SESHADRI RAO GUDLAVALLERU ENGINEERING COLLEGE

(An Autonomous Institute with Permanent Affiliation to JNTUK, Kakinada)
Seshadri Rao Knowledge Village, Gudlavalleru

Department of Electrical and Electronics Engineering

IEEE Power & Energy Society Student Branch Chapter

IEEE Power & Energy Society
IEEE SBC, SRGEC

Executive Members:

Faculty Advisor:

Dr. G. Kishor Babu (98073586)
Associate Professor

Office Bearers:

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Mr. S. Prashanthraju (98016945)

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Ms. T. Rajyalakshmi (98017004)

Publicity Committee Chair

Mr. K. Dileep Kumar (97960478)

Date: 15/02/2022

IEEE Power & Energy Society Student Branch Chapter of Department of Electrical and Electronics Engineering is Organizing a Guest lecture on **"Electric Traction"** by Mr. Alekh Ranjan, Traction Project Engineering Manager, Alstom Transport India Limited, Bengaluru, India on **19-02-2022** to the students of III B.Tech of EEE. Hence all the students are informed to attend the guest lecture without fail. The attendance will be monitored.

Dr. G. Kishor Babu
Faculty Advisor

Dr.B. Dasu
H.O.D I/C

A Guest Lecture On "Electric Traction"

By

Er. Alekh Ranjan

Project Engineering Manager- Traction

Alstom Transport India Ltd, Bangalore

Online platform:- Microsoft teams

Date:- 19/02/2022(Sat)

Time:- 2:00-3:00 PM (IST)

ORGANIZING BY:

IEEE Power & Energy Society Student Branch Chapter,

Department of Electrical & Electronics Engineering

Seshadri Rao Gudlavalleru Engineering College

(An Autonomous Institute with Permenant Affilitation To JNTUK, Kakinada)

Gudlavalleru Engineering College, Seshadri Rao Knowledge Village, Gudlavalleru, Krishna(dt),

Andhra Pradesh 521356.

Alekh Ranjan

#305, YD Lotus Apartments,
1st main road, 2nd cross, Ashirwad Colony,
Kalyan Nagar Post,
Bangalore, Karnataka-560043
aalekh.ranjan@gmail.com
9513614446, 7892848476

I introduce myself as a professional with 9 years of cross-functional experience in both industry and academia. I have worked towards design, development and testing of products like IGBT based static converters, diesel electric propulsion system and synchronous motors and generators. I am well-versed with concepts of design calculation, component selection, system design and validation (on and off the field), system integration and engineering with proficiency in tools like SAP, E3, MATLAB, ANSYS Maxwell and PSIM.

Experience

Alstom India Transport Ltd
Project Engineering Manager - Traction
April 2021 – Present
Bangalore – Nelamangala

Currently working as Project Engineering Manager (PrEM) – Traction for TREN MAYA project in Mexico.

ABB India Ltd – Traction LPG
Team lead – Electrical engineering
January 2020 – March 2021
Bangalore – Nelamangala

Leading a team of 4 members responsible for R&D and product engineering, failure analysis and product life cycle management of traction products.

Technical project lead for development of new integrated traction converter for EMU/MEMU in collaboration with Titagarh Wagons Pvt Ltd. Responsible for overall technical project management, MATLAB simulation, component selection, preparation of technical documents for RDSO/ICF submission.

Project lead and Senior design engineer
August 2017 – December 2019
Bangalore - Nelamangala

Carrying out engineering cost estimation, risk assessment, split of responsibility, design finalization and gate reviews based on ABB gate model for development projects. Responsible for design approvals from the customer (CLW, DLW, RDSO).

Product responsible for 3x130kVA auxiliary converter and 2x500kVA hotel load converter in 3-phase locomotives of Indian Railways. Responsible for engineering/design, alternate/new component selection and qualification, PLCM and analysis of hardware/software failures.

Responsible for analysis of traction converter PEBB module failures on account of hardware/software issues. Maintenance of reliability data, MTBF and FIT calculation based on monthly hardware failure data.

