduate engineers will be capable of mobilizing human and physical resources to their fullest extent in organizations for holistic development.

Program Specific Outcomes (PSO)

PSO1. Graduate Engineers will be able to exhibit excellence in the design of mechanical engineering systems using classical and state-of-the-art tools.
PSO2. Graduate Engineers will be able to exhibit employable skill in the areas of thermal power and modern manufacturing.

THE FIRST TECHNICAL INSTITUTION IN ASSAM

Dr. D. K. Mahanta
Professor, Mechanical Engineering Department
Assam Engineering College

The concept of technical education based on theory and science had not evolved till the first industrial revolution (1760 – 1840). Actually, the success and glory of the first industrial revolution caused germination of such concept. Dr John Anderson's school for general education of craftsman and artisans and also for teaching learners the use of machinery was the beginning. It was purely vocational education. There was no theory and no science involved, only hands-on application of skills needed to do the job was involved. Technical education based on theory and laws of science started growing initially at a slow pace and with passage of time the growth accelerated to attain the present-day state within a century.

Assam was rich in its cultural heritage of craftsmanship and artisan skills in many fields from the ancient times. Among those, weavers, spinners, goldsmiths, potters and workers in iron, cane and bamboo, wood etc. are worth mentioning. The handloom sector in Assam always had and still has an overwhelming presence in its socio-economic life. It is the largest cottage industry of the state flourishing since time immemorial. Weaving skills of Assamese women were highly praised by Mahatma Gandhi and APJ Kalam. Muga silk, especially raw material, was traded with far off Malabar and Corromandal coasts during the 17th century as recorded by Hamilton. Some finest varieties of silk mekhela with decorated border lines were sold in the markets during the 1890 at cost of Rs. 80 to Rs. 100 (Allen, 1899). During the period 1826 to 1919, Sualkuchi and Jorhat emerged as the major centers of muga weaving industry and the best of eri came from Palashbari, Rangia and some other places of then Kamrup (Barpujari, 1993). The fabrics, especially eri, were used to make suits and coats for the Englishmen (Allen 1905). Muga was also exported to Tibet and China during the period 1808 to 1809 (Basu, 1970). Assam exported muga silk to Bengal, Bhutan. Records from 1809 mention the export of 75 maunds (a unit of measurement, 1 maund is equal to 37 kg) of muga fabrics to Bengal (Phukan, 2012). From Buchanan-Hamilton's account collected in between 1807-1809, it is understood that bell metal items from Assam had good demand in adjoining areas of Bengal till 19th century (Bhuyan, 1963). The articles were common daily used utensils manufactured till late 1880s (Gait, 1884). Crafts such as brassware, cooper and iron product, and mat, ivory were reported to be exported till 1835 (Handique, 2012). The villagers made all sorts of articles using bamboo, cane and reed and furnished kitchen, fishing, farming as well as other utilitarian requirements (Barkataki, 1969) of the households as well as the kingdom. In fact a short of community capacity building of Assamese society was initiated by the kingdom and it produced a strong skill-based society capable of producing all items necessary for leading a normal life. As per J. P Tavernier, a 17th century French traveller, *the kingdom of Assam is one of the best countries in Asia, for it produces all that is necessary to the life of the man without there being need to go for anything to the neighbouring states.* (cited in Handique, 2012). This in fact had led to the closed economy in that period.

These basic art and skills used in indigenous household industries were handed down from generation to generation without any formal coaching. As a result, modification and improvisation of their craft culture could not take place.

Assam fell into the grips of British rule at a time when the first industrial revolution was in progress. After its annexation and inclusion to Bengal presidency, the closed economy of Assam ceased to exist and its traditional crafts started facing tough competitions from the other regions of the presidency. Many of the traditional crafts could not compete and faded away. Some crafts, however, continued to fight and survive. Weaving, spinning, goldsmithy, and works on iron, cane and bamboo, wood are some of such crafts that survived.

However, during this time a new generation of Assamese youth led by Ananda Ram Dhekial Phukan became vocal on the pitiable condition of trade and economy and demanded introduction of technical education in Assam. During this time, the wave of modernisation began to blow into Assam. (Barpujari,1992). The germination of seeds of technical education also took place during this period.

The germination of technical education may be attributed to the tireless efforts of the Missionaries, who started their operations in this north-eastern region just after the annexation. Schools were founded by both the Government and the Missionaries. However, there was a basic difference between the Government schools and the schools founded by Missionaries. In the Government primary schools, instructions in the 3R's, i.e., reading, writing and arithmetic were imparted. On the other hand, the missionary schools were both literary (the 3R's) and vocational [Borpujari, Political History of Assam]. Missionaries started such schools at Singeemaree in Goalpara, Namsang and Nowgong. However, these schools did not survive because of lack of interest of people in those regions.

The first formal technical institution was found in upper Assam about 30 years after the industrial revolution. In 1867, George Williamson (Senior), a senior administrative officer at Golaghat, Assam, donated one lakh rupees for the purpose of technical education in Assam and this fund came to be known as ‘Williamson Assam Education Fund’ [Peetem Surakal, *Baptism Mission in Nagaland*, 1984, 50.]. There was a reason behind such benevolent act of the British tea planter. The first national war for India’s independence was fought in 1857 and the East India Company convicted two Assamese activists Maniram Dewan and Piyoli Phukan for treason and hanged them in Jorhat. Maniram Dewan had a tea garden in Chinamora near Jorhat. After his death, the tea garden was auctioned and George Williamsom purchased it at a very low price. However, Maniram was immensely popular among the masses and the labourers refused to work for Williamson in the garden. He somehow managed to run the garden. But a sense of misdeeds always haunted him and towards the fag end of his life, he wanted to repay something to the local people. The famous tea planter in his will bequeathed the amount for educational purposes combined with schools of industry and art of the province and in the establishment of small libraries, both in English and Vernacular languages at the principal schools [Peetem Surakal, *Baptism Mission in Nagaland*, 1984, 50.]. Till the year 1872, the scheme could not be executed since the buildings raised for those purposes remained incomplete [Peetem Surakal, *Baptism Mission in Nagaland*, 1984, 180]. In 1873, classes were started and the tuition fee of one rupee per month per head for learning carpentry and handicraft was sanctioned by the Lieutenant Governor

of Bengal [Prakash Singh, *Nagaland*, National book trust New Delhi, 1972]. To suggest the best means of utilizing the bequest, the Chief Commissioner held a meeting on 15 Aug 1887 where it was unanimously resolved that an amount of Rs. 7000/- be set apart for public libraries and another amount of Rs. 14,000/- be appropriated for the establishment of two schools at Golaghat and Jorhat to be named Williamson schools. Thus, two Artisan schools were introduced at Golaghat and Jorhat to train pupils on blacksmith's work, carpentry, surveying and drawing. It was aimed at facilitating the manufacture of boats and carts and preparing pupils for the post of sub-overseers in the Public Works Department and as mechanics in the railways.

Thus, the Williamson Assam Education Fund initiated the first technical education at the lowest level in Assam.

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Webinar on "Professional Ethics" held on 5th November 2020.

CHALLENGES & OPPORTUNITIES ON TECHNICAL EDUCATION DUE TO IMPACT OF COVID-19

Dr. S. K. Deb
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Assam Engineering College

In view of prevailing pandemic situation due to COVID 19 corona virus, every system of education from elementary to higher education has been tremendously affected. The Covid-19 pandemic has shocked the world. Multi-dimensional pressure on students in all levels particularly in the higher education institutions is high. Schools and universities have been closed and examinations postponed. Classrooms are going virtual under different on-line modes and admissions for the upcoming academic year are fraught with confusion. According to UNESCO, more than 320 million students in Indian schools and colleges are currently impacted. The pandemic has pushed the world to drastically reinvent ways of coping with the 'new normal'. After the initial phase of complete overhaul, it is critical to understand the short and long-term impact and future measures. Every country is now trying to emerge from this crisis with a refreshed perspective and boost to educational sector including technical education. This article discusses the challenges & Opportunities in higher education particularly to technical education due to impact of COVID 19 situation.

