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SURGE
NEWSLETTER

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School of Engineering and Technology

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JUNIOR ORIENTATION

The department of Electrical and Electronics Engineering organized a three-day orientation program and bridge course for the 3rd-semester students from 12th August to 14th August. The orientation program commenced with a deanery level program which kicked off with an address by the Vice-chancellor, followed by addresses by the Director of the School of Engineering and Technology, Dr Fr. Benny Thomas, and the Dean of the School of Engineering and Technology, Dr Iven Jose.

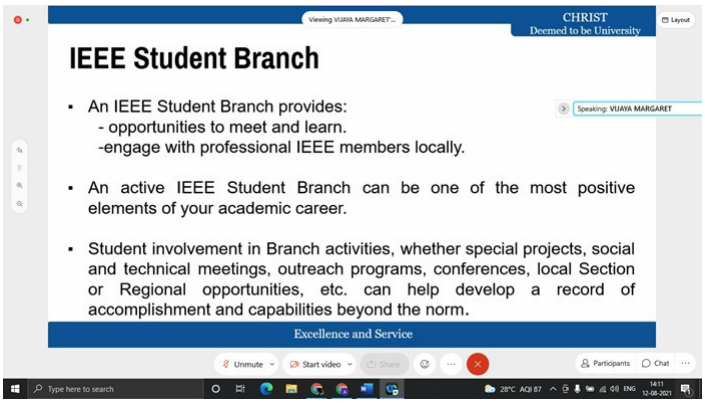
After this the students of 3BTEE had a department-specific orientation which started with a welcome address by the Head of Department, Dr Joseph Rodrigues, who also gave an overview of the facilities, programmes held and collaborations of the EEE department with Industries and other departments. This was followed by the introduction of the faculties of the department.

In the afternoon session, students were introduced to various multidisciplinary clubs under the department. Dr Vijaya Margaret gave a brief introduction to the IEEE and PES society. Prof. Linu Lonappan introduced all to the department association EETA(Electrical Engineers Technical Association) and the sports society. Later Dr Manikandan P provided a brief account on industrial automation.

The second day of the orientation started with an overview of the facilities, achievements and the proposed research projects of the E-Mobility R&D facility, presented by Prof. Haneesh K M. This was followed by an ice-breaking session for the 3rd-semester students held by students from the 7th and 5th semester. The students were informed of the placement records of the previous batches. After these, bridge courses on Circuit analysis and Electrical Machines by Prof. Devika Menon and Prof. Haneesh KM were also conducted.

The third and final day of the orientation started with a session on the basics of MATLAB by Dr Vijaya Margaret, followed by a workshop on MATLAB applications by Prof. Venkataswamy and finally ended with a session on MATLAB Simulink by Prof. Haneesh KM.

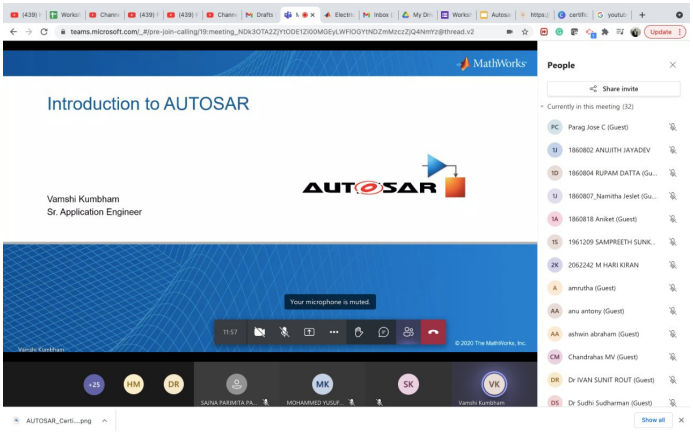
With this, the three-day orientation session was concluded.



AUTOSAR WORKSHOP

MATLAB AUTOSAR is a specialized toolbox that is used in Automotive studies. Experience in Autosar definitely is a feather in one's cap when it comes to employment in core areas like E-Mobility and Autonomous vehicles.

With this in mind, the E-Mobility Research and Development Centre, in association with Math Works and CoreEL Technologies, organized a workshop on "Introduction to AUTOSAR and Vehicle Network Toolbox" on the 19th of August, 2021.



The session was conducted by CoreEL's own team and was extremely informative. The session covered the applications and the use case scenarios of the new toolbox. It went into depth on the opportunities available with the new system.

It was extremely beneficial for the student body and helped us discover niche technologies that will definitely help us in our career prospects.