MATLAB simulation, prototype development, testing and commissioning

BoM preparation and change management in SAP.

Senior Executive - Developments at Crompton Greaves
July 2016 – July 2017
Bhopal - Mandideep

Project-1: Development of IGBT based propulsion system for electric locomotives

- Detailed study of system integration requirements.
- Preparation of design document, test protocols and system schematics.
- Complete testing of the system with TCN based VCU.

Project-2: Integration testing and commissioning of 1600HP DEMU propulsion system

- Carried out successful type test inspection in front of both RDSO and ICF.
- System integration and successful commissioning of the first prototype set at ICF, Chennai.

Executive - Developments at Crompton Greaves

April 2015 – July 2016

Bhopal - Mandideep

Project-1: Development of 1600HP DEMU propulsion system and associated electrics

- Design, development and testing of power rectifier and power inverter.
- Selection of components like IGBT's, power diodes, fuses, heat sinks, DC-DC converter power supplies etc.
- Preparation of type and routine test protocols as per relevant IEC standards.
- Design and development of complete DEMU integration test setup.
- Design, development and assembly of 2.2 kW blower power supply module for cooling of DEMU inverter.
- Creation of BoM in SAP.

Project-2: Cost optimization of IGBT based power converter

- Alternative component selection and system engineering in co-ordination with the TOT partner CAF P&A, resulting in 23% cost reduction.
- Creation of BoM in SAP.

Executive - Design at Crompton Greaves

November 2013 - March 2015

Bhopal - Mandideep

Project-1: Design of synchronous generators and motors

- Responsible for proposal engineering and project execution.
- Involved in the electromagnetic design of cylindrical and salient pole synchronous generators for hydro applications ranging from 500kW to 10MW.

Project-2: Development of diesel synchronous generator product line

- Preparation of the complete catalogue,
- Electromagnetic design of diesel generators ranging from 4 pole to 10 pole along with standardization of frame size and shaft parameters.

Assistant Professor - Department of Electrical Engineering at Maulana Azad National Institute of Technology

July 2013 - November 2013

Bhopal - Mandideep

- Taught Generalized Theory of Machines and EM theory to BTech students.
- Developed micro-controller and digital controller lab for MTech students.

Research Assistant - Department of Electrical Engineering at Maulana Azad National Institute of Technology

March 2013 - November 2013

Bhopal - Mandideep

- Development of electromagnetic model of 1 MW permanent magnet synchronous generator (PMSG) for direct drive wind turbine application in ANSYS Maxwell 16.0.
- Carried out short circuit fault analysis to estimate sub-transient and steady state parameters of the generator.

Freelancer - Transtutors

September 2012 - March 2013

Bhopal

- Completed a variety of assignments on Control System, Digital Electronics, Power System, Electrical Machines, MATLAB etc.

Project Assistant - SHYAM Institute

July 2009 - July 2010

Bhopal

- Worked on project KASIM (Knowledge and Skills in Midwifery).

Publications

A Switched-Capacitor Based Multilevel Boost Inverter with Single Input Source.
2012 IEEE Fifth India International Conference on Power Electronics December 8, 2012
Authors: Alekh Ranjan, K K Gupta, Lalit Kumar, Dr. Shailendra Jain

This paper proposes a novel hybrid topology for multilevel inverters with the capability of boosting the input voltage. The proposed structure permits use of single input DC source for multilevel voltage generation at the output. It combines a switched capacitor part with an H-bridge part along with an auxiliary switch. Operation of the topology is explained with the help of a single source five-level boost inverter. An appropriate control scheme is described, and simulation results are presented. A comparison with the conventional topologies is also presented in the paper.

