

# **SONA - EDISON Pages**





SONA COLLEGE OF TECHNOLOGY (AUTONOMOUS)

## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

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Contents	Page No.
Principal Message	3
HODs Message	3
About Sona	3
Vision of EEE	4
Misson of EEE	4
Students Technical Projects	5
Industrial Visit	7
Chandrayaan Mahotsav	8
Energy Audit	9
SONA PERT R & D Project	10
Faculty Technical Contributions	11
Patent Details	15
Student Technical Contributions	16
Placement Record	18



# **Principal's Message**

It gives me an immense pleasure to note that the Department of Electrical and Electronics of Sona College of Technology is bringing out the annual departmental magazine. "Learning is a continuous process from the minute we are born, until we die." This magazine provides a platform for every student to develop his learning skills. I congratulate the HOD, Teaching and non-teaching staff and students of the Electrical and Electronics department for bringing this edition of Magazine. Wish you all the best.

- Dr. S.R.R.Senthil Kumar, Principal

# **HODs Message**

Over the years the Electrical and Electronics magazine has provided an opportunity for students and faculty members to portray their topics of research interest, outcomes and share their ideas. Academic and research activity of department is continuously geared up and monitored to cope-up with emerging trends of technological development and innovations. This magazine contains new department vision and mission statements which is updated on December 2021. It will be a good source of guidance for faculty and coming batches of students in choosing activities of their choice in their future for building their carrier.



- Dr. S. Padma, HOD/EEE

## **About Sona**

Sona College of Technology (SCT) is established in the year 1997. It is one of the nationally ranking Autonomous self-financing Institutions founded by the Visionary Late Mr. M.S. Chockalingam Chettiar.

#### **Vision - EEE**

To be a leader in electrical and electronics engineering education and training by producing globally competent graduates who excel in their chosen careers and are successfully involved in innovative research and entrepreneurship with a strong commitment towards societal development.

#### **Mission - EEE**

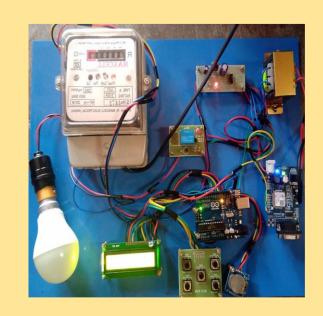
- M1) To offer undergraduate, postgraduate, and doctoral programmes in EEE through formal, non-formal, part-time and full-time delivery modes.
- M2) To provide state-of-the-art resources that contribute to the achievement of excellence in teaching-learning and research & development activities.
- M3) To organize faculty development programmes in need-based areas to enhance their capability in teaching, publishing research papers in peer reviewed journals, filing patents and for their overall career enhancement.
- M4) To provide special learning opportunities and a conducive environment for students to enhance their skills in technical, co-curricular activities, extra-curricular activities, entrepreneurship, soft skills and personality traits.
- M5) To enhance the research facilities, training, and consultancy services to bridge the gap between industry and academia.
- M6) To offer continuing education and need-based skill development programmes to the students for sustainable improvement and development of the society.

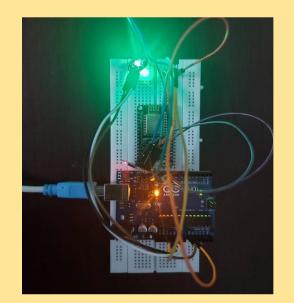
## STUDENTS TECHNICAL PROJECTS



#### **Smart Energy meter with multi intimation**

Dr. D. Prasad & Student team developed a smart energy meter for electricity billing to avoid haven errors. The proposed idea eliminates the need for third party between the consumer and service provider, and the errors like extra bill amount or wrong notification from electric board can be minimized. Through this system, energy consumption by a house for a week and month along with rated amount will be sent as message by using GSM. An alert message also sent to them as intimation for paying the electricity bill prior to the due date.