STUDENT PLACEMENT REPORT

The department's placement cell ensured that the students in their final year attended placement training. These sessions were conducted by Bizotic. Technical training in coding and programming languages are being taken. The students of the 5th semester also have weekly sessions of aptitude training for placements.

As of this month, the placements stand as follows:

1. Rupam Dutta- Epsilon and DXC Technologies
2. D Vikramnath -DXC Technologies.
3. Ryan Thomas- Capgemini
4. Sayak Mondal- Capgemini
5. John Joy Ukken- With internship offer in Morphle Labs.

DATES TO REMEMBER

- **1 SEPTEMBER** - NATIONAL NUTRITION WEEK
- **2 SEPTEMBER** - WORLD COCONUT DAY
- **3 SEPTEMBER** - SKYSCRAPER DAY
- **5 SEPTEMBER** - INTERNATIONAL DAY OF CHARITY
- **5 SEPTEMBER** - TEACHERS' DAY
- **8 SEPTEMBER** - INTERNATIONAL LITERACY DAY
- **10 SEPTEMBER** - WORLD SUICIDE PREVENTION DAY (WSPD)
- **11 SEPTEMBER** - 9/11 REMEMBRANCE DAY
- **11 SEPTEMBER** - NATIONAL FOREST MARTYRS DAY
- **11 SEPTEMBER** - WORLD FIRST AID DAY
- **12 SEPTEMBER** - GRANDPARENTS' DAY
- **14 SEPTEMBER** - HINDI DIWAS
- **15 SEPTEMBER** - ENGINEER'S DAY
- **15 SEPTEMBER** - INTERNATIONAL DAY OF DEMOCRACY
- **16 SEPTEMBER** - WORLD OZONE DAY
- **17 SEPTEMBER** - WORLD PATIENT SAFETY DAY
- **21 SEPTEMBER** - INTERNATIONAL DAY OF PEACE (UN)
- **21 SEPTEMBER** - WORLD ALZHEIMER'S DAY
- **22 SEPTEMBER** - ROSE DAY (WELFARE OF CANCER PATIENTS)
- **26 SEPTEMBER** - WORLD ENVIRONMENTAL HEALTH DAY
- **28 SEPTEMBER** - WORLD RABIES DAY
- **30 SEPTEMBER** - INTERNATIONAL TRANSLATION DAY

ANNOUNCEMENTS

The E-mobility R & D Center is initiating the Semester Long Training Programme (SLTP) for the academic year 2021-22. A hybrid model of project implementation will be performed for this semester. The areas of topics identified are:

1. Forward Collision Warning System.
2. Thermal Management System
3. Autosar Project
4. Autonomous Driving Studies
5. App Development
6. Micro Mobility model
7. Transportation Studies using IPG CarMaker

Interested students from any branch and any year can apply through the following link:

https://forms.gle/vAH64d4xNYeyUpvB9

LAST DATE FOR REGISTRATION: 20/09/2021

IEEE Day Celebrations

As a part of IEEE Day celebrations between September 15 to October 20, IEEE SB SOET is proud to announce that there will be lots of events conducted by the IEEE Bangalore Section and IEEE SB SOET, and offers to be availed!

Please participate and avail this opportunity to be a part of IEEE

Stay Tuned for Updates!

CREATIVITY CORNER

ROAD MAP TO E-MOBILITY ADOPTION IN INDIA

Air Quality Index (AQI) is a measure of the quality of air and portrays the level of air pollution in a region. The increasing levels of air pollutants are causing climate and environmental changes in the form of global warming and acid rains. According to AQI India et al., Delhi, the capital city of India had recorded AQI at a catastrophic level of 1239 on 3rd November 2019. Even though there are other reasons involved, vehicle emissions are categorised as the major contributor towards the increasing emission levels. Niti Ayog (2016), recorded the vehicle ownership of 167 per 1000 population. The majority of these are Internal Combustion (IC) engine based vehicles which acts are the main source for PM2.5 emissions. Researchers have accounted for 80 per cent of nitrogen oxides and carbon monoxides in Delhi from vehicle emissions.

Various world nations have therefore started adopting measures and policies to reduce the usage of IC engine based vehicles while promoting Gridable Electric Vehicles (GEV). These are vehicles that would utilize a traction battery power traction motor which would require power from a grid. It includes Plug-in Hybrid Electric Vehicles (PHEV) and Electric Vehicles (EV). The government of India has rolled out schemes like the National Electric Mobility Mission Plan (NEMMP), Faster Adoption & Manufacturing of Hybrid & Electric vehicles (FAME-I & FAME-II), in view of promoting the GEVs'. Various state governments in India have also come up with their Electric Mobility plans to promote green transportation for last-mile connectivity models.