Multilevel Inverter Topologies with Reduced Device Count: A REVIEW
IEEE Transaction on Power Electronics February 26, 2015
Authors: K K Gupta, Alekh Ranjan, Lalit Kumar Sahu, Pallavi Bhatnagar, Dr. Shailendra Jain

Multilevel inverters have created a new wave of interest in industry and research. While the classical topologies have proved to be a viable alternative in a wide range of high power medium-voltage applications, there has been an active interest in the evolution of newer topologies. Reduction in overall part count as compared to the classical topologies has been an important objective in the recently introduced topologies. In this paper, some of the recently proposed multilevel inverter topologies with reduced power switch count are reviewed and analyzed. The paper will serve as an introduction and an update to these topologies, both in terms of the qualitative and quantitative parameters. Also, it takes into account the challenges which arise when an attempt is made to reduce the device count.

Permanent Magnet Linear Generator Design
IOSR Journal of Electrical and Electronics Engineering (IOSR-JEEE), Nov-Dec 2015
Authors: M Santhosh Kumar, M Krishna, Alekh Ranjan, Manisha Dubey

The purpose of this design is to improve the efficiency of power extraction from sea waves. Sea waves are huge untapped energy resources. There are many methods to generate electricity from power of sea waves. But, all these conventional methods use mechanics, which have a lesser efficiency than electrical systems. A new design of permanent magnet linear generator is proposed which moves with the waves up and down. The structural design of generator is done using MAXWELL, a finite element analysis method. The generator magnetic field and no-load induced electromotive force are analyzed using the MAXWELL. The output of MAXWELL is analyzed in MATLAB with the help of single phase rectifier and inverter.

Languages

English	(Professional working proficiency)
Hindi	(Native or bilingual proficiency)

Research projects

3-phase symmetrical short circuit analysis of a 1 MW PMSG for direct drive wind turbine application
March 2013 to November 2013
Members: Alekh Ranjan, K K Gupta, Dr. Shailendra Jain

Responsible for modelling and analysis of 1 MW Permanent Magnet Synchronous Generator for wind turbine application in ANSYS Maxwell 15.0 environment. Also carried out onsite testing of the generator. The project was a joint collaboration between MANIT and Extol Winds.

Tools used: ANSYS Maxwell 16.0, MATLAB

Development of a Five-Level Switched Capacitor Inverter with Inherent Boosting Capabilty
August 2011 to June 2012
Members: Alekh Ranjan, K K Gupta, Dr. Shailendra Jain

The project was aimed to develop a 3-phase switched capacitor multilevel inverter which could run on a single source and provide boosting capability. A new control technique of zero level control was devised to achieve the same. Simulation work was carried out in MATLAB whereas hardware was built in Applied Power Electronics and Drives Lab at MANIT.

Tools used: MATLAB, DSPACE1103

KASIM (Knowledge and Skills in Midwifery)
July 2009 to July 2010
Members: Alekh Ranjan, Marry Foss

Responsible for data analysis and field coordination. A unique project carried out in joint coordination of SHYAM Institute and University of Southampton, UK to prepare an exhaustive video tutorial for midwife care in India. The pilot testing of the project has been done in Shivpuri (MP).

Education

Maulana Azad National Institute of Technology
MTech, Electrical Drives, 2010 – 2012
GPA: 9.03

University Institute of Technology, RGPV, Bhopal
BE, Electrical and Electronics, 2005 - 2009
Percentage: 77.72

References

Dr. Shailendra Jain
Professor
Department of Electrical Engineering
Maulana Azad National Institute of Technology, Bhopal, MP
Mob: +91-9406540720

Ramu S
Product Manager – Traction Converters
Traction LBL,
ABB India Ltd, Nelamangala, Bangalore, Karnataka
Mob: +91-9901490130

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2020-21 ACADEMIC YEAR,II-I SEM ROLL LIST

