ROHINI

COLLEGE OF ENGINEERING & TECHNOLOGY

Approved by AICTE and Affiliated to Anna University, (An ISO Certified Institution)

DEPT OF EEE



FEEDERS 2020

Contact us

hodeee@rcet.org.in

MAGAZINE EDITION

Volume:5 ISSUE:5

Follow us on

VISION

To create technically competent technocrats to meet the demand of Electrical and Electronics industry and societal need for the well being of human kinds.

MISSION

M1. To provide knowledge and skills necessary for professional Development in Electrical and Electronics Engineering.
M2. To promote research and creativity in the area of Electrical and Electronics Engineering.
M3. To promote team work and professional conduct in sociological activities.

PROGRAM EDUCATIONAL OBJECTIVES

PEO 1: Graduates of the programme will posses career in technical and allied fields.
PEO 2: Graduates will have the ability to adapt to the growing technological requirement of the society through lifelong learning and team work.
PEO 3: Graduates of the programme will possess knowledge to pursue higher studies.

Shri.K.NEELA MARTHANDAN
CHAIRMAN
Rohini College of Engineering and Technology

MESSAGE

As A Chairman of Rohini College of Engineering and Technology. I feel proud that the students of Electrical and Electronics Engineering Department are releasing a magazine RCET is a dream project for me and I am happy that RCET is taking a proper shape with the co-operation of all concerned. Students are the real assets of RCET and when they realize their responsibilities, RCET will always remain above all other similar Institutions. I take this opportunity to wish all the students a bright future.

Dr.R.Rajesh,M.E,.Ph.D.
Principal
Rohini College of Engineering And Technology

MESSAGE

It is a great pleasure for me that our Electrical and Electronics Engineering department is releasing a magazine.

The magazine is presenting a glimpse of the growth of the institution on many fronts. Our students and faculties have performed exceedingly well and competent enough in all the fields. Beyond academics, the research activities are being conducted.

The college also motivates and encourages staff and students to undertake research and enterprising skills. The faculty members plays major role in the overall development of department and institute.

I extend my greetings and best wishes to the faculties and students of the department and wish their endeavors my very best.

Dr.N.NEELA VISHNU
MANAGING DIRECTOR
Rohini College of Engineering And Technology

MESSAGE

I understand that the students of Electrical and Electronics Engineering Department are coming out with a Magazine. As the Managing Director of Rohini College of Engineering and Technology, I feel proud about it. We have taken an oath that we will develop RCET to world class standard and provide an overall development to all the students. We march towards that goal. We are happy that the students of RCET are properly shaping up, facilitating us to meet our goal. I wish all success to the EEE students.

Prof.A.Nabisha
HOD / EEE
Rohini College of Engineering and Technology

MESSAGE

On behalf of our students and faculty, it is my privilege to welcome all. We takes pride in our faculty, a team of highly capable and dedicated professionals, most of whom have academic and industrial experience and degrees from leading universities of the India. We provide ample opportunities to our faculty and students, through in -house trainings, workshops and trainings outside the college campus for further growth and development.

We at EEE Department are committed with the following objectives:

The Department has taken up the task of developing competent Electrical engineers of high quality, capable of facing various challenges of the power situation in the country

To produce graduates who are able to apply the technical skills which they have learnt in the department in order to serve the State and National Industries .

To produce graduates with the necessary background and scientific skills to work professionally in several fields in particular with IT Industries and Power sectors.

To train and encourage the graduates for personal and professional success with awareness and commitment to their ethical and social responsibilities, both as individuals and in team environments.

Prepare and train the graduates who are proficient of maintaining and improving their technical competence through enduring learning, including entering and succeeding in an advanced degree program in a field of Science & Technology.

LEARN.....LEARNING NEVER ENDS!

Editorial Message

It is an occasion of immense pleasure for the Department of Electrical and Electrical & Electronics Engineering to publish the E- magazine “FEEDERS”.

The Editorial board of department of EEE wants to thanks all the faculty members and students who have made this issue a success by providing an article .

This magazine focuses on the recent trends evolved in the field of electrical engineering & wants to provide advanced knowledge and awareness among the students about the same.

The Editorial board also wants to thanks the Management of the Institute and Head of the department for inspiring us to go forward in publishing this magazine.