However, apprehensions towards GEVs' still exist among the public. The major roadblocks in this are the low operating range of GEVs, its expensive traction battery packs, the inefficient controllers and insufficient charging or battery swapping technology. Range anxiety is one major issue that arises in the case of GEV owners and addressing this with massive deployment of charging infrastructure is still not performed. A primary reason for this is the inability of our utility grid to accommodate the increase in the GEV loads which connect to it for charging. Unlike other loads controlled by various electricity boards, the charging of GEVs' are highly uncoordinated. This uncontrolled influx of GEV loads could cause regulation issues on the utility grid. Therefore, provisions for modernization and easy integration of GEVs' is required. The governments have also to come up with schemes that would attract the population to adopt GEVs' while discarding their conventional IC engine vehicles.

One effort that has been promising is the adoption of Bharat Stage-6 (BS-6) emissions norms which are at par with Euro-6 norms. According to Transport Policy (2018) report, the BS-6 standards requires an M &N class low duty petrol vehicle to have CO emissions up to 1 gm/km. Fig 1. shows the reduction in the emission levels through various emission standards.

Over the years from 2000, when the India Stage I was implemented the permissible CO, HC and NOx levels have drastically reduced when compared with the BS-6 levels adopted in 2020.

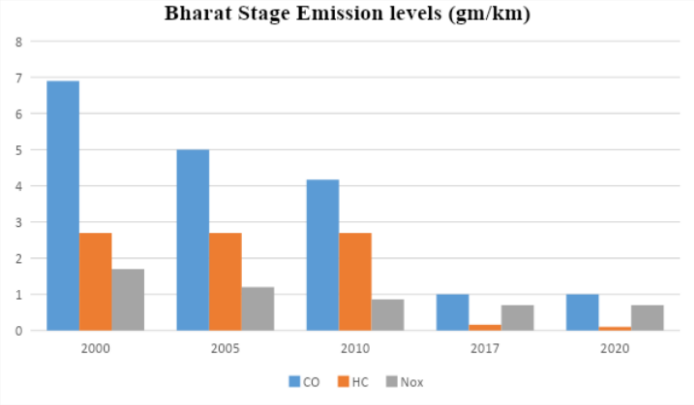


Fig 1: Emission levels under various Indian emission norms

Policies & Frameworks

Modernization of the grid and the easy integration of GEVs' is critical for its promotion. Countries like the United States of America, Australia have developed demand response programs to mitigate these issues. In 2018 the Australian government took up a study to analyse the EV market and the allied infrastructure. According to the report from Energeia (2018), delegated by the Australian Government, the popularity of EVs had drastically improved. The policies focus on an inclusive approach to enable users and OEMs to gain from the adoption of EVs, through government initiated policies. The study benchmarks the work performed in other countries like Norway, the USA in these areas. The concept of charging convenience is an important factor considered. It indicates the effort that a user puts in to ensure that their EV battery packs are charged to ensure that all their trips could be completed without range anxiety.

This charging convenience is measurable in terms of two important factors that include; time spend to locate a free charging point and the time spend recharging the battery pack. Therefore, the ability of the EV infrastructure model should be considering the user charging convenience as a prime factor while modelling. In developing nations, the scope of public charging ports are limited and therefore, the range anxiety factor would be very high. To mitigate this policies have to be adopted to promote small scale charging infrastructures including Micro grid-based charging stations.

According to studies conducted by the Environmental and Energy Study Institute et al., the policies adopted by the main EV promoting countries like the USA and China are changing the EV market. USA and China have adopted intensive policies which include rebates, tax exemptions and tax credit policies to attract more EV buyers. To intensify the policies further, China has come up with a 'dual credit policy'. According to this policy, the manufacturers are required to ensure a prescribed number of EVs are sold by them. Based on the sales, energy credit points would be awarded to the manufacturers. It is made mandatory that every year, 10 per cent of the energy credits that a manufacturer has, should be based on sales of new EVs. With respect to improved charging infrastructure, both countries have taken great measures. The USA has already installed a total of 47,130 charging points while the share of China is 213,903.

The government agencies like Advanced Research Project Agency-Energy (ARPA-E) of the USA and the National Key Research and Development Program of China has funded various research organizations to promote EV and allied field research.