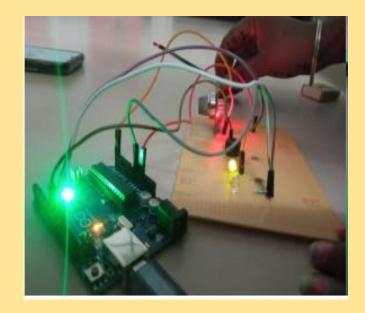


## **IOT** based Health Monitoring System

Gireeshama & Team of II year EEE developed IOT based Health Monitoring System which records the patient heart beat rate and body temperature and also send an email/SMS alert whenever those readings goes beyond critical values. Pulse rate and body temperature readings are recorded over Thing Speak so that patient health can be monitored from anywhere in the world over internet. A panic will also be attached so that patient can press it on emergency to send email/ SMS to their relatives.

## Smoke Detection using Gas Sensor in Arduino Uno Board

Subashini . S & Team of III year EEE developed Smoke Detection using Gas Sensor in Arduino Uno Board - System for detecting LPG, Butane, Propane, Methane, Alcohol, and Hydrogen, particles of smoke and combustible gases. Catalytic sensors detect the heat generated by the combustion of gas on a heated element. The heat produced changes the resistance of the material, which is then measured by electrodes and converted into a gas concentration reading.



## STUDENTS TECHNICAL PROJECTS

## **CAR REVERSE ALERT**

J. Sakthivel, P. Udhayaprakash, Sriram, Salman of EEE IIIrd Year developed Car Reverse Alert This system. project uses components like arduino and the Ultrasonic sensor.



When we take reverse in car we may crash into something. To avoid this we created this Project. So by using this alert if any Obstacle is behind to our Car within a distance of less than 20 cm the ultrasonic sensor deduct the distance and the buzzer alert us. By hearing the alert we may know something that could be in the distance of <20cm and We need to drive and park the car according to the distance.

## **SOLAR CCTV**



V. Shanmugam, T.S. Surendiran, M.L. Sanjay, M. Tharunkumar of EEE – IInd Year developed a Wireless solar power CCTV suitable for both remote and urban location.24/7 can be monitored by app.

This project is User friendly interface and features. Less maintenance and no electricity charge required. The best solar-powered security cameras have batteries that provide power for at least 12 hours, even if the sun isn't blazing in the sky. If you live in an area that receives lots of sunlight year-round, choose cameras with batteries that only last all night. Eco-friendly: Since they harness sunlight for power, these cameras help reduce your carbon footprint. Cost-effective: Solar-powered cameras eliminate the need for electric wiring, reducing installation costs.

## **INDUSTRIAL VISIT**



Sona college of Technology had organized an industrial visit to Mobitech, Perundurai, Tamil Nadu on 17<sup>TH</sup> October 2023 for the batch of 5th semester students of Department of Electrical and Electronics Engineering. Students also gained knowledge regarding the technical engineering solutions for all the problems. Company provides many different solutions to simple everyday problems such as Keeping track of your vehicle, monitoring your house's water levels and many more. A working model was demonstrated for the following product such as Automatic Bell Ringing System, R-gate Internet Gateway Solutions, Yarn densio Meter, Door Guard Systems, Street Light Automation, Floor cleaning Machine Mother board, Horn control board, EMI suppression assembly, Air purifier, Battery water level monitoring system.

#### **CHANDRAYAAN MAHOTSAV**



Joining hands with AICTE, Sona College of Technology, Salem, celebrated the extraordinary achievement of Chandrayaan 3 mission by conducting CHANDRAYAAN MAHOTSAV on 4th September 2023, Monday in Sona Valliappa Auditorium, Sona College of Technology, Salem. Scientist Prof. N. Kannan, Retd.Deputy Director, ISRO, was felicitated by Shri.C. Valliappa, Chairman, Sona Institutions. Further, Prof.N.Kannan briefed on the BLDC motor and 'Sona Make' stepper motor supplied to Chandrayaan 3 by SonaSPEED, Department of EEE, Sona College of Technology. Chandrayaan Mahotsav is a jubilant celebration in which there was an enthusiastic participation in various events like Quiz, Poster Presentation, Essay writing, Story telling, Dance and singing by 400 students of various schools and colleges from Salem.

The prize winners of various events conducted in Mahotsav was awarded with cash prizes by the Chairman & Vice Chairmen of Sona Institutions.

