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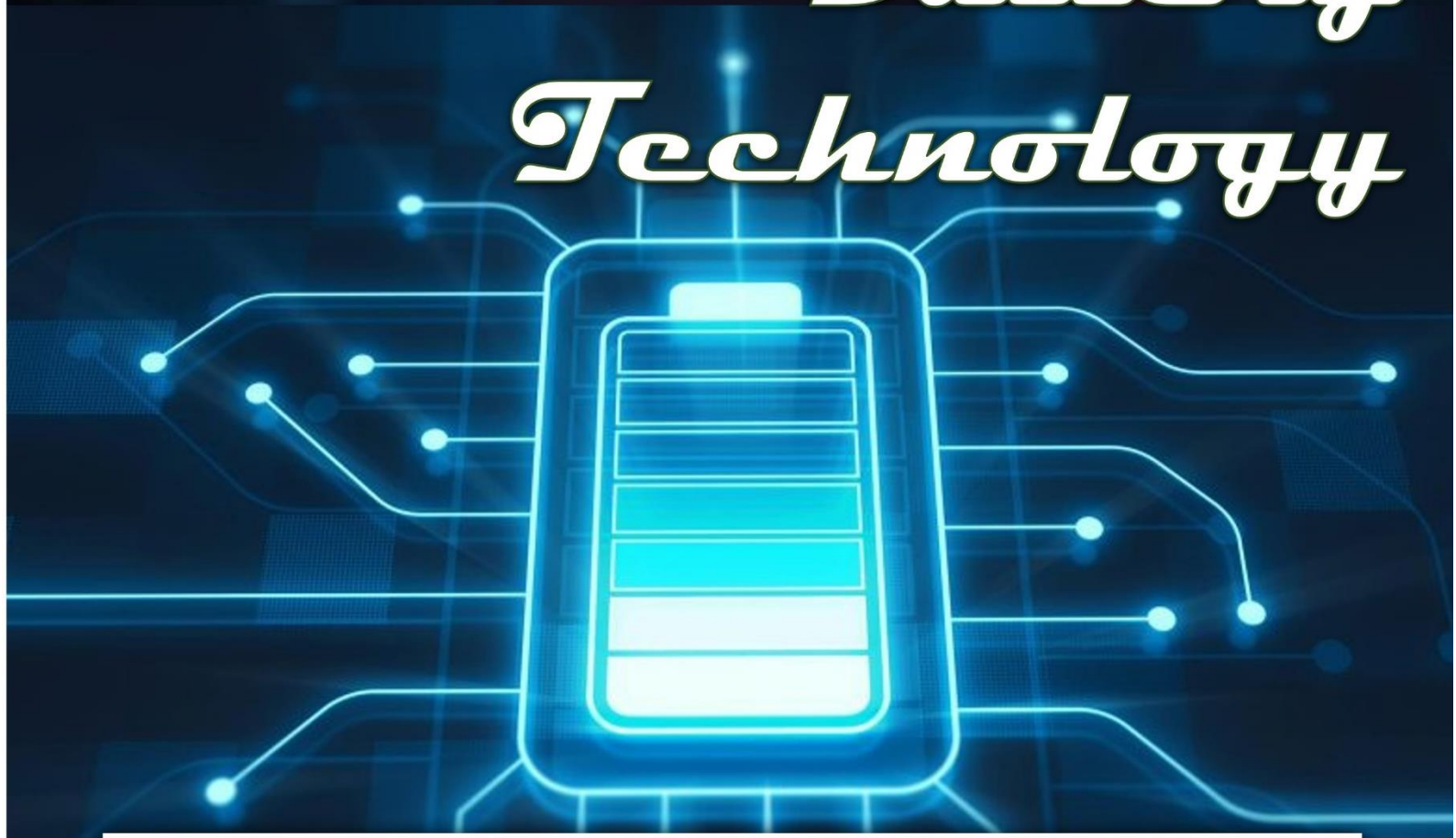
Future Battery Technology