Digital learning

In most of the technical education institutes an immediate and effective response to the crisis was to adopt digital. Developing robust virtual platforms under different modes has become necessary to offer continuity in learning. In the developing country like India with vast disparity in socio-economic and cultural backgrounds of students and the quality of technical educational institutions, the shift has not been so easy. The digital divide has been further widening the gap, and needs immediate and urgent consideration from both public and private sector players as the crisis continues. Qualified and experienced teachers, improved course and curricula and effective ECT tools will ensure students stay involved and active in the teaching learning process.

Learning from home

Millions of Indian students have increasingly chosen to pursue higher education abroad. As per reports, India is the second-largest source of international students in the world. This usual migration is likely to transform during immediate few years by an arrival into Indian institutions, given travel restrictions and health risks. This means that huge money and resources spent in foreign education could potentially be retained in the country, as more students look towards options at home. While international institutions might bear the brunt of the change, it is a remarkable opportunity for India to enhance its capacities and offer quality education at par with international standards.

The economy has taken a severe hit, and its ripples can be felt in the education sector as well. While many students will chart alternative paths, the pandemic is also leaving others in limbo. As unemployment is predicted to increase and the financial capacity of Indian homes comes under stress, the country can expect a drop in enrolments and challenges with tuition fees. Public institutions too,

may be under threat of reduced funding. On the flipside, the pandemic could also prompt reform in fee structures and creation of more cost-effective programmes.

Innovative teaching & learning

In order to enhance teaching quality and win the stiff competitive expertise for sustainability in technical education, Indian academia under technical education has been in need of transformation due to impact of prevailing pandemic situation. There is an opportunity to rethink the traditional technical education system now by implementing various innovative teaching learning process.

Digital learning is leading the charge as a mainstay, and many new trends are picking up momentum across the globe. Multidisciplinary and modular pedagogy that afford transferable skills and customised learning will succeed. Post-pandemic times could see a blend of e-learning and mainstream class room teaching with a boost from traditional technical institutions.

Global Industry Institute Interaction (GIII)

Opportunities to build global capacity of students and practical exposure through exchange programmes, internships, participation in national as well as international conferences are the need of the present day. Innovative new forms of collaboration and alternative paradigms are needed to drive learning, research and teaching. Sharing of knowledge and skill between institutions globally through joint-teaching, virtual guest lectures, etc. could give technical students an enriched global perspective in these difficult times due to present pandemic situation.

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"Strength is Life, Weakness is Death.

Expansion is Life, Contraction is Death.

Love is Life, Hatred is Death."

— Swami Vivekananda

FONDLY REMEMBERING PROF. PRATUL CHANDRA BARUAH

Bipasha Baruah and Neeraj Garg Baruah
Family of Late Prof. Pratul Chandra Baruah

Late Prof. Pratul Chandra Baruah

Hard to fathom nearly six months have passed since Prof. Pratul Chandra Baruah gently breathed his last on June 16th, 2020 and left his material body for heavenly abode. After a remarkable career as engineer and educator spanning four decades of service, we remember and celebrate the wide footprint he left in strengthening engineering education in Assam Engineering College and beyond.

Prof. Baruah began a long association with the Mechanical Engineering Department of Assam Engineering College (AEC) since 1977 as faculty member immediately after graduating from AEC and IIT-Bombay. He left a lasting and indelible mark on the Mech. Dept in particular where he was at the forefront of all activities – be it conferences, talks, workshops, seminars, award funds, alumni associations, or training and job placement. Baruah's unique style of inclusiveness and spirit of innovation along with his unrelenting enterprise and energy could be seen in the frequency of new initiatives he introduced. He was particularly instrumental in pioneering and spearheading many existing AEC initiatives such as the Merit Award Fund, Alumni association, Nodal Centre and Training and Placement Cell. We are told he was a visionary, a meticulous planner, an efficient manage-master and above all, we remember him as an excellent mentor for younger faculty members. Under his tutelage, students thrived, and younger faculty members made great strides - each enriched by his unique style of teaching and leadership. He was a consummate peacemaker, seeking no glory – to him, only high standards mattered, details mattered, and focus mattered. He leaves behind a legacy of intellectual and professional rigor.

But most of all, he was utmost noted and affectionately remembered for being a consummate and affable teacher. His unique teaching style using coloured cue cards and ability to simplify complex problems patiently and graciously, interspersed with a healthy dose of good humour and quips, always delighted his students. His former colleagues and students always jestingly remind us of the lasting imprint of his teaching of Engineering Mechanics. Fondly remembered as '*PCB'*, he was much respected and loved by generations of students and colleagues, whom he encouraged so warmly and helped so unselfishly to develop, and now occupy key positions in research, teaching, industry and government, both in Assam and abroad.

We have witnessed PCB's dedication to student development and welfare very closely since the time he served as superintendent of Hostel 1. He was very popular among the students because of his kind-heartedness, loving, caring and humorous personality and our campus house used to be always bustling with a crowd of students he never tired of engaging with and mentoring. With his sparkling wit and humour, he found just the right degree of eloquence for any occasion and forever delighted in demonstrating his wit with charming one-liners. Besides his gift of the gab and wit, another unique quality was his good memory and recall ability particularly in social situations - he used to remember people by their role number, car number and phone numbers, and that amused everyone. PCB loved his students and always maintained close relationships with them. We are always surprised to stumble into someone calling him 'Sir' wherever he goes, both here in Assam and abroad in our travels. He leaves behind a large footprint over generations of student diaspora whom he loved, and who adored him back. To honour his legacy of his deep and unwavering commitment to student development and welfare, we have proposed to institute a PCB Merit Scholarship and are very grateful to the Mechanical Engg. Dept, the Merit Award Committee and esteemed Principal for their support in this initiative.

Following three decades of service to AEC, he moved onto Girijananda Institute of Management and Technology as Head of the department and Dean of Academics where he helped in the rapid early growth of the Institute. He then served as the Head of Energy Engineering Department in Assam Science and Technology University before retiring in 2018. During his career, he was indefatigable in contributing to professional groups. As Joint Secretary and Fellow of Institution of Engineers and Assam Engineering Institute, he was continuously engaged with broader issues of engineering education in Assam and played a key role in expanding their student chapters, particularly in AEC.

PCB left his mark on all who knew him. He taught how to learn and how to teach. To others, he taught how to live and laugh. He left us better and enriched for having known him. On what was to be his last afternoon, he had been his usual expansive self. Life is measured not by the number of breaths you take but by number of moments that take your breath away – and that he did in plenty. The outpouring of messages from his peers and the student diaspora has been humbling and continue to be a source of strength for us - his bereaved family. There are a lot of things to write about but is not possible to write all – we plan to setup a memorial web site on his first death anniversary in June 2021 and invite contributions or articles and short memoirs and anecdotes from anyone (to saranachal@gmail.com) who wishes to spare some time and words to dedicate him. As he leaves behind us, relatives, colleagues, students and everyone who loved him, we hold on to our best memories of him and cherish them deeply.

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Report of Faculty Development Programme on "*Project Management*" Organised at Mechanical Engineering Department, AEC under TEQIP-III

3rd - 7th Feb 2020

Prasanta Kumar Choudhury
Assistant Professor, Mechanical Engineering Department
Assam Engineering College

Project Management is the practice of initiating, planning, executing, controlling and closing the work of a team to achieve certain specific goals in order to meet specific success criteria at a specific amount of time. It is the application of process, methods, skills, knowledge and experience to achieve specific project objectives. Keeping in mind the utmost importance of Project Management in Industry as well as Academics, a Faculty Development Programme was organised at the Department of Mechanical Engineering, Assam Engineering College from 3rd to 7th February, 2020 on the topic of Project Management under TEQIP-III. In addition to the in house faculties of Assam Engineering College, faculties from different Engineering Colleges of Assam including Assam Science and Technology University; Bineshwar Brahma College of Engineering, Kokrajhar; Girijananda Institute of Management and Technology, Guwahati; Royal Global University, Guwahati; Assam Engineering Institute, Chandmari, Guwahati; Assam Downtown University, Guwahati; Bongaigaon Polytechnic and PPCS Girls' Polytechnic participated in the one week programme.