The Government of India (GoI) has also initiated various schemes to promote EVs in India. The transition from IC engine vehicles to EVs would be difficult in India due to the higher ownership ratio of IC engine vehicles. The Indian society would find it difficult to do the transition without promising policies and frameworks. In 2010, the GoI announced an Rs. 95 crore scheme to popularize EVs through incentivizing it. This scheme promised tax rebates of up to 20 per cent on ex-showroom prices of the EVs'. However, to intensify the process, the Ministry of New & Renewable Energy (MNRE), the responsible body under the GoI, discontinued the scheme and came up with the National Electric Mobility Mission Plan (NEMMP) 2020. This scheme envisioned a mass adoption of EVs' and also focus on issues including national energy security, vehicular pollution and growth of domestic manufacturing capabilities. For this, the GoI provided a budget of Rs. 1,000 crore for two years. In 2015, the GoI came up with the faster adoption and manufacturing of electric vehicles (FAME) policy with an investment of Rs 75 crore. This promoted the entry of many new players in the Indian EV market. Seeing the trend, the GoI, aiming to attain 100 per cent electrification of vehicles by 2030, came up with a Rs. 10,000-crore FAME II scheme.

Under this scheme the Goods and Services Tax (GST) council has lowered the Tax rate on EVs from 12 per cent to 5 per cent and that on the electric chargers from 18 per cent to 5 per cent. These rate cuts drastically narrowed the price differential between EVs and IC engine vehicles. To further take up the policy towards green transportation the GoI proposed a plan to ban IC engine two-wheelers (below 150cc) and three-wheelers by 2023 and 2025, respectively, and to replace them with EVs. According to studies done by Energia Research (2018), various countries has developed timeframes as shown in fig 2. This involves initially banning the sales of IC engine vehicles followed by a complete ban from utilization.

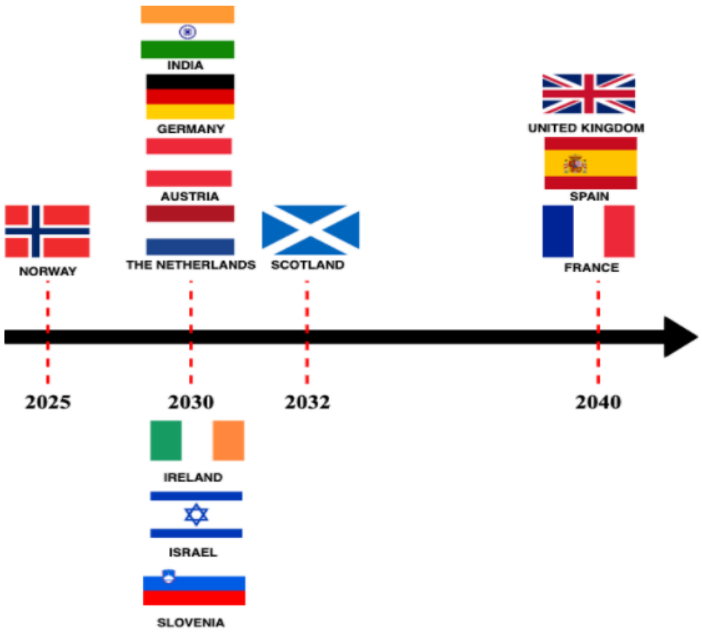


Fig 2: Countries and time frame adopted for the ban of IC engine vehicle sales

Mr Parag Jose
Asst. Prof., Dept of EEE

EXPLOITED

A penguin,
He stood on a spot of ice;
It wasn't too comfy,
But for his needs it'd suffice;
And as he'd waddle,
As most penguins do,
He'd often look up,
And scream in sheer frustration:

" Mother! Why hath thou,
forsaken your child?
To all but humanity,
you've been so unkind.
They have it all,
and yet they want more.
You gave me nothing,
I can't even fly."

Sweet Gaea,
as the Greeks would call her,
Was privy,
to the penguin's holler.
She held back her tears,
for she wished she could share,
The troubles caused,
by her so-called heirs.
What mother would she be,
to refuse her children?
So for all they asked,
She'd gladly give them;
Humanity,
How proud of them she was;
But their humble requests,
got exploitive real fast;

They massacred their siblings,
for their horns and skin.
This had no purpose,
Just aesthetics and a whim;
They poisoned her,
with their chemicals and their wastes;
Their own mother,
They'd dare to disgrace.

