

ANNAMALAI UNIVERSITY

DEPARTMENT OF ELECTRICAL ENGINEERING

DST- FIST Sponsored AICTE Approved



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Newsletter 2018 - 2019

ISSUE - 1

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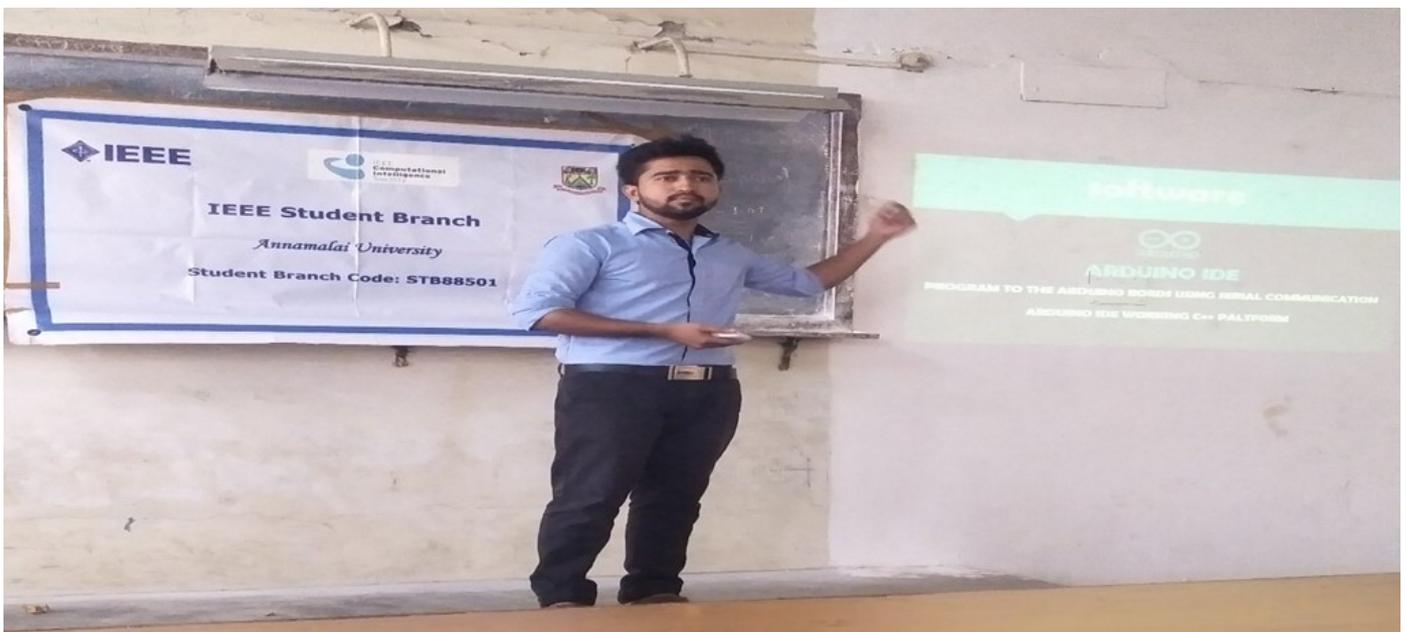


INAUGURAL FUNCTION



Department of Electrical Engineering organized an inaugural function of the IEEE student branch on 11th September 2018. Chief guest **Mr. C. Arumugam, Manager Training and Development, ABB GISPL, Chennai**, delivered the special address to the gathering and encouraged the students to involve in various technical activities and how to pursue knowledge in Electrical field.

HANDS ON TRAINING



IEEE student branch organized a Hands-on training session in “**Aurdino environment**” on 24th September 2018. The technical session which is based on Aurdino and its various function of ATMEL chips and various microprocessors lectured by **R. MOHAMED IN AMUL HASSAN**, Final Year BE, Department of Electrical Engineering, Annamalai University. 60 participants were benefited through this Hands-on-training.

SURGE - 19



Annamalai University, Faculty of Engineering & Technology, Department of Electrical Engineering conducted **SURGE'19** a **Technical Contest** sponsored by Institution of Engineers (IEI), Electrical Engineering Student Chapter and the IEEE student branch on **25th March 2019** at GJR Hall. More than 15 papers have been presented and two technical events named Rattle and Roll has been conducted. The students of Electrical Engineering participated in the events.

EXPERT LECTURE



Expert lecture titled “An overview of power plant” was delivered by N. Sundararaman Senior Manager– Electrical, TAQA Neyveli Private Ltd. on August 4th,2018.