Principal, Dr.S.R.R. Senthilkumar, thanked AICTE for giving an opportunity to Sona for organising Chandrayaan Mahotsav. Also, he thanked the coordinators, Dr. S. Padma, HOD/EEE, SPOC-Chandrayaan Mahotsav and Dr. M. Renuga, HOD/H&L, Coordinator-Chandrayaan Mahotsav, for disseminating the Chandrayaan-3 mission among the school and college students by conducting the Chandrayaan Mahotsav in a grand manner.

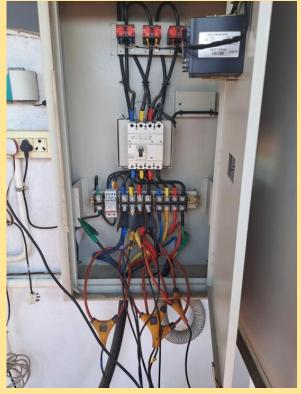






## **ENERGY AUDIT**





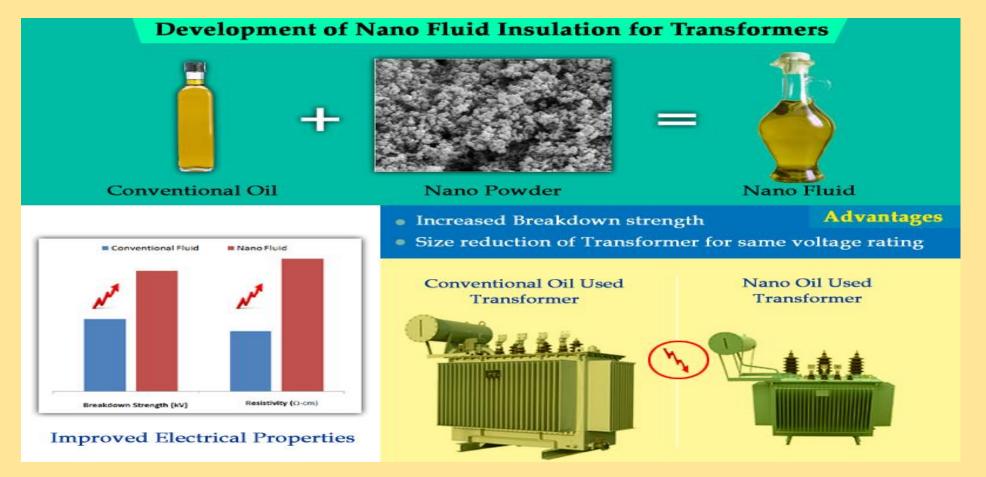
"SonaEnACT recently visited Vee Technology in Trichy to conduct an energy audit. Our team meticulously analyzed energy consumption patterns to identify areas for optimization and efficiency improvement. Stay tuned for insights and recommendations"

"The Sona Star team and SonaEnACT conducted an energy audit at Paravasa Ulagam Water Theme Park and has submitted the comprehensive report. Expect valuable insights and recommendations for energy optimization"





# SONA PERT R & D PROJECT – DEVELOPMENT OF NANO FLUID INSULATION FOR TRANSFORMERS



Increasing demand for electricity has led to the design of high power density transformers with superior insulation. Transformer industries concentrate more on improving the dielectric properties of liquid insulation, since 75% of the transformer failures are due to insulation problems. Recent technological advancements have shown path to the development of Nano Fluid considering its advantages over conventional mineral oil. Nanofluid, in which nanoparticles are dispersed in base liquid, is capable of enhancing the thermal conductivity, surface wet ability, insulation strength and heat transfer coefficient which is mainly attributed to the high surface area and fast heat transfer between particles and fluid. Stability of the nano fillers in the base fluid can be achieved with predominant Brownian motion of nano particles. These improvements in fundamental properties of liquid insulation will reduce the size of power apparatus.