The programme started on the first day with distribution of kit to each and every participant along with the on-spot registration. The inaugural programme was commenced and hosted by Samiron Neog, MTech 4th Semester student in the gracious presence of his excellency Dr.Atul Bora, Principal, Assam Engineering College and Director, Directorate of Technical Education, Assam, Dr Ranjit Kumar Dutta, Head of the Department, Department of Mechanical Engineering And Department of Industrial and Production Engineering, Assam Engineering College and Prof. Shantikam Hazarika, Founder Director of Assam Institute of Management and a noted management consultant. Mr.Prasanta Kumar Choudhury, Assistant Professor, Department of Mechanical Engineering and the coordinator of the programme welcomed the participants and guests with his opening remarks and highlighted the importance of Project Management in Industry and Academia. The inaugural programme was followed by a keynote speech by Prof. Shantikam Hazarika who was also the former chairman of Board of Secondary Education, Assam. He delivered his lecture on the topic

of "***Project Management: An Overview in Indian context***". In the second session, post lunch, Dr.Jayanta Pathak, Department of Civil Engineering, Assam Engineering College delivered a lecture on "***Project Management Issues in Civil Engineering***" wherein he also mentioned the importance of interdisciplinary coordination as well as the skills of a Mechanical Engineer needed to manage a Civil Engineering Project.




The second day of the programme started with a lecture on "***Project Risk Management***" delivered by Dr. Sharada Prasad Sharma, Professor, Industrial and Systems Engineering, IIT Kharagpur wherein he discussed the different aspects of Risk Management including detecting, prioritizing, analysing and controlling a risk involved in a Project. The next lecture on that day was delivered by Dr. Pratul Chandra Kalita, Associate Professor, Department of design, IIT Guwahati on the topic of "***Professional Responsibility"***. Dr. Kalita emphasised on the responsibility and commitment that is involved in various stages of a project, with a special reference to the "***Diagnostic Study on Weaver's need in respect of Eri and Muga Silk under the World Bank financed Assam Agribusiness and Rural Transformation Project (APART***)", Directorate of Handloom and Textiles, Government of Assam. Dr. Bipul Das, Assistant Professor, Department of Mechanical Engineering, NIT Silchar, delivered his lecture on "***Project Cost Management***" in the last session of the 2nd day. The lecture was very interactive and informative wherein he allowed the participants in a hands-on session to deal with a real-life problem of Cost Management. Day 3 of the Faculty Development Programme started with a lecture on "***Project Management Framework***", followed by "***Project Integration Management***" post tea break. The lectures were delivered by Dr. Banajit Changkakoti, Assistant Professor, Department of Business Administration, Gauhati University. The lectures included the roles and responsibilities of a Project Manager, the Project Life Cycle, Project Management Process, Project Selection Methods, Components of Project Management, planning, monitoring and controlling a project to name a few. The participants enjoyed the session as it was very interesting wherein, they were divided into different teams

and asked to plan and present a project of their choice in front of the lecturer and other participants. The last lecture of the day was delivered by Dr. Samir Sarkar, Assistant Professor, Department of Business Administration, Gauhati University on the topic of "***Project Communication Management***" wherein he discussed the various aspects of good communication skills required to run a project. As name of the topic of the lecture suggests, this session was also very interactive where the participants were made to involve in various group learning activities related to the topic. The second last day of the programme started with a lecture on "***Project Human Resource Management***" by Ms Ankita Jain, Founder and CEO, SWAGLOK followed by "***Project Procurement Management***" by Ms Chandra Goswami, Business Management Executive, SWAGLOK. The lectures focused on the procurement and management of the right human resource and man power for smooth and successful working of a project. The last lecture of the fourth day was delivered by Prof. Mukulesh Barua, Director and ONGC Chair Professor, Assam Institute of Management on "***Project Quality Management***". In the lecture the lecturer discussed about the various issues and aspects of Quality Engineering and Management in a project. The last day of the programme commenced with a lecture on "Project Scope Management" and finally the last lecture of the day on "***Project Time Management***" after the tea break. Both the lectures were delivered by Mr. Hariprasad Agarwal, Founder and CEO, Ride Ally Travels and OpCord Consultancy. During the lecture he also shared his journey and his success story during his entrepreneurship venture. During the 5 days of the participants has seen a mixture of different lecturers and resource persons form different fields including academics and industry. Post lunch a fun quiz was organised wherein the participants were asked to answer a questionnaire within a stipulated time and the filled-up questionnaires were again jumbled up and distributed amongst themselves for checking while the answers were displayed on the projector. The quiz session was fun, full of enthusiasm and sport and was well appreciated among the participant fraternity. The first three winners of the quiz were given special prizes as token of appreciation. Online feedback through Google forms was also collected from the participants on their experience of the programme as a whole and to understand the effectiveness and scope of improvement of the programme and the lecture notes and slides were shared to all the participants through mail. The valedictory session followed the quiz wherein volunteers from the participants were asked to share their experience and certificates were distributed among the participants. The one-week FDP ended with a vote of thanks and gratitude by Dr. Manash Hazarika, co-organiser of the programme where he offered his sincere thanks to all the participants, organising members, staffs and the volunteers who worked hard to make the event successful. The FDP ended with a positive note of success, learning and a hope of such future collaborations and programmes in the department.

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ELECTRIC VEHICLE TRENDS IN INDIA

Subhransu Sekhar Mallick
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The increasing popularity of EVs highlights significant efforts made jointly by various governments and automotive industry associations. However, more than 70% of EV sales worldwide in 2018 were in the US, Japan, and China. BYD Auto Co., Ltd. (China), Nissan Motor Company Ltd. (Japan), Tesla Motors (US), and Volkswagen (Germany) are some of the leading players in the EV market. Currently, EVs constitute less than 1% of all the vehicles sold in India. There are more than 400,000 units of electric two-wheelers and only a few thousand electric cars on Indian roads. According to the Society of Manufacturers of Electric Vehicles (SMEV), more than 95% of electric vehicles in India are low-speed electric scooters (25 km/h), which do not require registration and licenses.

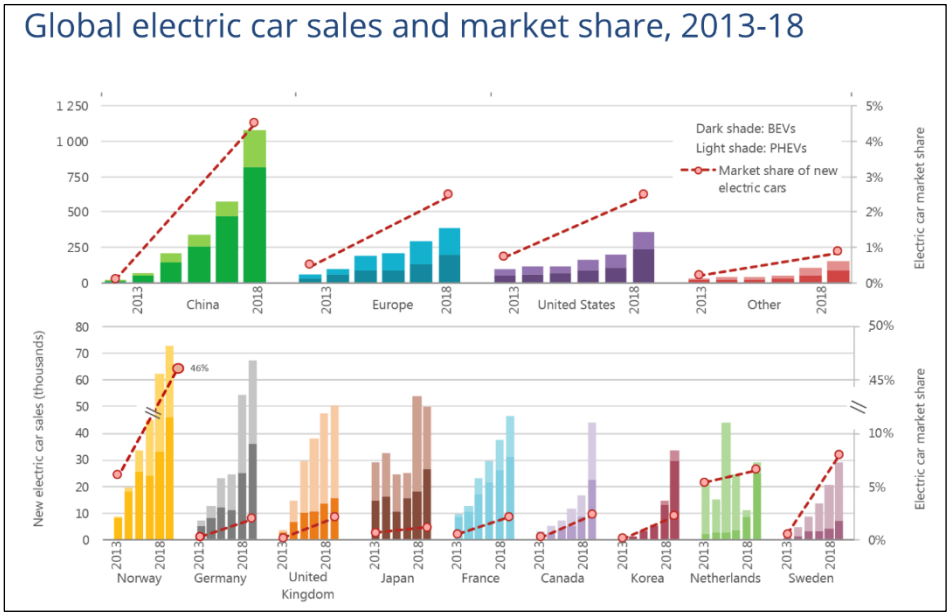

Figure1: Global Sales of EVs

CHALLENGES OF ELECTRIC MOBILITIES

I. High cost of EVs in comparison to IC engine vehicles

The cost related to technology and infrastructure in EV such as the cost of battery, charger, and fast charging station installation gets added to the cost of an EV. Hence, the high cost of EVs is the biggest challenge faced by EV manufacturers.