Editorial Board

Prof. G.K.Jabash Samuel (Editor in Chief)

Prof. V.Ponselvan (AssociateEditor)

Miss.P.Latha (Assistant Editor)

BODY ARMOR WITH BUILT-IN STUN GUN, FLASHLIGHT AND CAMERAPHONE CHARGER

The Arm star Bodyguard 9XI-HD01 looks a bit like that scary black body armor that Christian Bale wears in the recent Batman movies. And it is kind of like that, actually.

The Bodyguard, which was patented by a California inventor in 2007 under the title of "wearable shield and self-defense device," is designed to be a shield, a non-lethal weapon and a communications device all in one. The flexible arm, which is armored with Kevlar and hard plastic, contains a rechargeable lithium battery pack that powers an "electronic deterrent" device built into the arm's artificial skin. All the user has to do is pull a pin, and an assailant who grabs his or her arm is going to get zapped with electricity. The Bodyguard is also equipped with a bright LED flashlight, an HD camera capable of transmitting pictures, and a charging slot into which an iPhone apparently fits nicely.

We could see this gadget becoming an indispensible tool for law enforcement officers and bodyguards of the future, but given that you have to inquire about it to get a price quote, we're guessing that it'll be too costly to make much of a dent into the everyday suburban adventurer market

CLEAN WATER

The tragic loss of lives from the lack of safe drinking water in the aftermath of the tsunami in Indonesia and the hurricane in Louisana, motivated inventor Micheal Pritchard to find a solution.

After developing many prototypes, he designed an innovative handheld water purification device that creates fresh water instantly.

The LifeSaver bottle removes bacteria, viruses, parasites, fungi and all microbiological pathogens from contaminated water without the use of chemicals and lasts for years with very little maintenance. Accepted for use by military forces, Lifesaver has also received a technological development award for green inventions.

M.V.SORNA SALINI, Final EEE.