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
ADITYA COLLEGE OF ENGINEERING AND TECHNOLOGY

VISSION OF THE DEPARTMENT

TO BE RECOGNIZED AS A LEADER IN EDUCATION, TRAINING, AND RESEARCH

MISSION OF THE DEPARTMENT

- Provide state-of-art infrastructure to impart technical skills in the frontier areas of electrical and electronics engineering.
- Enable innovative teaching and learning process with collaboration
- To raise professionals, academicians, researchers and entrepreneurs with a passion for Solving societal problems

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CONTENTS

CAREER GUIDANCE

Why Career Guidance is Important?

Have you ever thought about the career guidance? Well! I think majority of students do not consider career guidance a significant issue. Hence, they have no or very little realization about the importance of career guidance. As a matter of fact, career guidance is a very important aspect of your life. In fact, it can make or break your career. In this article, we will discuss about the importance of career guidance. Not just students but working professionals also should give importance to it. Usually, students and employed professionals have no idea of right career guidance. Hence in this article, I will shed some light on this issue.

Nothing Succeeds Like Success

- As we say nothing succeeds like success. And career guidance is very essential for success. If you want to see your career moving in a right direction then career guidance is of utmost importance.
- Everyone wants to be successful but they do not get the right guidance to make right decision at right time. If you have a pre-planned guidance for your career then it can make a lot of difference.
- Today, awareness about career guidance is still very low among younger generation. The culture of going to a counsellor is almost non-existent in our country.
- Therefore, for success it is important that you get right guidance from right person

Planning your Future

- If you are a high school student then your entire future is lying in front of you. I is you with your parents who need to make right decision about your career from now on.
- It is essential that for a bright future you must start planning from now on. And for right planning you need right guidance.
- Right career guidance can tell you, about the career options that could suit you the most. Hence, you can start preparing for that option from the beginning.
- It will give you ample amount of time for right kind of preparation. This could only possible if you take guidance for your career.

Bring Clear Sight of Your Goal

- Everyone has some goal in his or her life. So, what is ambition or target as far as your career is concerned.
- You have to decide in advance and right career guidance could really help you in that.
- The best part of career guidance is that it is very objective as well as strategic. You could get a clear picture what your goal should be or must be.

- Otherwise it is quite normal that students fail to figure out, what they want to do in near future. Career guidance from right person could really help you to figure out perfect career for you

Choosing Right One from Myriads of Career Options

- Today, in the time of globalization, when there are myriads of career options, it is normal that novice students get lost in those options.
- In short, I want to say, they are not able to decide a career which is best for them. The reason for this confusion is hundreds of carers available in just one line.

- This confusion could easily be clarified with the help of career counselling or guidance. Moreover, there are people who have malice intentions. Unfortunately, there are quite a few people.
- They may not want you to succeed. Hence, they are ready to misguide you anytime. You should not fall in the trap of those people and the best way to avoid is through career guidance from right person.

Beat the Competition More Easily

- You do have friends and all are aspiring for same career that you want to be. Could you imagine the competition when so many others are competing? How is it possible that you can easily beat the competition?
- Is there a way out? Yes the best way to beat this competition is to consult a career counselor for right guidance.
- A counselor knows everything about the present state of affairs regarding a particular career option.
- If you are not consulting the right person for your career then you might go haywire.Hence to avoid confusion and deception go for career guidance

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Best Career in India or Abroad

- There are more other complex issues related to choosing a career. We will touch some of those pressing issues. One of them is whether you want to pursue your career in India or abroad.
- If the option is in India then it is OK. But if you want to go outside the country then you have to know the future prospect of the career option you have chosen. Whether inthat particular country, future is good or it may not work well.
- So, the best way to find a solution is through career guidance. The Person could tell whether for a particular career you should stay in India or go abroad. Do not consult from friends or anyone else, always go for a professional advice.
- Organize Finances for Further Education Expenditure

- Today affording education has become so difficult and for many it is out of their means. However, if you get right career guidance then you can choose best colleges and courses at very affordable price.
- If you do not have any idea about the right courses or colleges then you might have to pay more. Hence, the best way to avoid this is taking right guidance because they could give you the most appropriate information.
- You could also plan for your child‘s future that how much you have to spend in next 5 to 10 years. You could take loan and start funding for the education of your child.