II. Stringent rules for installation of charging stations

A service provider must follow a certain set of instructions while installing a charging station. Service providers need approval from plot owners (when the installation is done on private properties), local governments for regulatory mandates, and utility providers for energy transfer. Thus, installation of a charging station is complex as many stages are involved in the value chain.

INDIA CURRENT SCENARIO FOR EV PENETRATION

The market of EVs in India is expected to show rapid growth in the long term. The e-mobility industry in India is developing at pace with support from the government and manufacturers such as Mahindra & Mahindra and Tata. In September 2017, the Indian government decided to buy 10,000 electric cars from Tata Motors to replace old petrol and diesel cars used by government agencies. Tata Power has deployed EV Charging solutions in over 17 cities across India so far including Delhi, Mumbai, Bangalore, Hyderabad, Pune, Chennai, Kolkata, Vishakhapatnam, Chandigarh, Ahmedabad and Lucknow.

Tata Nexon EV, MG ZS EV, Hyundai Kona, Tata Tigor EV, Mahindra e-Verito and the Mahindra eKUV are currently on sale and several more are in the pipeline. These include the Tata Altroz EV, sub-Rs 10 lakh EVs from Hyundai and Maruti Suzuki, eXUV300 from Mahindra and the electric version of the Kwid from Renault.

Figure 2: EVs Charging Station by TATA POWER

GOVERNMENT INITIATIVE & SCHEMES

The Government of India has setup the National Electric Mobility Mission Plan (NEMMP) under which a roadmap for the faster adoption of electric vehicles and their manufacturing in the country has been prepared. The National Mission for Electric Mobility (NCEM) has launched the National Electric Mobility Mission Plan (NEMMP)-2020 with an aim to invest INR 140 billion in the next 8 years for the development of electric infrastructure. The 'Faster Adoption and Manufacturing of Electric and Hybrid Vehicles (FAME)' programme of the National Electric Mobility Mission Plan (NEMMP) 2020 was launched in 2013 to achieve sales of six-seven million units of electric vehicles.

SEGMENT	FY 2019	FY 2018
ELECTRIC TWO-WHEELERS	126,000	54,800
ELECTRIC THREE-WHEELERS	630,000	NA
ELECTRIC PASSENGER CARS	3,600	1,200

Figure 3: EVs Sales in India

Phase I of the FAME-India Scheme was launched on April 1st, 2015 and extended to March 31, 2019. Its original time period was two years. The scheme was implemented with an outlay of Rs 895 crore. Approximately 2,18,625 Electric Vehicles were 'promoted' by FAME I till July 2018.

The second phase is an expanded version of the first phase. FAME India Phase II has a total outlay of Rs 10000 Crores over the period of three years from 1st April 2019 to 2022. FAME-II will cover buses using EV technology; electric, plug-in hybrid and strong hybrid four wheelers; electric three-wheelers including e-rickshaws and electric two-wheelers. An expression of interest (EoI) invitation put out by the government states its plans to have one charging station every 25 km to facilitate faster adoption of electric vehicles under the second phase of the.

Subsidies and Tax Benefits

A new circular regarding the charging infrastructure has been announced by the Indian government, in December 2018, which stated that was a de-licensed activity to set up a charging station and the electricity received from any company would be free of cost. Private charging stations are permitted at residential places, and any charging station can get electric power from any company through open access protocols.

The scheme proposes for establishing charging infrastructure and for this about 2700 charging stations will be established in metros, other million plus cities, smart cities and cities of Hilly states across the country. Objective is to create at least one charging station in a grid of 3 km x 3 km. Similarly, establishment of charging stations are also proposed on major highways connecting major city clusters. Of the total allocation, Rs 1,000 crore has been allocated for setting up charging stations for electric vehicles in India.

The government's decision to lower the GST rate on EVs to 5 percent from 12 percent is expected to make electric cars affordable for consumers with additional income tax deduction.

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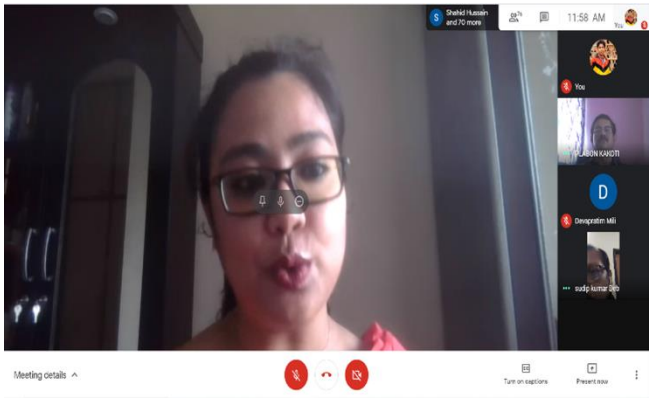
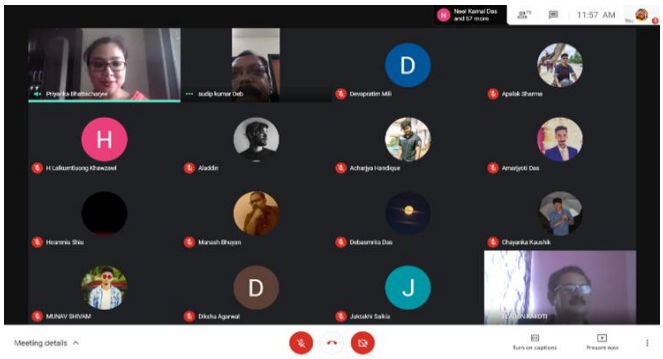




A webinar was organized by the department to help the members of the department adapt to the disruption caused by the pandemic and come to terms with the new norms in place.

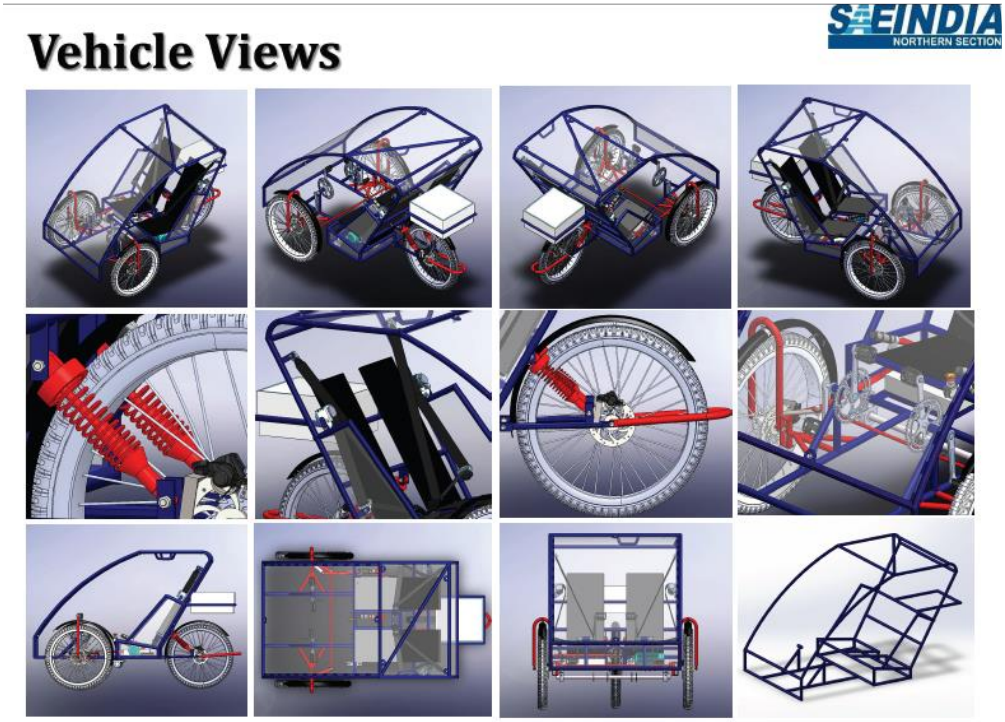
TEAM ELYSIAN 2.0 AT EFFI-CYCLE'20

Automobile Club AEC

Trikes has always been a comfortable means of transport for humans due to its unique design and holding a lot of capabilities and scopes of improvement. Effi-Cycle 2020 is a National event organised by SAEINDIA to design a human cum motor power vehicle, with a comfortable and easy steering based on Ackermann Geometry, with Coil spring suspensions, Disk Brakes and Ergonomics.
Journey began early June, with CAD modelling and Structural Analysis in SolidWorks and Ansys. It took us a month to perfect a compact yet tough design. We submitted the first document package with the design report, project plan, validation plan and dfmea report, on 31st July. Following it, was the virtual Technical Inspection and Document Package Evaluation, on 21st August where we had to tackle questions and judgements from experts to prove our design as a fool proof one. We were able to clear the TI in the first attempt itself.