Development of a Hybrid Power Generation System

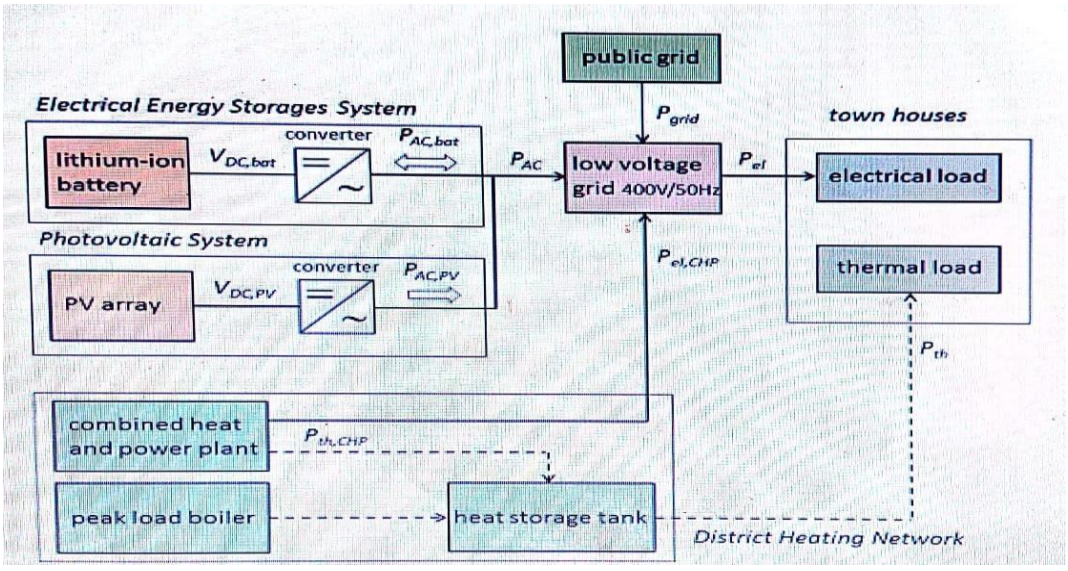
Introduction

As a consequence of the Fukushima reactor catastrophe in the year 2011 the German government has decided an accelerated phasing out of nuclear energy. Up to 2022 a gradual decommissioning of nuclear power plants will take place. Furthermore the goal of a reduction of greenhouse gas emissions by 40 percent by 2020 compared with the base year 1990 was announced by the Federal Minister for the Environment, Nature Conservation and Nuclear Safety, Germany [1]. This goal can only be achieved by the penetration of renewable energy sources, e.g. wind and solar power, [2], [3]. As part of the program "Energiewende" - transforming Germany's energy system a forward-looking approach of a decentralized power generation is currently installed in the town Kelsterbach located in the German Frankfurt/Rhine- Main metropolitan region with a total population of around 3.5 million. The proposed system consists of a combined heat and power plant (CHP) which provides a residential neighborhood with thermal and electrical power. In case of conventional CHP the consumers are supplied with heat together with a peak load boiler to cover the total thermal power demand. In addition a certain amount of electrical power is generated. During periods of heavy consumption additional electrical power is provided by the public grid. The aim of the proposed system is to establish a nearly independent power supply. Therefore a photovoltaic system (PV) is integrated. Due to the fluctuation of the solar power an electric energy storage device is required. Investigations of the electricity storage association ESA show that for photovoltaic applications in the medium power range lithium-ion batteries seems to be the most promising solution [4], [5]. Hence an energy storage system which consists of a lithium-ion pack is used for the proposed application. Fig. illustrates the residential neighborhood which consists of 180 low- energy town houses in accordance with the energy saving regulations KfW efficient house 70 (EnEV 2009). The housing estate was built by Deutsche Reihenhaus AG, a German building enterprise. As indicated in Fig. 1 the power station is located on the left end of the area, it comprises the combined heat and power plant, the peak load boiler and the electric energy storage system.

System Topology

In this system a CHP is used which consists of one module with a rated electrical power of Pel,CHP = 50 kW and a rated thermal power of Pth,CHP = 80 kW. The annual generated thermal energy is approximately 300000 kWh/a, this leads to about 6000 full load hours. Since the CHP

operates always in the heat-controlled mode, these values can vary in dependence on the thermal power demand of the consumers. The thermal power of the installed peak load boiler is 895 kWh. The CHP and the peak load boiler if necessary charge the heat storage tank. The residential neighborhood is supplied with thermal power via a district heating network (dashed line). With this plant design the complete thermal power demand can be covered. The electrical power of the CHP Pel,CHP is transmitted via a 400V/50 Hz low voltage grid (solid line). To establish a hybrid power generation a PV array as a second electrical energy source will be integrated. The installed peak power depends on the useful area of the anti-noise barrier. In this system the projected peak power is set to 70 kWP. As mentioned above a lithium-ion battery is integrated into the system to compensate the fluctuating solar power. In addition the battery supplies power during power-off durations of the CHP. The DC voltage on the PV panel output VDC, PV varies with the module temperature T and the solar irradiation S, the DC voltage on the output terminal of the battery VDC,Bat varies with the state of charge (SOC). Therefore the PV panel and the battery are linked to the low voltage grid via individual converters. Each converter consists of two power electronics components, first a DC/DC converter which is required for the DC voltage adaption, second a grid tied inverter which converts the DC power into AC power for the low voltage grid. To ensure a charge and discharge of the battery the power flow PAC,bat is bidirectional. To reduce the power flow from the public grid in order to establish a nearly independent power supply an optimized power management will be implemented so that the complete demand of the consumers Pel is covered by the electrical power of the CHP (Pel,CHP) and the PV and battery system (PAC), Pel = Pel,CHP + PAC. In this way the power from the public grid can be minimized, Pgrid → 0.



Design of the electrical energy storage system

The integral part of the decentralized power generation is the CHP. As described in section 2 the design is determined by the requirement to cover the entire thermal power demand of the residential neighborhood. Since the described project is a new housing estate no operation experiences regarding the thermal power consumption exists. In the first phase of the project 120 town houses will be supplied. Therefore load curves of a reference plant are used and scaled to 120 houses. Based on this data a CHP with a nominal thermal power of 80 kWh in combination with a peak load boiler with a rated power of 895 kWh are projected. The selected CHP provides a nominal electrical power of 50 kWel. This is not sufficient to supply electrical power to the town houses. For this reason a hybrid system is supposed with a PV array as a second energy source.The standard Ho load profiles applicable for household customers separated into a winter, summer and transition day for two scenarios. In the first scenario it is assumed that the neighborhood comprises 120 two-person households, in the second scenario 120 four persons households are assumed. The factual power demand will be in between these two boundaries. The maximal power demand varies between 80 kWel and 120 kWel. In particular the highest power demand occurs during the noontime and in the evening hours. It is obviously that the PV system can only generate power during the day.

Consequently an electric energy storage device is required. As mentioned in section 1 for the decentralized power generation a lithium-ion battery is suitable. Two parameters are required for the design of the battery, first the rated power, second the capacity. Taking both scenarios into account the rated power of the battery should be in the range between 30 kWel (a: two-person household) and 70 kWel (b: four-person household). Based on this analysis the rated power of the battery is set to 50 kWel. The required capacity can be determined by the power balance.