AUTHOR	TITLE OF PAPER	NAME OF THE JOURNAL	INDEXE D	TECHNICAL NOVELTY AND MAJOR CONTRIBUTIONS
Dr. S. Padma, professor/EEE	Optimal allocation of UPFC for congestion management using ANTLION algorithm	International journal of numerical methods for calculation and design in engineering (RIMNI)	WOS	The paper focus on to determine where FACTS devices should be placed. The main goal is to use the ANTLION optimization algorithm to locate the optimal position and size for FACTS devices.
Dr. R. Shivakumar Professor/EEE	Power system stability analysis using nature inspired optimization algorithm	AIP conference - green computing for communication technologies	SCOPUS	This paper gives the best solution to solve the low frequency fluctuations which are based on the optimization criteria of a generator and the load angle. The proposed naturally inspired Math Flame Optimized controller exhibit good damping performance compared to conventional and Particle swarm optimized controllers.
Dr. M. Senthilkumar Professor/EEE	Hybrid optimization technique-based maximum power point tracking for single-stage grid- connected PV systems	Clean Technologies and Environmental Policy	WOS	The key objective of proposed work is to improve global maximum point tracking under all situations together with partial shading. PV source, current controller, voltage controller, DC-to-AC converter, and grid are all parts of the proposed system.
Dr. A. Jagadeeshwaran Professor/EEE	Efficient energy management strategy for an electric vehicle powered by a hybrid energy storage system based on hybrid GBDT-RSA approach	Cybernetics and systems, taylor & francis publisher	WOS	This paper proposes an efficient energy management scheme for an EV with a hybrid energy storage system like super capacitor and battery based on hybrid optimization method. The proposed hybrid approach is a parallel performance of gradient boosting decision tree algorithm and reptile search algorithm.
Dr. R. Arulmozhiyal Professor/EEE	Implementation and control of multi-tasking power converter using TLBO algorithm for energy management	AIP conference - green computing for communication technologies	SCOPUS	In this paper multi-Tasking operation-based power converter is designed with 3 sources that offers stability and better, control Which essential in conventional converters power distribution.

AUTHOR	TITLE OF PAPER	NAME OF THE JOURNAL	INDEXE D	TECHNICAL NOVELTY AND MAJOR CONTRIBUTIONS
Dr. K. Krishnamoorthi Associate professor/EEE	A robust and improved sparrow search algorithm for optimization in wireless sensor network	IEEE XPLORE- international conference on artificial intelligence and knowledge discovery in concurrent engineering (ICECONF)	SCOPUS	The emergence of swarm intelligence approaches has resulted in the development of a workable theoretical computational approach to the simulation, modeling, and optimization of complex systems. This research proposes using a Modified sparrow search algorithm (MSSA) to optimize the coverage WSN.
Dr. G. Karthigeyan Associate Professor/EEE	A comprehensive study and review of tuning the performance on database scalability in big data analytics	Journal of Intelligent & Fuzzy Systems	WOS	This review paper deals with Hadoop and Spark features also their challenges and limitations over different criteria such as file size, file formats, and scheduling techniques. In this paper, a detailed survey of the challenges and limitations that occurred during the processing phase in big data analytics was discussed and provided solutions to that by selecting the languages and techniques using modern tools.
Dr. B. Karthik Associate Professor/ EEE	Word Sense Disambiguation Based Sentiment Classification Using Linear Kernel Learning Scheme	Intelligent Automation & Soft Computing	WOS	Word Sense Disambiguation has been a trending topic of research in Natural Language Processing and Machine Learning. Mining core features and performing the text classification still exist as a challenging task. This paper presented the text document classification that has wide applications in information retrieval, which uses movie review datasets.
Dr. C. B. Venkatramanan Associate Professor/ EEE	Identification of Fatigue Drivers Based on Multiple Convolutional Neural Networks in Accelerometry Data	IEEE- XPLORE - International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE)	SCOPUS	Using class activation mapping, researchers were able to identify class-specific differences in the dynamics of movement and posture. Results from a simulated drive using a thigh-mounted accelerometer show that CNN is a viable option for categorization. The results of this method might help in the detection of potentially impaired drivers due to exhaustion.