NATIONAL EDUCATION DAY LITERARY ACTIVITIES



To celebrate the National Education Day, The Institute of Engineers (India), Electrical Engineering students chapter conducted the competitions to the student members. The following Events are organized, 1.Essay writing, 2.Drawing, 3.Slogan writing, 4.Photography, 5. Poem writing and 6. Elocution-“ Desiya kalviyil poriyalin panku”

INDUSTRIAL VISIT



An industrial visit was arranged for B.E Electrical students on 11-August-2018 to the 33/11Kv Annamalai University substation. 98 students along with Assistant Professor **Dr.V.Padmathilagam** visited the substation.

SPORTS ACTIVITIES



The Sports extravaganza **“Electro sport”** was conducted for the students of Electrical Engineering during **08 - 10 March 2019**. The students participated various sports events like Athletics, Basket Ball, Badminton, Cricket and Kabadi. Faculty Sports Coordinators **Dr. K. Gayathri** and **Mr. J. Thillaivanan** organised the events.

ACADEMIC ACHIEVEMENTS

Number of B.E Projects	:	34
Number of M.E Projects	:	08
Number of PhD awarded	:	25
No of Publication by Faculty	:	27
Surge (Students Symposium)	:	01

VALEDICTORY FUNCTION



IEEE Student branch activities (2018-2019) concludes with **Valedictory function** on 26th April 2019. **Dr. N. Kumarappan, Professor and Head, Dept of Electrical Engineering** welcomed the gathering and introduces the chairman of the IEEE association. **Dr. K. Raghukandan, DEAN** presided over the valedictory function and distributed certificates for the IEEE student members. **Ms. C. Poongothai IEEE chairman**, student branch proposed the vote of thanks.

STUDENT CORNER

WHY ARE INDIAN ENGINEERS UNEMPLOYABLE

India has done a great job in terms of creating capacity – sheer quantity of educational institutions. India is a very aspirational. It's on the system parents, mentors, institutions, government to inspire and lead them directionally in rising up the employability pyramid. Out of more than 6,00,000 engineers, being pumped into the economy each year, only a handful (18.43%) are ready to be deployed as software engineers in the IT services industry. And the number drops to as low 3.21% of IT product roles. The figures come from the latest edition of National employability Report, engineers. The onus is on the educational system to develop curriculum that is focused on imparting skills that are relevant to the industry. Impetus on the quality of teaching that is imparted and an overall sincerity from the institutions is very essential. Seriousness about education and sincerity in working towards getting a job should come in students at an early stage and not when they are at the brim. It is mostly seen that students get to realize that they are unemployed only in the final year of college. It is when they gear up to look outside into the job space that they realize what skills they have been lacking, skills imperative for getting a job. A student who takes the asses. Employability assessment can play a big role in this for they help both institutions and their students understand and evaluate their job readiness and work constructively to fix the lean points, The Aspiring minds AMCAT – four year program is designed in a way that exactly bridges this gap. A student who takes the assessment in the first year of college gets to evaluate his employability in detail. He gets a directional feedback on the type of jobs he/she would do good in and also realizes his/her strengths and weakness and can immediately get into action to acquire the missing skills. By the time he / she reaches the final year college when doors are about to open to the job world, they are equipped with the right skill set.

S.R.SAKTHI PUJA
UG Student IV year

Smart Grids and Its Recent Trend

As we are moving into the digital world everyone is expecting to become smarter in all aspects. Engineers play a major role in changing the world to smarter. Electrical engineers are at the forefront of some of today's most important innovations.

Smart electrical grids:

Nations worldwide are increasing in effort to reduce carbon emissions and encourage more sustainable lifestyles. The energy sector is prime example of these efforts as the move towards using renewable and clean energy has been on-going for over a decade. As energy system become more complex and energy sources become more diverse, smart grids are growing in importance worldwide. Smart grids integrate innovative electrical technology at multiple level to improve flow control, detect malfunction and automate service delivery. With end to end communication between power plants, distribution sites, and end users electrical point to presence, it become possible to raise efficiency and reduce costs.

The earliest, and one of the largest, example of a smart grid is the Italian system installed by Enel S.p.A. of Italy. Completed in 2005. The 'National Smart Grid Mission' was approved by the Indian Ministry of Power on 27 March 2015. Currently, it has allocated 14 smart grid pilot projects across India that will be implemented by state-owned distribution utilities. They are in the initial phase in their pilot project management timeline, finalizing budgets and contractors. Civil work has started in few places and the government updates the progress monthly on its website.