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING - SECTION -A

S.No	Permanet Roll No	Name of the Candidate	Signature
1	19481A0201	ABDUL AZEES	A. Azees
2	19481A0202	ABDUL KABIR	A
3	19481A0203	BADUGU DINESH BABU	A
4	19481A0204	BANDARU SAI GANESH	B. Sai Ganesh.
5	19481A0205	BANDI SAI VITAL	A
6	19481A0206	BATCHU VEERA PHANI JYOTHI KRISHNA	B.V.P.J. Krishna
7	19481A0207	BEZAWADA UMA KRISHNA	A
8	19481A0208	BORRA DIVYA SREE	B. Divya Sree.
9	19481A0209	BORRA LOKESH	A
10	19481A0210	BOTCHA UMA MAHESH	B. Uma Mahesh.
11	19481A0211	CHANDIKA VINEELA	ch. Vineela
12	19481A0212	CHAVALI MANOJ KUMAR	Ch. Manju
13	19481A0213	CHIRAMANI VINOD KUMAR	A
14	19481A0214	CHITIRALA SREENIVAS	Ch. Sreenivas
15	19481A0215	DONE VASANTHA KUMARI	A
16	19481A0216	DURGA PRABHU RANIMEKHALA	R. Durgaprabhu
17	19481A0217	GARAPATI TEJASWI	G. Tejaswi
18	19481A0218	GORLA PRADEEP	G. Pradeep
19	19481A0219	GUMMADI SEETHA	G. Seetha
20	19481A0220	GUMMADIDALA SIVA NAGA SAI	G. Siva naga Sai
21	19481A0221	GURRALA SAI RAJESH	A
22	19481A0222	HEMANTH GUNTI	Hemantha
23	19481A0223	INTI JASWANTH	
24	19481A0224	JAMALAPURAM JHANSI	J. Jhansi
25	19481A0225	JANNU SAI DEEPAK	J. Sai Deepak
26	19481A0226	JONNALA SWATHI	J. Swathi
27	19481A0227	JONNALLAGADDA SAI SANDEEP	A
28	19481A0228	KAGITA DEEPIKA	K. Deepika
29	19481A0229	KAMIREDDY CHENNA NAGA ANVESH REDDY	K. Chennaiah Reddy
30	19481A0230	KANCHERLA MANOJ KUMAR	Manoj Kumar
31	19481A0231	KANTETI DILEEP KUMAR	K. Dileep kumar
32	19481A0232	KATIKALA LAHARI	K. Lahari
33	19481A0233	KODALI MANOJ KUMAR	A
34	19481A0234	KOKI GNANA SREE	K. Gnanasree
35	19481A0235	KOLLAREDDY GAYATHRI	K. Gayathri
36	19481A0236	KOLLI NAVEEN NAIDU	A
37	19481A0237	KONAKALLA DURGA BHAVANI	K. Bhavani
38	19481A0238	KONDETI VENKATA DASU	K. Venkata Dasu
39	19481A0239	KONDRU KEERTHANA	K. Keerthana
40	19481A0240	KOTA ANUSHA	A
41	19481A0241	KOTE BALU	K. Balu
42	19481A0243	KURRA VENKATA SIVA	K. Venkata Siva
43	19481A0244	LINGAM KAVYA	L. Kavya.
44	19485A0262	RAVURI YUVA RAJU	
45	19485A0264	RAGI CHANDU NAGA KOTESWAR	K. Chandu

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2020-21 ACADEMIC YEAR,II-I SEM ROLL LIST