AUTHOR	TITLE OF PAPER	NAME OF THE JOURNAL	INDEXED	TECHNICAL NOVELTY AND MAJOR CONTRIBUTIONS
Dr. M. Gopila Assistant Professor/EEE	IoT-based patient monitoring system for predicting heart disease using deep learning	Measurement	WOS	Massive volumes of data were collected by the IoT, and because of deep-learning algorithms, it is now possible to identify and diagnose diseases. The suggested approach collects information from IoT devices, and electronic medical evidence connected to patient histories that are stored in the cloud are sent to predictive analytics.
Ms. M. Porkodi Assistant Professor/EEE	Improvement of corrosion resistance of concrete element by using Nanotechnology	AIP Conference Proceedings	SCOPUS	Flexural strength is increased in high-strength concrete containing nano-SiO <sub>2</sub> . Corrosion resistance characteristics are found out for twenty-eight days curing period for concrete cylinders with no silica additive and also for cylinders with silica additive. Their results are analyzed and checked weather the addition of nano silica has any effects in increasing the corrosion resistance.
Dr. D. Prasad Assistant Professor/ EEE	Dielectric and conductance of biochar- based PVA flexible nanocomposite film	Materials Today: Proceedings	SCOPUS	The objective of this research is to investigate the dielectric and conductance of Polyvinyl alcohol-based nano-bagasse biochar. The network analyzer with a probe is used for the analysis of the dielectric property. The impedance analyzer is used to measure the conductance of the biochar.
Dr. S. Madhubalan Assistant Professor/ EEE	ANN-SOGI-based Shunt Active Power Filter for Harmonic Mitigation	International Journal of Electrical and Electronics Research (IJEER)	SCOPUS	In this paper introduces a PV based generation system interlinked with shunt active power filter (SAPF) to provide the effective reactive power compensation and mitigation of harmonics. The Second Order Generalized Integrator (SOGI) with Artificial Neural Network (ANN) controller is engaged to calculate the reference source current for SAPF. ANN additionally boasts great compatibility for digital implementation, control performance, and lightning-fast dynamic reaction.
Dr. M. Panneer Selvam Assistant Professor/ EEE	Impacts of Electric Vehicle Connected with Charging Station Using Student Psychology Optimization Algorithm (SPOA) and AdaBoost Algorithm	Journal of Circuits, Systems and Computers	WOS	This paper presents an electric vehicle connected to a charging station based on the proposed method. The proposed technique is the joint execution of the Student Psychology Optimization Algorithm (SPOA) and the AdaBoost algorithm and is therefore called the SPOA-AdaBoost algorithm. In particular, the annualized social cost depends on CS and EVCS set from the objective function of the allocation model.

AUTHOR	TITLE OF PAPER	NAME OF THE JOURNAL	INDEXE D	TECHNICAL NOVELTY AND MAJOR CONTRIBUTIONS
Dr. M. Murali Assistant Professor/ EEE	Investigation of Y-source inverter for renewable energy driven application	AIP Conference Proceedings	SCOPUS	This paper extends a topology for cascaded multilevel Y source inverter employs of z source inverter unit block with bidirectional switches. The proposed converter holds better concepts through non-linear load and linear loads. The multilevel Y source inverter reduces harmonics further and provides a novel topology for power conversion. The competence of proposed converter configuration which produces all odd and even output voltage and power level sources fed to the load with increasing the power efficiency.
Mr. D. Kesavan Assistant Professor/ EEE	Analysis of weather monitoring system integrated with renewable energy using IoT technology	IEEE: Fourth International Conference on Cognitive Computing and Information Processing (CCIP)	SCOPUS	This paper consists of in-depth analysis of IoT based Solar Power and Weather Monitoring System as all know Renewable energy sources are proven to be one of the most reliable and accepted worldwide as source of energy which can fulfil needs of human without any wastage of resource. The IoT based Solar Power and Weather Monitoring System has been proposed to collect, evaluate and analyze the solar energy parameters along with weather monitoring.
Mrs. T. Ilakkia Assistant Professor/ EEE	An efficient Optimal Sizing model for STATCOM using Harris Hawk Optimization in Power System	IEEE XPLORE- International Conference on Signal Processing, Computation, Electronics, Power and Telecommunicatio n (IConSCEPT)	SCOPUS	The Optimal Power Flow (OPF) plays a major role in proper planning and operation of a power system. Its basic objective is minimization of fuel cost. In this present work, a novel HHO based topology achieves multi objective OPE by integrating the STATCOM. The power flow analysis is utilized to identify the STATCOM's location.
Mr. M. Sugumaran Assistant Professor/ EEE	Multimachine power system stability improvement using butterfly algorithm tuned controller design	AIP Conference - Green computing for Communication Technologies	SCOPUS	This paper gives the best solution to solve the low frequency oscillation problems which are based on optimization criteria of a generator and load angle. For better tuning of the controller parameters, Butterfly optimization algorithm is used. The simulation results for Butterfly Algorithm based controller design are compared with the performances of conventional and Firefly Algorithm based controllers.