A 2019 study from International Energy Agency estimates that the current (depreciated) value of the US electric grid is more than USD 1 trillion. The total cost of replacing it with a smart grid is estimated to be more than USD 4 trillion. If smart grids are deployed fully across the US, the country expects to save USD 130 billion annually. One of the many trend that have emerged in recent years is the use of smart grids. While smart grid technology is certainly not new, its use is increasing ever faster. Indeed, the smart grid market is expected to grow at 16% CAGR (compound annual growth rate) between 2019 and 2024.

By using smart grid technology energy can be utilized to maximum and would not be wasted. This technology also helps to save earth from the global warming. The time to build smart grid is now. it is risky because of financial development and regulations but in the long run attitudes will change wide spread usage of smart grid from every business to every home just like the internet.

Smart grid is an emerging research field of the current decade. so I recommend the scholars to do more research in this area it will be beneficial for them in the future.

A. Thamaraiselvi
PG Student

UTILIZATION OF RENEWABLE ENERGY SOURCES IN POWER SYSTEM EXPANSION PLANNING

A forecast is just an expectation of power demand in future values, however the accuracy of load forecast is troublesome as an outcome of the time and attributes of power system extensions. Accurate forecasts direct to extensive saving in operating and maintenance costs also it improves the reliability of power supply. An important activity of electric power providers are forecast the load demand using regression analysis, which may result in unexpected cost as it depends only on past values. Renewable Energy comes from a source that is naturally occurring and replenishes naturally without the interference of human intervention.

Why Renewable Energy resources?

Huge potential to meet the energy demands of present and future generation.

Promotes sustainable growth and mitigate climate change.

Enhances energy security and eliminates fuel supply risk.

Modular in nature and supports decentralised energy access.

Price competitive with conventional sources.

India is one of the countries with large production of energy from renewable sources.

As of 31 march 2020, 35.86 % of India's installed electricity generation capacity is from renewable sources, generating 21.22 % of total utility electricity in the country.

P. Suriya

Ph.D Full Time Scholar

R. Senthilkumar M.E, PGBDBA, FIE.
Dy. General Manager/Electrical,
NLC India Ltd, Neyveli



Power Sector Scenario in INDIA

Power is one of the most critical components of infrastructure crucial for the economic growth and welfare of nations. The existence and development of adequate infrastructure is essential for sustained growth of the Indian economy. India's power sector is one of the most diversified in the world. Sources of power generation range from conventional sources such as coal, lignite, natural gas, oil, hydro and nuclear power to viable non-conventional sources such as wind, solar, and agricultural and domestic waste. Electricity demand in the country has increased rapidly and is expected to rise further in the years to come.

Indian power sector is undergoing a significant change that has redefined the industry outlook. Sustained economic growth continues to drive electricity demand in India. The Government of India's focus on attaining 'Power for all' has accelerated capacity addition in the country. At the same time, the competitive intensity is increasing at both the market and supply sides (fuel, logistics, finances, and manpower).

In addition to rapid growth and development, many other macro economic factors, climatic factors, technological changes, consumer preferences, alternative energy sources, state-specific factors and energy policies are expected to impact Electrical Energy Requirement both in the short-run and long-run. For instance, on the one hand, policies and schemes such as Make in India, Dedicated Freight Corridor, Power for All are likely to increase electricity consumption dramatically; on the other hand, roof-top solar Programme, Perform, Achieve and Trade (PAT), Bachat Lamp Yojana (BLY) and Star and Labeling program are likely to reduce electricity demand on the grid. Furthermore, other advanced technologies such as electric vehicles could alter demand. Also with increasing global concerns due to climate change, there has been increasing focus on gradually reducing dependence on fossil fuels and increasing the share of renewable energy sources in the energy mix. The share of off-grid renewables such as solar pumps, off grid Rooftop solar is expected to decrease demand for grid electricity in the future, as a result of numerous policies and programs being recently implemented by the Ministry of New and Renewable Energy.

The Government of India has identified power sector as a key sector of focus so as to promote sustained industrial growth. Government of India to boost the Indian power sector following initiatives are taken . The Union Budget 2020-21 has allocated Rs 15,875 crore (US\$ 2.27 billion) to Ministry of Power and Rs 5,500 crore (US\$ 786.95 million) towards the Deen Dayal Upadhyay Gram Jyoti Yojana (DDUGJY). Ujwal Discoms Assurance Yojana (UDAY) was launched by the Government of India to encourage operational and financial turnaround of State-owned Power Distribution Companies (DISCOMS), with an aim to reduce Aggregate Technical & Commercial (AT&C) losses to 15 per cent by FY19.