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING - SECTION -B

S.No	Permanet Roll No	Name of the Candidate	Signature
1	19481A0245	LOYA GAYATHRI	Gayathri
2	19481A0246	MAGANTI GAYATHRI DEVI	M. Gayathri
3	19481A0247	MAMIDI DURGA RAO	M. Durga Rao
4	19481A0248	MAMILLAPALLI MEGHANA	M. Meghana
5	19481A0249	MATHI JAHNAVI SAI BHAVANI	M. Jahnavi
6	19481A0251	MULLAPUDI CHARAN SUJAY	M. Charan
7	19481A0252	MURARI VEERA AMALESWARA RAO	
8	19481A0253	MURUGUDU UDAY	
9	19481A0254	MUTYALA RAKESH	M. Rakesh
10	19481A0255	NAGADASU ANGEL SUNDARI	N. Angel S.
11	19481A0256	NAIDU VARAPRASAD	
12	19481A0257	NIMMAGADDA VENKATA SRINIVASA RAO	N.V. Srinivasa Rao
13	19481A0258	NUNNA BHARGAVI	N. Bhargavi
14	19481A0259	OLETI USHA	O. Usha
15	19481A0260	ORSU LAKSHMI TIRAPATHAMMA	O. Usha O. Lakshmi Tirapathamma
16	19481A0261	OSURI PARDHA VENKATA NARENDRA KUMAR	O.P.V. Narendra Kumar
17	19481A0262	PADAMATA KIRANMAI	P. Kiranmai
18	19481A0263	PARASA LAKSHMI DURGA VARA PRASAD	Prasad
19	19481A0264	PATHURI AJAY	
20	19481A0265	PILLI PURNA SATYA SAI KUMAR	Satya
21	19481A0266	PILLI TEJA	P. Teja
22	19481A0267	POTU SUBBARAO	P. Hareesh
23	19481A0268	PULIGUJJU HAREESH	
24	19481A0269	RAMANI SAI SANTHOSH	
25	19481A0270	SAMIDESI PRASHANTH RAJU	
26	19481A0271	SAMMETA MAHALAKSHMI	S. Mahalakshmi
27	19481A0272	SAMUDRALA SAICHARAN	Sai Charan
28	19481A0273	SANIKOMMU SRINIVASA REDDY	
29	19481A0274	SAYILA VANDANA	S. Vandana
30	19481A0275	SEGU SRI HARSHITHA	
31	19481A0276	SOWMYA KUNDETI	K. Sowmya
32	19481A0277	TADISETTI RAJYA LAKSHMI	T. Rajya Lakshmi
33	19481A0278	TENALI LAKSHMI GANESH	
34	19481A0279	TUNUGUNTLA MEGHANA NAGA VENKATA MADHURI	Subba Reddy
35	19481A0280	UMMA REDDY SUBBA REDDY	
36	19481A0281	VALLURUPALLI NAGA VENKATA HARSHITHA	V. Harshitha
37	19481A0282	VEMULAMADA RAKESH BABU	
38	19481A0283	VENKATA RAGHAVENDRA PRABHU CHIMATA	V. Prabhu
39	19481A0284	VENNA HEMANTH	
40	19481A0285	VINNAKOTA RAJA SRIKAR	Rajasri
41	19481A0286	NANDRU JAGA JEEVAN	Jaga
42	19481A0287	CHALAMALASETTI SAI PRAVALLIKA	Ch. Pravallika
43	16481A0207	BANDARU SAI KRISHNA	
44	18481A0270	PEDAPROLU VENKATA N RAGHAVENDRA SIDDHARDHA	

PROGRAM REPORT

Name of the Program : A one day Guest lecture on " Electric Traction "

Dates : 19th February 2022

Details of the Resource Person : Alekh Ranjan

Traction Project Engineering Manager, Alstom Transport India Limited, Bangalore

Phone number : 9513614446

Objective of the Program:

- To provide an overview of electric traction and its importance in transportation
- To discuss the challenges and opportunities in the field of electric traction and ways to overcome them.

Outcomes of the Program:

- The students gained a better understanding of the concept of electric traction and its role in powering modern transportation systems such as electric trains, trams, and metros.
- The students gained insights into the challenges facing the development and implementation of electric traction technology, such as high initial costs, limited range, and the need for infrastructure upgrades.

No. of Participants : 87

Concluding Remarks : The guest lecture on "Electric Traction" provided valuable insights into the potential of electric traction in the transportation sector. The talk emphasized the need for continued research and development to improve the performance and reduce the cost of electric traction systems, thereby accelerating their adoption and contributing to a more sustainable future.