The Second Document Package was submitted on 10th September. This included a CAE report, Business Plan Report, Cost Report and an Overall Project Presentation. The second package evaluation was conducted on 26th September, in presence of Industry Experts from Maruti Suzuki India Ltd, followed by a brief presentation from the team followed by a question round.

The Vehicle



The fabricated vehicle has a configuration of adjacent two-seater tadpole type with right hand steering, powered by a hybrid foot-operated pedal and motor drive. It has a dimension of 2082 mm length, 1270 mm width, and 1346 mm height. The Wheels used were 24" triple walled alloy wheel. Steel of AISI 1018, AISI 4130 and ASTM A36 were used in fabrication. The specification of other components are as follows; motor: 48V 600 W, 500 RPM BLDC motor; Battery: 48V, 25 AH Li-ion battery; Brakes: Disc Brakes on all wheels; Suspension: dual coil spring swing arm suspension; other features: seatbelts, BMS, battery level indicator, headlights, sensor based speedometer and tripmeter.

The Competition

Due to COVID-19, this year the Competition had to be held virtually. After the submission of the first two packages. They marked us for the various reports that we submitted and on 4th October,2020 the final results were announced.

It is very satisfying for us that Team Elysian 2.0 has been able to achieve the 10th rank in the event and also, we were able to bag the 1st runners up award in Best CAE Presentation. It was a matter of pride that we could represent Assam Engineering College in a big stage like this, being the lone participant from north east.

This event was all about the application and combination of engineering knowledge with designing skills using SolidWorks, also of marketing skills, presenting a business plan, teamwork and many more. The idea of learning by doing is what is now called 'Experimental Learning', though it is very effective. Automobile Club AEC has accepted this challenge with a 13-member team and a faculty in charge of the National Competition, Efficycle 2020.

We would like to express our thanks to Prof. R. K. Dutta and Mr. Subhransu Sekhar Mallick for their invaluable time and guidance. This task could not have been completed without the effort and cooperation from our team members.

Faculty in charge: Mr. Subhransu Sekhar Mallick, Assistant Professor, Department of Mechanical Engineering, AEC Guwahati

Team Members: Satyam Sarma (Captain), Abhilash Das (Vice-Captain), Ankit Tiwari, Subhashish Chakraborty, Aatish Nath, Bhaskar Borah, Chandan Borthakur, Lokash Jain, Manan Sarma, Manash Das, Milan Priya Bora, Jimlee Patowary and Bandeep Saikia.

SPONSORED RESEARCH PROJECTS

The following table provides a list of the ongoing sponsored research projects undertaken by the faculty members of the department. The cumulative value of the projects is ₹118.72L (approximately).

Name of the Faculty	Project Title	Funding Agency	Amount	Duration	Period	Status
Dr. D K Mahanta	A study on the effects of parameters of torrefaction on the quality of torrefied Biomass.	TEQIP III, ASTU	2,85,000.00	1 year	Oct, 19 – Sept 2020.	Ongoing
	A comparative study of aerobic, anaerobic and semi-aerobic decomposition of municipal solid waste in a laboratory scale landfill	TEQIP III, ASTU	2,85,000.00	1 year	Oct, 19 – Sept 2020.	Ongoing
Dr. S K Deb	Design and development of bio-digester based on hostel kitchen waste in AEC	TEQIP III, ASTU	3,00,000.00	1 year	2019-2020	On going
Dr. P Kakoti	Development of an Index for Ranking of Cement	TEQIP III, ASTU	2,60,000.00	18 months	September 2020	Ongoing
	Development of an Actuator for Shedding Mechanism of Looms	NPIU-MHRD	14,60,000.00	15 months	18/05/2019 to 30/09/2020	Ongoing
Dr. N Saha	Pyrolysis of locally available biomass samples and their blends: A study on effect of parameters, characterization of products and evaluation of thermal behavior.	TEQIP III, ASTU	3,00,000.00	1 year	July 30, 2019 – July 29, 2020	Ongoing

Dr. A Bora	Investigation of the Effect of Trace Addition of Titanium on 2xxx Series Aluminium Alloy	TEQIP-III and ASTU	2,99,993.00	1 year	July 30, 2019 – July 29, 2020	Ongoing
Dr. D K Bora	Environmental Application of Biochar produced from Biomass waste	TEQIP-III and ASTU	3,00,000.00	18 months	2019-2020	Ongoing
	Crude Biodiesel production and crude biodiesel using Dry washing	TEQIP-III and ASTU	3,00,000.00	18 months	2019-2020	Ongoing
Mr. P K Choudhury	Production and Characterization of biodiesel from waste cooking oil of Assam Engineering College Canteen and investigation of its CI engine performance and emissions for running its own DG (diesel generator) set	TEQIP III, ASTU	2,99,930.00	1year	2019-2020	Ongoing
	Bio compatible Properties of Tea Tree Oil Derived Plasma Polymer Films	-do-	3,00,000.00	1 year	2019-2020	Ongoing
Mr. J Arumughan	Design, Development and Simulation of Nanoelectrofuel Flow batteries for their application in EV's	NPIU, MHRD	11,40,000.00	15 months	18/06/2019 to 30/09/2020	Ongoing
Mr. J Chowdhury	Development of Actuator for Shedding Mechanism in Looms	NPIU MHRD	14,60,000.00	07/2019-09/2020	15months	Ongoing

Mr. D Kashyap	Development of novel endotracheal tube holder for better management in invasive ventilation	NPIU - MHRD	17,00,000.00	1 year	June 2019-2020	Ongoing
Dr. A Kar	Plastic Driven I.C. Engine	NPIU MHRD	15,81,000.00	15 months	30.06 2019-30.09.2020	Ongoing
Mr. S S Mallick	Investigation on thermal management system of Heat pipe/PCM based Li-ion Battery Pack.	NPIU, MHRD	10,01,434.00	15 months	18/06/2019 to 30/09/2020	Ongoing
Mr. M Bhuyan	Investigation of the effect of trace addition of titanium on 2xxx series Aluminium alloy	ASTU-TEQIP III	2,99,993.00	1 year	2019-20	Ongoing
Mr. M Baruah	Computational Investigation of Perforated Hollow Shape Energy Efficient Pin Fin Heat Exchanger	TEQIP-III	3,00,000.00	12 months	Upto sept. 2020	Ongoing
Total amount (Lakhs of ₹) = 118.72L						

NB: In view of the COVID-19 pandemic the duration of the projects has been extended by the funding agencies.

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Quality means doing it right when no one is looking.