Conclusion

Finally, I will conclude by saying never underestimate the importance of career guidance. In our, country where everyone only wants a Sarkari Naukri, they hardly give any importance to other career options. You should open your mind regarding your career. Career guidance could make things a lot easier for you. Although in India the culture of career guidance is limited to big cities but you need to defy this culture and make best use of career guidance

Hence career guidance could save you from all the financial woe

EEE Subject learning Websites

- www.nesoacadamy.org www.nptel.ac.in
- www.tutorialspoit.com www.daenotes.com
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By

Mr. M.RAJESH M.TECH (Ph.D.)

ASSOCIATE PROFESSOR

H.O.D, EEE

Chief Editor

D. P. Kothari Retd. IIT professor

Dwarkadas Prahladadas Kothari (born 7 October 1944) is an educationist and professor who has held leadership positions at engineering institutions in India including IIT Delhi, Visvesvaraya National Institute of Technology, Nagpur and VIT University, Vellore. Currently, He is with Electrical Engineering Department as Hon. Adjunct Professor. As a recognition of his contributions to engineering education, he was honoured as an IEEE Fellow.Previously he was Vice-Chancellor at VIT University. On his 75th Birthday (07.10.2019), he was given the title of "Electrical Professor" by all his research scholars, faculty . The 75th birthday also marks his 50 years of professional experience. D. P. Kothari has served as Advisor to the Chancellor at VIT University, Vellore, and prior to that he was Head, Centre for Energy Studies at IIT Delhi (1995–97) and Principal, Visvesvaraya Regional Engineering College, Nagpur (1997–98). He has also been Director i/c, IIT Delhi (2005) and Deputy Director (Administration), IIT Delhi (2003–06). His research interests include: Optimal Hydro-thermal Scheduling, Unit Commitment, Maintenance Scheduling, Energy Conservation (loss minimization and voltage control), and Power Quality and Energy Systems Planning and Modelling.

By
MR. K.R.K.V.PRASAD,
Associate professor, EEE Dep, ACET.

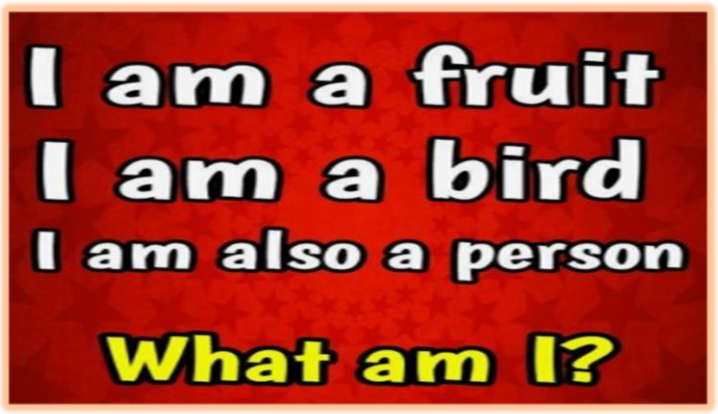
FACULTY ARTICLE

A new Symmetric Solar Fed Inverter (SSFI) with a reduced number of components compared to the classical, modified, conventional type of Multilevel Inverter. The design of a fifteen-level SSFI, which uses a single switch with