It should be taken into account that the PV array supplies power during the daytime. Fig. 6 shows the measured module temperature and solar irradiation of a reference PV array with a peak power of 4 kWP for a cloudless summer day in Frankfurt. The DC power was scaled to a 70 kWP system. These results indicate that sufficient power is supplied by the PV array; however the power varies with the weather and the time of a year. For the design of the battery only the energy demand in the evening time is essential. Taking into account that the power demands of three or four-person households are correspondingly higher a battery with an available capacity of approximately 100 kWh seems to be reasonable for the proposed decentralized power generation.

Analysis of the decentralized power generation

Due to the complexity of this topology a detailed analysis of the operational behavior is required. However no validated results for a decentralized hybrid power generation in the medium power range are known so far. Thus the goal is to find an optimized operation strategy. To evaluate the energy flows the knowledge of the operational behavior of the subsystems is essential. In this case the energy generation and consumption at different times of a day as well as of different times of a year is of particular interest. This could be established by the use of an applicable simulation model. The advantage of this approach is an easy parameterization of plant data, a variation of environmental conditions and load profiles. For this purpose models of each subsystem are developed which are capable to analyze the dynamic behavior. The standard load profiles are stored in ASCII files which include the thermal and electrical power demand as described in section 3, Pth and Pel, with a sampling interval of 15 minutes. The neighborhood is represented by the consumer model. The thermal power demand Pth is transferred into a power request for the power management. In dependence on the available energy of the heat storage tank Eth the CHP is switched on and off (CHP controller). The electrical power management adjusts PAC so that the demand Pel is covered by the available electrical power of the CHP Pel,CHP and the converted DC power of the battery and PV array. To achieve sufficient simulation accuracy physical models of the used lithium-ion battery and PV modules have been integrated in the model. In this way the state of charge of the battery for varying operating points as well as the temperature and solar irradiation for varying weather conditions can be considered in the analysis. The model was set up in PSIM.

Conclusion

In this paper a forward-looking technology based on a hybrid decentralized power generation was presented. It was illustrated that a combined heat and power plant together with a photovoltaic installation including an electrical energy storage system is capable to reduce the power supply from the public grid. For the proposed plant a lithium-ion battery was supposed in order to smooth load peaks and to enhance the power supply in case of no direct contribution from the photovoltaic array. An appropriate modeling approach which enables the development of a power management was explained. In particular it was demonstrated how standard load profiles can be utilized to analysis the performance of the power generation system for different seasons. Currently only the combined heat and power plant is in operation. By the end of May 2014 the battery and the photovoltaic system will be installed. The introduced model is helpful to find an optimized operation strategy which will be implemented in the final system.

Dr. A.Nabisha/ HOD/EEE

POET'S CORNER

THE MOON

She is go gentle and clear With the stars twinkling dear

And makes the sky a wonder sight

All through the creeping dark night. I am the one who awaits her

All day she keeps me keen To look at her beautiful face

At which fill never stop to gaze she lends me her light

So that I don't have to fight, with darkness at my heels

To my welcoming delicious meal.

She sometimes disappears

Into the cloud surrounding the near, and I always wish

I could see her when I eat my fish!

For she helps the mother earth at the dark night

With her glittering rays of light

I always waited at noon

To see the round jolly moon!!!!

She smiles at me and gives me company when I am sad, dull and lonely

She is the one who make me forget my worries

N.HEMA/FINAL EEE

MOUs signed by the department

S.NO	Name of Industry/Institute	Year of MOU Signed	Purpose
1	SMEC LAB	2019	Skill Development program.
2	AB TECHNOLOGIES	2020	Industrial visit,Industrial Training Placement
3	CYRIL SOLAR	2020	Visiting Faculty Seminar
4	BULE HORA UNIVERSITY ETHIOPIA	2020	conferences seminars; Project Visiting Faculty Research
5	ONDEZX GROUPS	2020	Conference, Seminars Workshop.Skill Development & Faculty Development Programme Guest Lecture
6	NICE PANEL Electrical and Automation	2020	Industrial Training Project
7	NIT TRICHI	2019	Research