-Henry Ford

PEOPLE IN THE DEPARTMENT

List of Faculty Members

SL NO	NAME	DESIGNATION	AREA OF SPECIALIZATION
1	Dr. RANJIT KUMAR DUTTA	PROFESSOR & HEAD	MANUFACTURING
2	Dr. DIMBENDRA KUMAR MAHANTA	PROFESSOR	ENERGY, THERMAL ENGINEERING
3	Dr. SUDIP KUMAR DEB	PROFESSOR	INDUSTRIAL ENGINEERING & MANAGEMENT
4	Dr KALYAN KALITA	PROFESSOR (IPE)	COMPUTATIONAL FLUID DYNAMICS
5	Dr. PLABON KAKOTI	ASSOCIATE PROFESSOR	INDUSTRIAL ENGINEERING & MANAGEMENT
6	Dr. NIHARENDU SAHA	ASSOCIATE PROFESSOR	MACHINE DESIGN, TRIBOLOGY, COMPOSITE MATERIAL
7	Dr. ANIL BORAH	ASSOCIATE PROFESSOR	ADVANCED MANUFACTURING
8	Dr. DILIP KUMAR BORA	ASSOCIATE PROFESSOR	ALTERNATIVE FUELS, IC ENGINES, RENEWABLE ENERGY
9	Dr. MANJURI (HAZARIKA) GOSWAMI	ASSOCIATE PROFESSOR	CIM, GREEN MANUFACTURING
10	Dr KALYAN KUMAR DAS	ASSOCIATE PROFESSOR (IPE)	AEROSPACE ENGINEERING & APPLIED MECHANICS
11	Mr. BAHARUL ISLAM BARBHUYAN	ASSOCIATE PROFESSOR	THERMAL ENGINEERING, ENVIRONMENT
12	Dr. KAMAL KUMAR BRAHMA	ASSISTANT PROFESSOR	ENERGY
13	Mr. PRSANTA KUMAR CHOUDHURY	ASSISTANT PROFESSOR	THERMAL ENGINEERING
14	Ms. MOUSUMI GOGOI	ASSISTANT PROFESSOR	MANUFACTURING, DESIGN
15	Mr. JITUL BARUAH	ASSISTANT PROFESSOR	THERMAL ENGINEERING
16	Dr. BASHAB JYOTI PHUKAN	ASSISTANT PROFESSOR	THERMAL ENGINEERING
17	Dr. PRADIP BAISHYA	ASSISTANT PROFESSOR	SOLID WASTE MANAGEMENT
18	Dr. MANASH HAZARIKA	ASSISTANT PROFESSOR	ADVANCED PRODUCTION SYSTEMS
19	Mr. MADURJYA BARUAH	ASSISTANT PROFESSOR	MACHINE DESIGN, VIBRATION
20	Mr. SUBHRANSU SEKHAR MALLICK	ASSISTANT PROFESSOR (TEQIP)	FLUID & THERMAL ENGINEERING
21	Mr. PIYUSH SINGH	ASSISTANT PROFESSOR (TEQIP)	MANUFACTURING
22	Mr. JYOTHIS A	ASSISTANT PROFESSOR (TEQIP)	FLUID & THERMAL ENGINEERING
23	Mr. MOHAMMED RAFI.A	ASSISTANT PROFESSOR (TEQIP)	FLUID & THERMAL ENGINEERING
24	Mr. ANIRBAN SAHA	ASSISTANT PROFESSOR (TEQIP)	CAM
25	Mr. DEVARSHI KASHYAP	ASSISTANT PROFESSOR (TEQIP)	MANUFACTURING
26	Mr. JUAN CHOWDHURY	ASSISTANT PROFESSOR (TEQIP)	CAM
27	Mr. MANASH BHUYAN	ASSISTANT PROFESSOR (IPE, CONTRACT)	INDUSTRIAL & PRODUCTION ENGINEERING
28	Mr. MONOJ BARUAH	ASSISTANT PROFESSOR (IPE, CONTRACT)	INDUSTRIAL & PRODUCTION ENGINEERING

List of Supporting Staff

SL NO.	NAME	DESIGNATION
1	Mr. APURBA KR DAS	TECHNICAL OPERATOR
2	Mr. NILAMONI SARMAH	JUNIOR INSTRUCTOR
3	Mr. JYOTISH KATHAR	JUNIOR INSTRUCTOR
4	Mr. MAHESH BARMAN	BOILER ATTENDANT
5	Mr. PRANAB JYOTI SARMAH	JUNIOR INSTRUCTOR
6	Mr. MOSTAB ALI	BEARER
7	Mr. KANGKAN BAISHYA	BEARER
8	Mr. MAJIBUL HAQUE	BEARER
9	Mr. MAINUL ALI	COMPUTER LAB SERVICE (TEMPORARY)
10	Mr. NAYAN DUTTA	COMP. OPERATOR

PUBLICATIONS OF FACULTY MEMBERS IN 2020

Dr. Ranjit Kumar Dutta

1. U Deka, M Bhuyan, C Borah, S Kakoti & **R K Dutta**, Fabrication of treated and untreated coconut fibre reinforced epoxy based composites of different fibre content and comparison of their tensile and flexural strengths. International Conference on Recent Developments in Mechanical Engineering, ICRAME 2020 07-09 February 2020, NIT Silchar, India (In Press)

Dr. Sudip Kumar Deb

1. B J Phukan & **S K Deb**, Performance improvement of Split Air conditioner using evaporative cooling method in the climatic condition of Guwahati, International Research Journal of Engineering and Technology, e-ISSN:2395-0056, p-ISSN:2395-0072
2. **Sudip Kumar Deb**, Reeshab Pratim Upamanaya, Aditya Bishwakarma & Vishal Vivek Saikia (2020), Fabrication of carbon capture device using activated charcoal. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
3. Kabita Roy, **S.K.Deb** & B.J.Phukan (2020), Possibilities of condensate recovery from split air conditioner in the climatic condition of Guwahati city and its utilization. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
4. Abhijit Chakraborty, Abhisek Bhowmik & **Sudip Kumar Deb (2020),** Applications of Systems Approach of Production to Improve Productivity in smes. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.

Dr. Kalyan Kalita

1. **K Kalita,** D. K. Bora, M. Saikia, B. Bikash, & B. Sham, An Investigation of Effectiveness of MesuaFerrea L. Seed Cake as a Binder in Briquettes made from Rice Straw, Teak and Banana Leaves The international symposium on **"Aspects of Mechanical Engineering and Technology for Industry"** NERIST, Nirjuli-791109, Itanagar, Arunachal Pradesh, India. Symposium proceedings Vol. II, ISBN: 978-93-83842-96-4,
2. B Bikash, M Saikia, D K Bora & **K Kalita** (2020) A Review and comparative analysis on Valorization of Deoiled Seed Cakes for Production of Bio-oil and Bio-char. 3rd National Conference on Recent Advances in Science and Technology (NCRAST- 2020) (in press)
3. Sahul Muhique & **Kalyan Kalita (2020),** Numerical simulation of submarine hydrodynamics and flow field analysis of nose and hull using ansys fluent. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
4. Rathish Borah, Pankaj Das, Bhargav Hazarika & **Kalyan Kalita (2020),** Design and fabrication of a mini farming cultivator. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.

Dr. Plabon Kakoti

1. Desringdi Maibangsa, & **Plabon Kakoti (2020), Development** of an index for ranking of cement based on its quality characteristics. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
2. Iqbal Mustaffa Jamal Choudhury, Barun Bipllab Gogoi & **Plabon Kakoti (2020),** Utilization of rain water for producing electricity using nominal cost set up. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.

Dr. Niharendu Saha

1. R Al Rejah, **N Saha** & A Akhtar, Domestic Source of Municipal Solid Waste (MSW) in Guwahati City, India: Quantification and Characterization. Pollution Research 38 (2), 353-360
2. N D Choudhury &**N Saha**, Biolubricant from Vegetable oil: A review, Emerging Renewable Energy Technologies. International Conference on Renewable and Alternate Energy, pp: 260-271
3. A Goswami &**N Saha**, Analysis of Static Characteristics of Externally Pressurized Two Layer Porous Oil Journal Bearing with Journal Misalignment, Tribology International (Submitted and in review process)
4. Dhritiraj Lahkar, Nabajit Dev Choudhury & **Niharendu Saha (2020),** Experimental investigation of energy properties for *Cucurbita Pepo* Deoiled Cake and its blend with sawdust and *Ipomoea Carnea* as potential source of solid fuel. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.