minimizing harmonics, and Modulation Index values. Power Quality is developed by using the optimization algorithms like as Particle Swarm Optimization, Genetic algorithm, Modified Firefly Algorithm. That will help us to determine to generate the gating pulse and finding optimum firing angle values. We can propose a solar fed inverter used for optimization techniques governed by switching controller approach delivers a major task. SSFI generates low distortion output uses through without any additional filter component through utilizing MATLAB Simulink software. The P-Q issues are the hidden problems in the solar power distribution system, which has resulted in higher demand for electrical equipment. Therefore, the development of electrical power is dramatically shifted to sustainable energy sources. The necessity for sustainable energy has grown up considerably over the years due to the fast depletion of fossil fuel, greenhouse effect in particularly solar, and also the wind has become more popular demanding requirements. To fulfil the goal, it is necessary to connect intelligent techniques assists by the power electronic-based multilevel inverter which enables the P-Q. The research involved the creation of a single phase load harmonic reduction through solar-power utilization without any additional filters and control power switching devices.

By
Dr.B.RAJANI,
Professor, EEE dep.

RIDDLES



ANS: Kiwi

ANS: ***Clock***

By
18P31A0214,
SATYAM TIWARI.

OLD HORROR HOUSE

There is an old horror house. It has no electricity, plumbing, or power of any sort. You go inside and see three doors. Each door has a number on it. In each door is a way for you to die. In door number one, you die by getting eaten by a lion. In door number two, you die by getting murdered. In door number three, you die by electric chair. You may not turn back so you have to go through a door.

Which door do you go through?

ANS: Go through number three. You'll survive because it's an electric chair and there is no electricity.

By

19P35A0254,

DODDI RAJU.

.

FITNESS

By

18P35A0267,

KOPPIREDDI HARISH.

Battery Technology

A battery is a device which stores chemical energy and converts it to electrical energy. Battery technology is pervasive for individual consumers and in scaled operations, whether that is through the use of smartphone, automotive vehicles, or even large-scale data centres. The most popular battery type currently is lithium-ion, which ranges in application from powering small cellular devices to the electrical grid. Advancements in battery technology have been relatively slow due to the complex chemistry involved and the challenges to commercialize while maintaining safety. The promises of emerging battery technology include enhanced smartphone battery life, reliable electric transportation, more efficient energy storage for large-scale buildings, and even energy storage for the grid.

New designs could also address environmental and safety concerns regarding raw material sourcing, as well as battery disposal. However, it remains difficult for even the most promising battery experiments to find their way out of research labs and into the devices we carry. Though the United States has regulations of existing technology and investment plans for emerging technology research and development, there is still an observable gap in policy and the public sector engagement. With the emergence of competitive strategies from other nations and blocs, such as the European Union's Strategic Action Plan on Batteries, it is increasingly important for the U.S. to focus and develop a public approach to battery technology investment that capitalizes on the promises of the technology, while minimizing foreseeable harms.

BY
16P31A0202,
BODDU RAMYA.

CURRENT ISSUE

Power sector challenges and solutions

India's Power Sector: Five Key Challenges and Solutions

Despite the encouraging growth trajectory in the energy space over the last few years, the Indian Power sector has still not been able to induce and sustain the required capacity addition matching the ever growing power demand of the country.

Five Key Challenges facing the Energy Sector

a. Fuel Security Concerns: Thermal capacity addition is plagued by the growing fuel availability concerns faced by the Industry. While a significant gas based capacity of more than 20,000 MW is idle due to non-availability of gas. Coal supplies by CIL is restricted to around 65% of actual coal requirement by coal based thermal plants, leading to increased dependence on imported coal with the cascading result of high power generation costs.

b. Financial Health of State Discoms: Years of populist tariff schemes, mounting AT&C losses and operational inefficiencies have adversely affected the financial health of State Discoms which are currently plagued with humongous out-standing debts.

c. Under-procurement of Power by States: Increasing power generation costs due to limited fuel availability, poor financial health of State Discoms, high AT&C losses have contributed in suppressed demand projections by State Discoms.

d. Inimical Financing Environment: Over the last 4-5 years, the leading rates have increased significantly from the time of project appraisal resulting in project cost overrun and hence higher end tariffs.

e. Policy Paralysis: The micro level policies governing the fuel cost pass-through, mega power policy, competitive bidding guidelines are not in consonance with the macro framework like The Electricity Act 2003 and the National Electricity Policy.