Faculty Members undergone Industrial Training

S.NO	Faculty Under went for Industrial Training	Name of Industry/Institute
1	Dr.D.Sam Harison	AB TECHNOLOGIES
2	V.Ponselvan	Perfect Electronics
3	C.Basker	DS CONNECTORS AND CABLES
4	S.Gopakumar	ELCOMPO
5	G.Murugan	NICE PANEL Electrical and Automation

SEMINARS/WORKSHOPS ATTENDED BY FACULTY

No	Name of the Faculty	FDP/SSTP Topic	Duration	College Name
1.	Dr.D. SAM HARISON	FDP on Managing online classes and co creating MOOCS	5 days	Ramanujam college of university , Delhi
2.	DR.T.SREEDHAR	FDP on Application of power electronics for renewable energy	7 days	RVS College of Engineering and technology
3.	DR.NABISHA A	1.FDP on OBE implementation towards accreditation 2.FDP on renewable Energy System	1.7 days 2.5 days	1.Kalasalingam Academic of research and education. 2. Panimalar Institute of Technology

4.	Mr.JEYAKUMAR. P	FDP on Application of power electronics for renewable energy	7 days	RVS College of Engineering and technology
5.	Mr.G.K.JABASH SAMUEL	FDP on Application of power electronics for renewable energy	7 days	RVS College of Engineering and technology
6.	Mr.PONSELVAN. V	FDP on Application of power electronics for renewable energy	7 days	RVS College of Engineering and technology
7.	Mr.BASKER .C	FDP on Application of power electronics for renewable energy	7 days	RVS College of Engineering and technology
8.	Mrs.NITHYA. S	1.FDP on renewable Energy System	7 days	1.Panimalar Institute of Technology.
9.	Mrs.THANGASAKTHI	FDP on OBE implementation towards accreditation	7 days	Kalasalingam Academic of research and education.

PRODUCT OF THE YEAR

No	Name of the Product	Image of the Product	Description &Application
1.	Portable solar Study Lamp		The solar study lamp, commonly known as Solar (Energy) Lamp is a lighting device consisting of a solar PV module, battery, LED, and electronics.

INDUSTRIAL VISITS:

The department is associated with various government, quasi-government and private industries in the field of Electrical Engineering.

Our students visit these companies to get a practical exposure to current work practices.

The details of the industrial visits are furnished below

Date of Visit	Name of Industry	Scope of Visit
5-12-2019	**Koodangulam Atomic power station**	**To study about generation and distribution of power plant.**
6-9-2019	**Kerala Electrical and Allied Engine Ring CO LTD**	**To study about Assembly and testing of transformer**

Participation of students in National and International Conferences:

no	Authors	Title	Conference	Venue	Date
1.	P.LATHA	Electric lineman system with IOT based circuit breaker	National conference	Dr.Sivanthi Aditanar College of Engineering Tiruchendur	15.2.2020
2.	P.LATHA	Design of energy harvesting by stick on sensor for small grid	National conference	VV College of Engineering	21.02.2020
3.	R.JEEVITHA	Design of harvesting by stick on sensor for the smart grid	National conference	VV College of Engineering	21.02.2020
4.	G.GANGA	Smart incubator	National conference	VV College of Engineering	21.02.2020
5.	M.V.SORNA SALINI	Electric power generation from foot step for auditorium	National conference	VV College of Engineering	21.02.2020
6.	R.JEEVITHA	Robotics in agriculture	National conference	Dr.Sivanthi Aditanar College of Engineering Tiruchendur	15.02.2020
7.	C.ABISHA	Front office smart man	National conference	VV College of Engineering	21.02.2020
8.	HEMA.N	Front office smart man	National conference	VV College of Engineering	21.02.2020
9.	P.ANANTHA SHIJI	Front office smartman	National conference	VV College of Engineering	21.02.2020

10.	A.JEYA MALINI	Smart incubator for premature babies	National conference	VV College of Engineering	21.02.2020
11.	VALARMATHI	Performance and analysis of piezo electric energy harvesting system employing bridge less boost rectifier	National conference	VV College of Engineering	21.02.2020
12.	SHARAN JEBAMALAR	Performance and analysis of piezo electric energy harvesting system employing bridge less boost rectifier	National conference	VV College of Engineering	21.02.2020
13.	SUVI.P	Performance and analysis of piezo electric energy harvesting system employing bridge less boost rectifier	National conference	VV College of Engineering	21.02.2020
14.	DAYANA.R	Front office smartman	National conference	VV College of Engineering	21.02.2020
15.	T.SUBHASHINI	Electric power generation from fost step for smart auditorium	National conference	VV College of Engineering	21.02.2020
16.	S.SABEENA	Electric power generation from fost step for smart auditorium	National conference	VV College of Engineering	21.02.2020
17.	R.RAMYA	Smart incubator for premature babies	National conference	VV College of Engineering	21.02.2020