Dr. Anil Bora

1. **A Borah**, M Baruah, A Ladha, M Baruah, A Kar & A Deb, A Study of Effect of Micro-alloying of Tin on Ageing Behaviour of 6xxx Series Aluminium Alloys. Book Series Lecture Notes in Mechanical Engineering "Advances in Mechanical Engineering" Springer Nature, https://doi.org/10.1007/978-981-15-0124-1
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3. Jishnu Goswami, Monikesh Kakoty, Rahul Pandey & **Anil Borah (2020),** Comparative Study of Arc Welding Using Solid and Tubular Electrodes. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.

Dr. Dilip Kumar Bora

1. B Bikash, M Saikia, D K Bora & K Kalita (2020) A Review and comparative analysis on Valorization of Deoiled Seed Cakes for Production of Bio-oil and Bio-char. 3rd National Conference on Recent Advances in Science and Technology (NCRAST- 2020) (in press)

Dr. Manjuri Hazarika

1. S D Roy, D Rabha, M Hasan & **M Hazarika**, Study and Analysis of a Solar Power System. Abstract Booklet of National Conf. on Advances in Mechanical Engineering 2020, Vol 1, pp 50
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Dr. Kalyan Kumar Das

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Mr. Baharul Islam Barbhuyan

1. Animesh Borgohain, Kaustav Bharadwaz & **Baharul Islam Barbhuyan (2020),** Implementation of Energy Efficient Measures in a Typical Commercial Building in Assam. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.

Mr. Prasanta Kumar Choudhury

1. **P K Choudhury** & D K Bora, A Comparative Study of Multi-Objective Optimization Methods for I.C. Engine Performance Study of Koroch Blend Biodiesel. Journal of energy research and Environmental Technology, Volume6, Issue3, ISSN:2394-1561e-ISSN:2394-157X
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Ms. Mousumi Gogoi

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Dr. Bashab Jyoti Phukan

1. Nikita Katharpi & **Bashab Jyoti Phukan (2020),** Computational fluid dynamics of analysis of air conditioning performance in room by using ansys fluent. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
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Dr. Pradip Baishya

1. Hrishikesh Basumatary & **Pradip Baishya (2020),** Feasibility study for solid waste management on kamakhya temple and vicinity through plasma pyrolysis technology. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.

Dr. Manash Hazarika

1. **M Hazarika**, An improved genetic algorithm for the machine part cell formation problem. International Journal of System Assurance Engineering and Management, (In Press)
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Mr. Piyush Singh

1. R Kutum, **P Singh** & A Saha, Experimental study on Recycled Polyethylene Terephthalate (PET) Bottles Fiber Reinforced Concrete. Proceeding of 3rd International Conference on Waste Management-Recycle 2020organized by IIT Guwahati, Feb 13-14, 2020
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Mr. Devarshi Kashyap

1. **D Kashyap**, S S Gaur & S Kanagaraj, Development of hybrid shape memory polyurethane composites for endovascular applications. Materials Today Communications, https://doi.org/10.1016/j.mtcomm.2019.100751

Mr. Anirban Saha

1. R Kutum, P Singh & **A Saha**, Experimental study on Recycled Polyethylene Terephthalate (PET) Bottles Fiber Reinforced Concrete. Proceeding of 3rd International Conference on Waste Management-Recycle 2020organized by IIT Guwahati, Feb 13-14, 2020
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3. R Kutum, P Singh, **A Saha**, Experimental Study on Fibers and without Fibers Reinforced Concrete. TEQIP III Sponsored National Conference for students on Advances in Mechanical Engineering held on 6th March, 2020 at Mechanical Engineering Dept., AEC
4. J Roy, M A Barbhuiya, P Boruah, **A Saha**, Study of Temperature variation in LPG Refrigeration System. TEQIP III Sponsored National Conference for students on Advances in Mechanical Engineering held on 6th March, 2020 at Mechanical Engineering Dept., AEC

Mr. Subhransu Sekhar Mallick

1. Nayan Gogoi, Kaushik Baidya, Pulastya Sarmah & **Subhransu Sekhar Mallick (2020),** Design and fabrication of a small scale electric crop harvester. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
2. SamironNeog & **Subhransu Sekhar Mallick (2020),** A comparative simulation study of thermal characteristics of Li-ion battery cell. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.

Mr. Juan Chowdhury

1. Raktim Prakash Karjee & **Juan Chowdhury (2020),** Retro fitting Shedding Mechanism in Power Loom. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.

Mr. JyothisArumughan

1. Tanvir Alam, Juhita Das, Abhishek Roy & **Jyothis Arumughan** (2020), Review on feasibility of flow batteries in electric vehicles. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.

Mr. Manash Bhuyan

1. **M Bhuyan**, A Saikia & A Borah, A Study on the Effect of Micro-alloying of Titanium in 2XXX Al-alloy. Advances in Mechanical Engineering- Lecture Notes in Mechanical Engineering, Springer Nature, Singapore, https://doi.org/10.1007/978-981-15-0124-1_34
2. **Manash Bhuyan**, Imran Hussain Ahmed, Bappi Chamua, Manas Jyoti Medok, Raju Ronghang & Mousumi Gogoi (2020), Design and fabrication of a flood proof house to overcome the flood hazards in Assam, India. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.

Mr. Monoj Baruah

1. **M Baruah**, A Ladha, M Baruah, A Kar, A Deb & A Borah, A Study of Effect of Micro-alloying of Tin on Ageing Behaviour of 6xxx Series Aluminium Alloys. Advances in Mechanical Engineering, Springer, Singapore, https://doi.org/10.1007/978-981-15-0124-1
2. **M Baruah**, H Bhattacharyya, H Gohain & A Borah, Effect of solution treatment temperature and soaking time on hardness of AlMgSiSn alloy. Recent Advances in Science and Technology, (In Press)

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Our Profound Gratitude

The Mechanical Engineering Department expresses its heartfelt appreciation to its members who superannuated in the year 2020. You embody hard work and optimism. Thank you for bringing such joy to the department.
Happy retirement! You'll be missed but never forgotten!
We hope retirement brings you the opportunity to fill your time with everything you enjoy!

Prof. Amar Jyoti Barthakur
Associate Professor

Mr. Dipak Kr Das
Scientific Assistant

Mr. B. Beema Rao
Cleaner

STUDENTS' CORNER

Pratul Chandra Baruah Merit Award Scholarships 2021 for UG (Mechanical)

- Tanvir Alam: Senior PCB Scholar (7th and 8th Semester)
- Kaustobhmoni Hazarika: Junior PCB Scholar (5th and 6th Semester)
- Manas Pratim Das: Sophomore PCB Scholar (3rd and 4th Semester)
- Abhinav Nath: Freshman PCB Scholar (1st and 2nd Semester)

List of students (2016-20 batch) placed in different companies through placement drives organized by the Training & Placement Cell during 2019-20

Sl. No.	Name of Company	Name of the student(s)
1	TCS	Amlan Baruah
2		Bibank Sarkar
3	Go speedy Go	Priyanku Chutia
4		Zafirul Haque
5		Abhishek Roy
6	Luit Minerals	Shakil Injamamul Hoque
7		Abhishek Roy
8		Paubiaklian Hauzel
9		Krishnav K Kalita
10	Cognizant	Sanjib Das
11		Siddhant Agarwala
12		Bijay Sarma
13		Milan Agarwal
14	TVS	Bijay Sarma
15	Tata Advanced Systems Limited	Vishal Vivek Saikia
16		Siddhant Agarwala
17		Amlan Baruah
18	i3infosoft	Amit Beniwal
19		Amarendra Handique
20		Reeshab Pratim Upamanaya
21	Dalmia Cement	Akash Deep Malik
22	Godrej & Boyce	Iqbal Mustaffa Jamal Choudhury
23	Oil India Limited	Tanvir Alam

List of students who opted to pursue higher education in 2019-20

Sl No	Name of Students	Qualifying Exam, Rank	Program Name and Institute Address
1	Tapash Chandra Goswami	GATE 1074 (2020)	M.Tech at IIT kanpur
2	Anamitra Phukan	GATE 3003 (2020)	M.Tech at IIT Patna

3	Samiran Gohain	Mat 77.37 Percentile (2020)	PGDM at Jaipuria Instiitute of Management
4	Mohit Khemka	-	MBA at Symbiosis Institute of Business Management Bengaluru