Five Solutions to Combat the Foregoing Challenges

a. Fuel Reforms: Various aspects like ramping up coal production by both public and private sector in a time-bound manner, increased participation of private sector in coal production and easing of regulatory framework, clearances and approvals for allocation and development of coal blocks & gas infrastructure need to be addressed while formulating such reforms.

b. Arriving at an optimal fuel mix: There is a dire need to develop both conventional and non-conventional forms of energy, wherein, three key factors must be kept in view for developing an energy mix: (i) the pattern of energy demand seen in the country (ii) the availability of fuels, and (iii)fuel production and import costs. It would be effective to adopt coal thermal as a fundamental component of the fuel mix for the next 20-30 years, with solar occupying 5-8 percent of the total mix.

c. Balanced Regulatory Interventions: Regulators need to be sensitized to the challenges faced by the sector and policy framework needs to be crafted and enforced to ensure a win-win situation for all the stakeholders. They must pro-actively intervene to resolve the immediate issues ailing the power sector.

d. Increased Financing Facilities for Energy Sector: A robust and sustainable credit enhancement mechanism for funding in Energy Sector needs to be put in place through increased participation by global funding agencies like The World Bank, ADB etc. in the entire value chain.

e. Public private partnership model: There is a strong need to push for wider-scale implementation of public private partnership models. The private sector has been playing a key role in generating power, a more supportive environment will help in bridging the energy deficit of the country.

This is the foundation of a functioning energy market and the sustainable, green growth economy that India should pursue.

BY
18P31A0201,
KUMAR NISHANT.

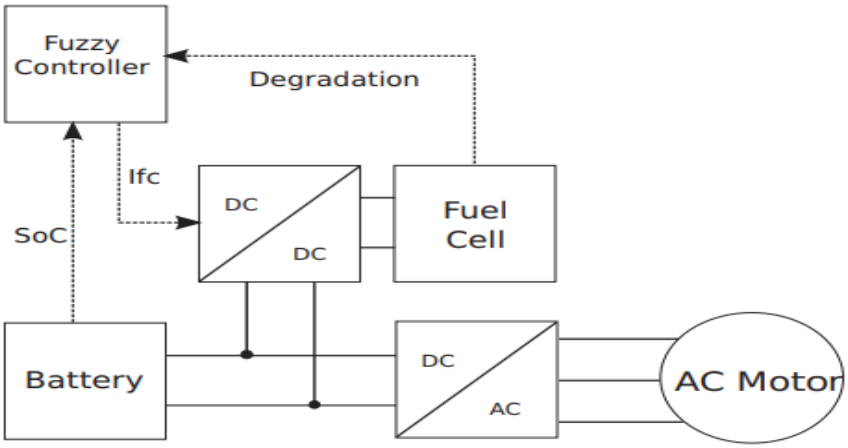
PROJECT IDEA

Control strategy of fuel cell electric vehicle including degradation process

Electric mobility is expected to play a key role in the future of clean energy transportation. Nevertheless, due to autonomy limitation, Hybrid Electric Vehicle appear to be the best mid-term solution, especially with Fuel Cell Hybrid Electric Vehicle which allow zero emission mobility.