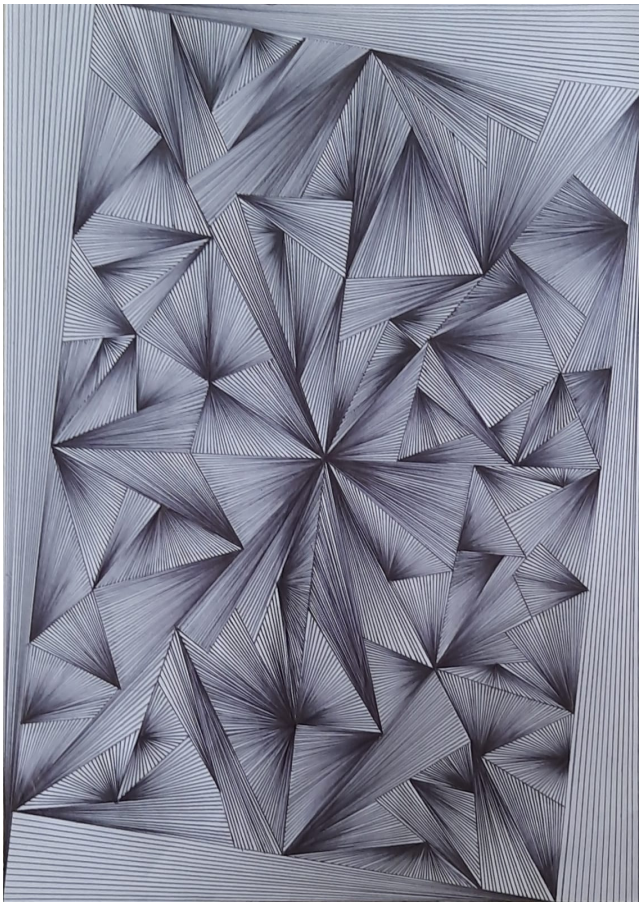
So now she was,
but a shell of herself;
Abused by her children,
left a wretch;
And her children,
they dared,
to seek a brand new home;
As though the death of one,
Just wasn't enough.

Her other children,
now lay forsaken;
All because humanity,
was just too exploitative.
So as she stared,
at her child at sea;
That lonely penguin,
alone was he.
He'd waddle,
on what he called home,
but she knew that soon,
he'd be no more.

Ashwin Abraham
7BTEE

Roshni Cherian
5BTEE

Royesee JM
3BTEE



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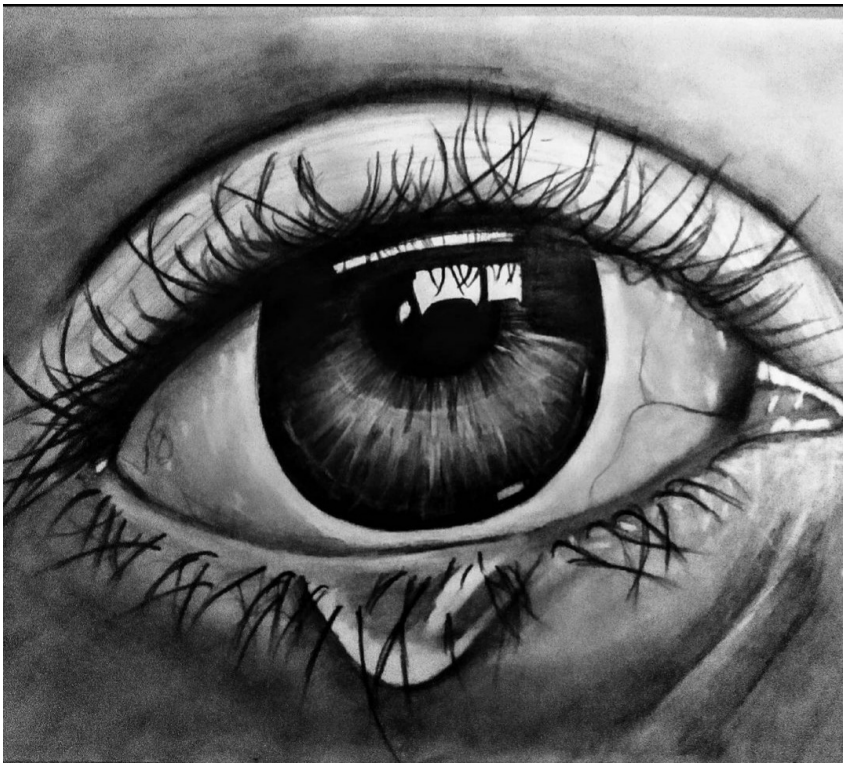

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