List of publication by students during 2020

1. Sudip Kumar Deb, Reeshab Pratim Upamanaya, Aditya Bishwakarma & Vishal Vivek Saikia (2020), Fabrication of carbon capture device using activated charcoal. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
2. Kabita Roy, S.K. Deb & B.J. Phukan (2020), Possibilities of condensate recovery from split air conditioner in the climatic condition of Guwahati city and its utilization. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
3. Abhijit Chakraborty, Abhisek Bhowmik &Sudip Kumar Deb (2020), Applications of Systems Approach of Production to Improve Productivity in smes. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
4. Sahul Muhique & Kalyan Kalita (2020), Numerical simulation of submarine hydrodynamics and flow field analysis of nose and hull using ansys fluent. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
5. Rathish Borah, Pankaj Das, Bhargav Hazarika & Kalyan Kalita (2020), Design and fabrication of a mini farming cultivator. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
6. Desringdi Maibangsa, & Plabon Kakoti (2020), Development of an index for ranking of cement based on its quality characteristics. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
7. Iqbal Mustaffa Jamal Choudhury, Barun Bipllab Gogoi & Plabon Kakoti (2020), Utilization of rain water for producing electricity using nominal cost set up. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
8. Dhritiraj Lahkar, Nabajit Dev Choudhury & Niharendu Saha (2020), Experimental investigation of energy properties for *Cucurbita Pepo* Deoiled Cake and its blend with sawdust and *Ipomoea Carnea* as potential source of solid fuel. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
9. Jishnu Goswami, Monikesh Kakoty, Rahul Pandey &Anil Borah (2020), Comparative Study of Arc Welding Using Solid and Tubular Electrodes. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
10. Souvik Deb Roy, Dhiraj Rabha, Mahmoodul Hasan, Manjuri Hazarika (2020), Study and analysis of a solar power system. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
11. M. Baruah, J.M.Barman, U.N.Konwar, F.B.Kashyap & K. K. Das (2020), A computational investigation on performance of elliptical pin fin heat exchanger. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
12. Animesh Borgohain, Kaustav Bharadwaz & Baharul Islam Barbhuyan (2020), Implementation of Energy Efficient Measures in a Typical Commercial Building in Assam. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
13. Bidisha Chetia & Prasanta Kumar Choudhury (2020), Multi-objective optimization of engine performance with waste cooking oil (WCO) biodiesel using Taguchi-DEAR method- a case study. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
14. Manash Bhuyan, Imran Hussain Ahmed, Bappi Chamua, Manas Jyoti Medok, Raju Ronghang & Mousumi Gogoi (2020), Design and fabrication of a flood proof house to overcome the flood hazards in Assam, India. National Conference for Students "*Advances in Mechanical Engineering*", AEC,

Guwahati-781013.

15. Nikita Katharpi & Bashab Jyoti Phukan (2020), Computational fluid dynamics of analysis of air conditioning performance in room by using ansys fluent. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
16. Kabita Roy, S.K. Deb & B.J. Phukan (2020), Possibilities of condensate recovery from split air conditioner in the climatic condition of Guwahati city and its utilization. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
17. Hrishikesh Basumatary & Pradip Baishya (2020), Feasibility study for solid waste management on kamakhya temple and vicinity through plasma pyrolysis technology. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
18. Manash Hazarika & Himadri Sikhar Das (2020), Study and optimization of machine cell formation for sequential problems. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
19. Tanvir Alam, Juhita Das, Abhishek Roy & Jyothis Arumughan (2020), Review on feasibility of flow batteries in electric vehicles. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
20. Raktim Prakash Karjee & Juan Chowdhury (2020), Retro fitting Shedding Mechanism in Power Loom. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
21. R Kutum, P Singh & A Saha, Experimental study on Recycled Polyethylene Terephthalate (PET) Bottles Fiber Reinforced Concrete. Proceeding of 3rd International Conference on Waste Management-Recycle 2020 organized by IIT Guwahati, Feb 13-14, 2020
22. R Kutum, P Singh & A Saha, A Comparative Study on Jute-Fiber and Polymer-Fiber Reinforced Concrete. Proceeding of 1st International Conference on Emerging Global Trends in Engineering and Technology (EGRET-2020) held on 6-7 March,2020 organized by School of Technology, Assam Don Bosco University
23. R Kutum, P Singh, A Saha, Experimental Study on Fibers and without Fibers Reinforced Concrete. TEQIP III Sponsored National Conference for students on Advances in Mechanical Engineering held on 6th March, 2020 at Mechanical Engineering Dept., AEC
24. J Roy, M A Barbhuiya, P Boruah, A Saha, Study of Temperature variation in LPG Refrigeration System. TEQIP III Sponsored National Conference for students on Advances in Mechanical Engineering held on 6th March, 2020 at Mechanical Engineering Dept., AEC
25. Anirudh Roy & Abhimanyu Kar (2020), Preparation of IC engine fuel using waste plastic (LDPE) chips. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
26. Nayan Gogoi, Kaushik Baidya, Pulastya Sarmah & Subhransu Sekhar Mallick (2020), Design and fabrication of a small scale electric crop harvester. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.
27. Samiron Neog & Subhransu Sekhar Mallick (2020), A comparative simulation study of thermal characteristics of Li-ion battery cell. National Conference for Students "*Advances in Mechanical Engineering*", AEC, Guwahati-781013.

STUDENT ACHIEVEMENTS IN 2020

SL. NO	PARTICIPANTS	EVENT	DATE	PERFORMANCE
1	PARAG BARUAH, MASUM AHMED BARBHUIYA AND JOY ROY	National Conference on Advances in Mechanical Engineering	6-Mar-20	Best Oral presentation award

2	RUPJYOTI DOLEY, KRISHNAV KALITA, CHAYAN PAUL AND ABHILASH DAS	29th Chetan Deveraj Memorial East Zone Technical Institutions Cricket Tournament, at Birla Institute of Technology Mesra Ranchi.	18-Feb-20	Top 4 (Lost in semifinals)
3	JIMLEE PATOWARY SATYAM SARMA BHASKAR BORAH HRISHIKESH BHARADWAJ DIKSHIT UPADHYA ANKIT TIWARI	UPES Sahayak Virtual Hackathon 1.0	25-Jun-20	Selected for the final round
4	IQBAL MUSTAFFA JAMAL CHOUDHURY	Twain'd of Techxom - regional level convection	9-Feb-20	2nd position
5	RUBUL PHUKON	3rd WSS online open chess competition	5-Apr-20	6th position (open)
6	NAVADIP BHUYAN, HAFIZUR ROHMAN AND JYOTIRMOY BARUAH	AEC Class' 88 batch foundation	22-Feb-20	Aparna Kumar Padmapati Memorial Scholarship- Innovative Student of the Year 2019-20
7	TEAM ELYSIAN 2.0 (SATYAM SARMA (CAPTAIN), ABHILASH DAS (VICE-CAPTAIN), ANKIT TIWARI, SUBHASHISH CHAKRABORTY, AATISH NATH, BHASKAR BORAH, CHANDAN BORTHAKUR, LOKASH JAIN, MANAN SARMA, MANASH DAS, MILAN PRIYA BORA, JIMLEE PATOWARY AND BANDEEP SAIKIA)	SAE North India Section EFFI-CYCLE 2020	17-27 September 2020	First Runners up- Best CAE Presentation

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PHOTO GALLERY

Expert Talk on "OPPORTUNITIES FOR MECHANICAL ENGINEERS IN HIGHER STUDIES ABROAD" for Mechanical Engineering and Industrial & Production Engineering 6th Semester students by Dr. Tribeni Roy, Project Assistant in Imperial College of Engineering, London, UK on 24/02/2020

TEQIP-III sponsored FDP on "Recent Trends in Green Energy Utilization" 10-14 February 2020

TEQIP-III Sponsored hands-on training workshop on IOT (Internet of Things) from 24th February to 26th February, 2020. The resource person invited for the workshop were Mr. Ayushman Gogoi and Mr. Kamalesh Sarmah from Yantrabot Technologies Pvt. Ltd.


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