The design and control of such powertrain must be carefully done to determine the size of each energy sources. When the vehicle is built for specific applications, the conception can be optimized for its use. Since fuel cell produce power by electricity, series architecture is widely used to create a hybrid power train with both fuel cell and batteries. Moreover, this type of architecture allow to use the fuel cell as a range extender, reducing the dynamic of current during acceleration phases of the vehicle, increasing the fuel cell lifetime. Nevertheless, as for batteries, fuel cell degradation as a huge impact on the hydrogen consumption, so the autonomy of the vehicle. Several studies about energy management of Fuel Cell Hybrid Electric Vehicle can be found into the literature. But are not taking into account the degradation of the fuel cell.

This idea aims to integrate a degradation estimation into the energy management of the powertrain, taking into account the estimated voltage from a fuel cell model and compared to the measured one. In a first part, the model of the powertrain and each of its component is presented. A focus is then done on the fuel cell model with parameters identification in order to estimate the degradation of the stack. Then a real time fuzzy logic controller is design to control the fuel cell current via power converter. Simulation on real scenario



Powertrain architecture and control

A control strategy of a fuel cell electric vehicle taking into account the degradation process has been presented. The fuzzy controller include the degradation of the fuel cell stack in order to control the fuel cell power. A simulation of a realistic driving cycle with three different scenarios has been presented, showing the good behaviour of the controller and proving its adaptation to the degradation of the fuel cell during its lifetime and when a failure of the system happen during the trip. Future works aims to embed the control inside the electronic control unit of a prototype which it's already used by postal delivery services.

BY
15P31A0205,
CHELLUR SAI PAVAN.

LIMERICKS

To sit in solemn silence in a dull, dark dock,

In a pestilential prison, with a life-long lock,

Awaiting the sensation of a short, sharp shock,

From a cheap and chippy chopper on a big black block!

To sit in solemn silence in a dull, dark dock,

In a pestilential prison, with a life-long lock,

Awaiting the sensation of a short, sharp shock,

From a cheap and chippy chopper on a big black block!

A dull, dark dock, a life-long lock,

A short, sharp shock, a big black block!

To sit in solemn silence in a pestilential prison,

And awaiting the sensation

From a cheap and chippy chopper on a big black block

BY

18P35A0266,

KONDAPALLI MADHU

JOKES

Patient: I have forgotten so many things lately, and it's getting worse. What can I do?

Doctor: Yes, this is known illness, unfortunately it has no cure. I'd also like to remind you

About that 800$ that you owe me?

A man goes to the doctor and says, "Doctor, wherever I touch, it hurts."

The doctor asks, "What do you mean?"

The man says, "When I touch my shoulder, it really hurts. If I touch my knee - OUCH!

When I touch my forehead, it really, really hurts."

The doctor says, "I know what's wrong with you - you've broken your finger!"

BY
18P31A0211,
TALLURI SAI CHANDU.

Vedic Indian Math Tricks

10th to 99th….. any table……, very easy method to learn. I didn't know this. Because it was not

Taught to us in school.

How to write Table of any two digit number? For example Table of *87*

First write down *table of 8 then write down table of 7 beside it*

8	7		87
16	14	(16+1)	174
24	21	(24+2)	261
32	28	(32+2)	348
40	35	(40+3)	435
48	42	(48+4)	522
56	49	(56+4)	609
64	56	(64+5)	696
72	63	(72+6)	783
80	70	(80+7)	870

3	8		38	9	2		92
6	16	(6+1)	76	18	4		184
9	24	(9+2)	114	27	6		276
12	32	(12+3)	152	36	8		368
15	40	(15+4)	190	45	10	(45+1)	460
18	48	(18+4)	228	54	12	(54+1)	552
21	56	(21+5)	266	63	14	(63+1)	644
24	64	(24+6)	304	72	16	(72+1)	736
27	72	(27+7)	342	81	18	(81+1)	828
30	80	(30+8)	380	90	20	(90+2)	920
33	88	(33+8)	418	99	22	(99+1)	1012
36	96	(36+9)	456	108	24	(108+2)	1104

This way we can write tables from 10 to 99

By
V.U.P LAVANYA,
Assistant professor, EEE dep.