# PATENT DETAILS

AUTHOR	TITLE OF PATENT	PATENT NUMBER	DATE GRANTED
Dr. K. Krishnamoorthi Associate Professor/ EEE  Mr. P. S. Revanth B.E.EEE - Student	Method of Making Winter and Summer Revamp clothes by Chemical Treatment	437186 / 2023	4/7/2023
Dr. A.P. Uthirakumar Associate Professor and Head of Nano- COED	Carbon Quantum Dots Covered Nano Composite Solid Dielectric Materials and its Preparation Methods Thereof	426509 / 2023	23/03/2023
Dr. S.Chandrasekar Dean (R&D)	An under-voltage tripping device for energizing trip coil of circuit breaker	202341038950	Application awaiting examination

# STUDENT TECHNICAL CONTRIBUTIONS

AUTHOR	TITLE OF PAPER	NAME OF THE JOURNAL	DATE
NAVEEN D NAVEEN KUMAR K NAVEEN KUMAR S NARESH N	Iot based Smart Device for Women Safety	5th International Conference on Emerging Trends in Engineering and Technology (ICETET-2023)	19/03/2023
PREETHI K SWETHA R SWETHA S	Earthquake monitoring, Detection system and Alerting through Service Providers and IoT	7th International Conference on Engineering, Technology and Science (ICETS'23)	31/03/2023
PRIYANKA K PRASANNA K L PRAVEENA V RAKSHANA S	Smart IOT Based Consignment Monitoring and Tracking System using Raspberry Pi	7th International Conference on Engineering, Technology and Science (ICETS'23)	31/03/2023
DEEPA DHARSHINI S SRINATH K G MOULITHARAN C KESAVAN G	PEF based Vegetable Fresher	The Virtual International Conference on Recent Trends in Emerging Technologies and Engineering (ICRTETE-2023)	09/04/2023
DEEPAK M SANKAR N SRIDHARAN S SRIRAM P	Railway Track Crack Detection Robot	The Virtual International Conference on Recent Trends in Emerging Technologies and Engineering (ICRTETE-2023)	09/04/2023 16

# STUDENT TECHNICAL CONTRIBUTIONS

AUTHOR	TITLE OF PAPER	NAME OF THE JOURNAL	DATE
RUPESH KUMAR D SARAN AADITHYAN V SRI HARI PRAKASH V VASANTH A V	ElectricVehicle Mileage Calculator	7th International Conference on Engineering, Technology and Science (ICETS'23)	31/03/2023
DHARANI DHARAN M DINESH KUMAR P GOWTHAM J SANJAI M	Console Control of Sewage Treatment Plant with Sensors and IoT	5th International Conference on Emerging Trends in Engineering and Technology (ICETET-2023)	19/04/2023
SHANMUGASUNDARAM P SOUNDERRAJAN K SUDHARSHAN GOKUL RAJAN S YEGNEESWARAN M	GSM based Distribution Transformer Monitoring and Control System	7th International Conference on Engineering, Technology and Science (ICETS'23)	31/03/2023
PRATHAAP A V DESINGA PRAWIN S PAVITHIRAN B AJITH KUMAR S	Development of Faullt Detection,Segregatio n and Announciation in 3 Phase Network	ISTE sponsored National Conference on Emerging Trends in Engineering Science and Technology (ETEST-23)	20/04/2023
SYED SAQLAIN S VIDHYASRI G SOWMEYA D RATANAVIJAI S V	ZIGBEE based Bus Alert System for Easy Navigation of Blind	7th International Conference on Engineering, Technology and Science (ICETS'23)	31/03/2023

#### PLACEMENT RECORD - 2023