Coordinator

HoD, EEE

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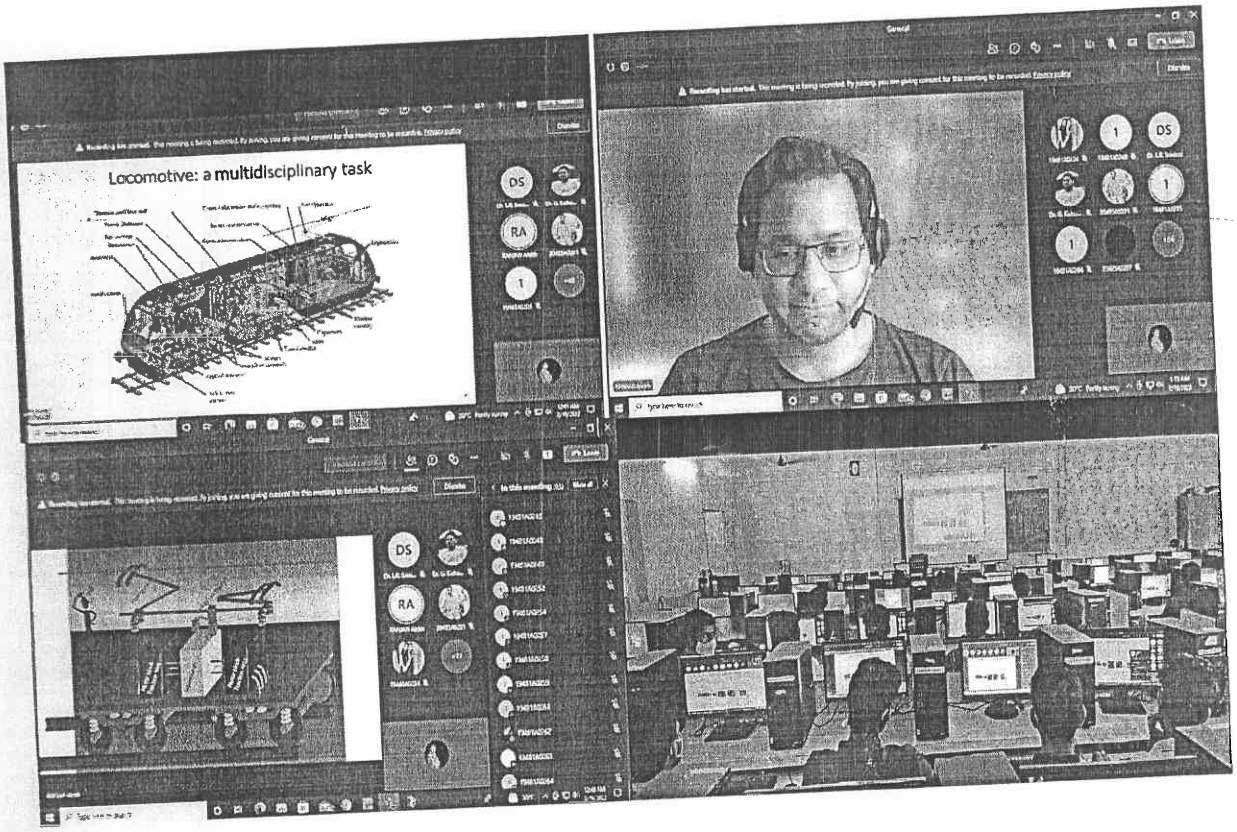
Department of Electrical and Electronics Engineering

IEEE PES Power & Energy Society
IEEE SBC, SRGEC

Report on "Guest lecture"

19-02-2022



IEEE Power & Energy Society Student Branch Chapter of Department of Electrical and Electronics Engineering is Organizing a Guest lecture on **"Electric Traction"** by Er. Alekh Ranjan, Traction Project Engineering Manager, Alstom Transport India Limited, Bengaluru, India on **19-02-2022.** An event guest lecture on IEEE Power and Energy Society Student Branch Chapter was conducted for the students of III B. Tech of EEE. This event was coordinated by the IEEE student members under the supervision of Head of the Department of EEE and IEEE faculty advisor. The contest was conducted for about 60 minutes. Students are well awarded of railway electric traction describes the various types of locomotive and multiple units that are used on electrification systems around the world.

Dr. G. Kishor Babu
IEEE Faculty Advisor

Dr. B. Dasu
H.O.D (I/C)