Faculty –Journal Publication

S.No.	Name of the Author	Tittle	Name of the Journal	Volume No, IssueNo,PP& Year
1.	***Dr.A.Nabisha***	*Optimal placement of Phasor measurement unit using Genetic Algorithm*	*International Research Journal of Engineering and Technology.*	*ISSN 2395-0056 Volume:7,Issue:7 June 2020*
2.	***Ms.S.Nithiya***	*Optimal placement of Phasor measurement unit using Genetic Algorithm*	*International Research Journal of Engineering and Technology.*	*ISSN 2395-0056 Volume:7,Issue:7 June 2020*
3.	***Mr.S.Gopakumar***	*Optimal placement of Phasor measurement unit using Genetic Algorithm*	*International Research Journal of Engineering and Technology.*	*ISSN 2395-0056 Volume:7,Issue:7 June 2020*
4.	***Mr.G.K.Jabash Samuel***	*A New point of view for estimating of Disseminated generation and energy storage for modish family units under demand reaction.*	*International Journal of advanced trends in Engineering and Technology.*	*ISSN 2456-4664 Volume:5,Issue:2 June 2020*
5.	***Mr.V.Ponselvan***	*Front office Smart man*	*International research journal of Modernization in Engineering Technology & Science*	*ISSN 2582-5208 Volume:2,Issue:7 July 2020*
6.	***Mr.C.Basker***	*Front office Smart man*	*International research journal of Modernization in Engineering Technology & Science*	*ISSN 2582-5208 Volume:2,Issue:7 July 2020*

7.	***Mr.P.Jeya Kumar***	*Front office Smart man*	*International research journal of Modernization in Engineering Technology & Science*	*ISSN 2582-5208 Volume:2,Issue:7 July 2020*
8.	***Dr.A.Nabisha***	*Automatic Air Pollution n control and alert to pollution control board*	*International Journal of Advances in Engineering and Management*	*ISSN 2395-5252 Volume:2,Issue:3 July 2020*
9.	***Mr.G.Murugan***	*Automatic Air Pollution n control and alert to pollution control board*	*International Journal of Advances in Engineering and Management*	*ISSN 2395-5252 Volume:2,Issue:3 July 2020*
10.	***Mrs.T.Thanga Sakthi***	*Automatic Air Pollution n control and alert to pollution control board*	*International Journal of Advances in Engineering and Management*	*ISSN 2395-5252 Volume:2,Issue:3 July 2020*
11.	***Mr.Sanju***	*Automatic Air Pollution n control and alert to pollution control board*	*International Journal of Advances in Engineering and Management*	*ISSN 2395-5252 Volume:2,Issue:3 July 2020*
12.	***Mr.P.Jeya Kumar***	*Deap Learning Based Human Emotion Recognition From Speech Signal*	*Bioscience Biotechnology Research Communications*	*Volume:13,Issue:3 July 2020*

The students who undergo training/Internships

Gopakrishnan.m	**1 Month**	**NICE PANEL electrical and Automation**
Mohammed Shaji.A	**1 Month**	**NICE PANEL electrical and Automation**
Subin Raj.D	**1 Month**	**NICE PANEL electrical and Automation**

FLYING ROBOTS

This cool invention is a flying robot that imitates a bird. It takes off, lands and flies like a real bird.

This flying robot has a two-meter wingspan, and a lightweight (450 gram) carbon-fibre skeleton body.

It uses hybrid drive technology to simulate the flying characteristics of the Herring Gull. The design imitates the construction and the motion of the wings during flight.

Birds have a down-stroke and a characteristic up-stroke of their wings, but they also twist to change angles for manoeuvrability and directional control.

The Smart Bird mimics this capability by using a flexible articulated torsion drive that allows the robot to autonomously twist for maximum flight efficiency - just like real birds.

This technical adaptation is quite an accomplishment in aero dynamic engineering. The project also provided innovated research into material construction and energy consumption efficiency.

Diya John /III EEE

ARTISTS' CORNER

Aromal /III EEE

Click-O-Clicks

Shadhana/lll EEE

ROHINI
COLLEGE OF ENGINEERING & TECHNOLOGY

Department of Electrical and Electronics

FEEDERS-2020

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