Amend to Electricity Act, 2003 to further strengthen some of the concepts and also make changes to enable smoother implementation of the Act. Draft Electricity Amendment Bill, 2020 circulated for the purpose of key positives like abolishing of cross subsidy charges, easier privatisation through sub-licensing/franchise of distribution areas and a separate authority to adjudicate PPA obligations to augment capacity of the Appellate Tribunal.

India is the world's third largest producer and third largest consumer of electricity. The national electric grid in India has an installed capacity of 370.348 GW as of 31 April 2020. Renewable power plants, which also include large hydroelectric plants, constitute 35.86% of India's total installed capacity. During the 2018-19 fiscal years, the gross electricity generated by utilities in India was 1,372 TWh and the total electricity generation (utilities and non-utilities) in the country was 1,547 TWh. The gross electricity consumption in 2018-19 was 1,181 kWh per capita. In 2015-16, electric energy consumption in agriculture was recorded as being the highest (17.89%) worldwide. The per capita electricity consumption is low compared to most other countries despite India having a low electricity tariff. India has recorded rapid growth in electricity generation since 1985, increasing from 179 TWh in 1985 to 1,372 TWh in 2019. The contribution from Wind and solar renewable energy sources was nearly 20% of the total. In the year 2019-20, all the incremental electricity generation is contributed by renewable energy sources. Coal-based power generation capacity in India, which currently stands at 205 GW is expected to reach around 441 GW by 2040. As per CEA India's present Peak demand is 180GW (before Covid-19) expected to grow to 421 GW by year 2036-37 with the assumption of GDP of 6.5%

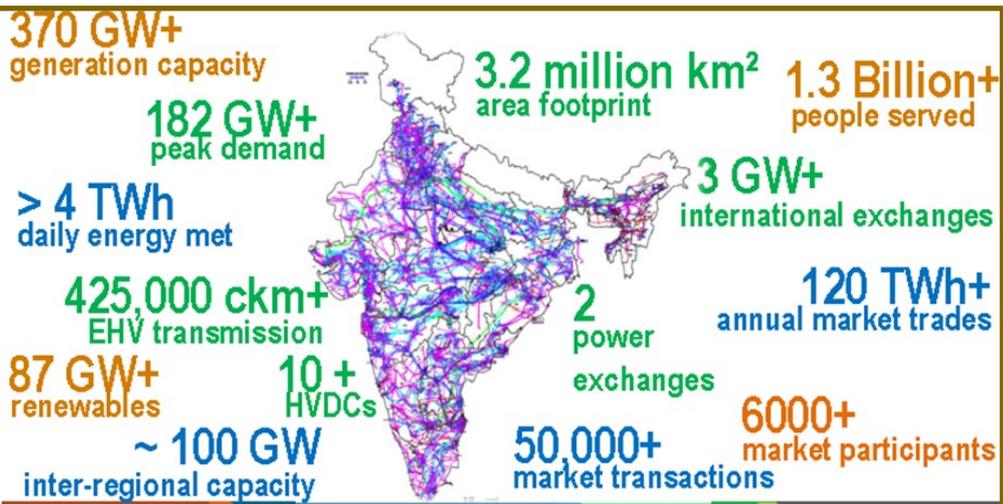
ALUMNI CORNER

Indian Grid...One of the World's Largest

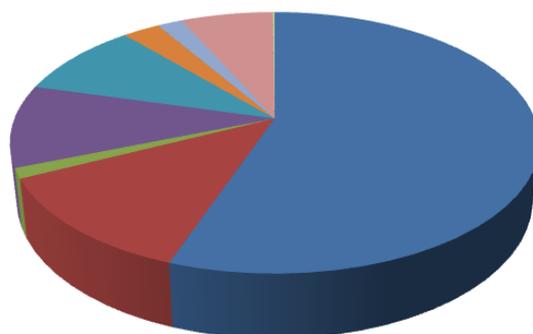


- 1** national synchronous grid
- 1** electricity generation
- 3** electricity consumption
- 3** installed generation capacity
- 3** transmission system
- 4** wind generation
- 5** solar generation
- 5** renewable energy generation
- 7** hydro generation

Source: IEA Key World Energy Statistics 2019
(2017 data, 2018 provisional data)



INSTALLED CAPACITY-370GW+



- Coal: (55.4%)
- Large Hydro: (12.3%)
- Small Hydro: (1.3%)
- Wind Power: (10.2%)
- Solar Power: (9.4%)
- Biomass: (2.7%)
- Nuclear: (1.8%)
- Gas: (6.7%)