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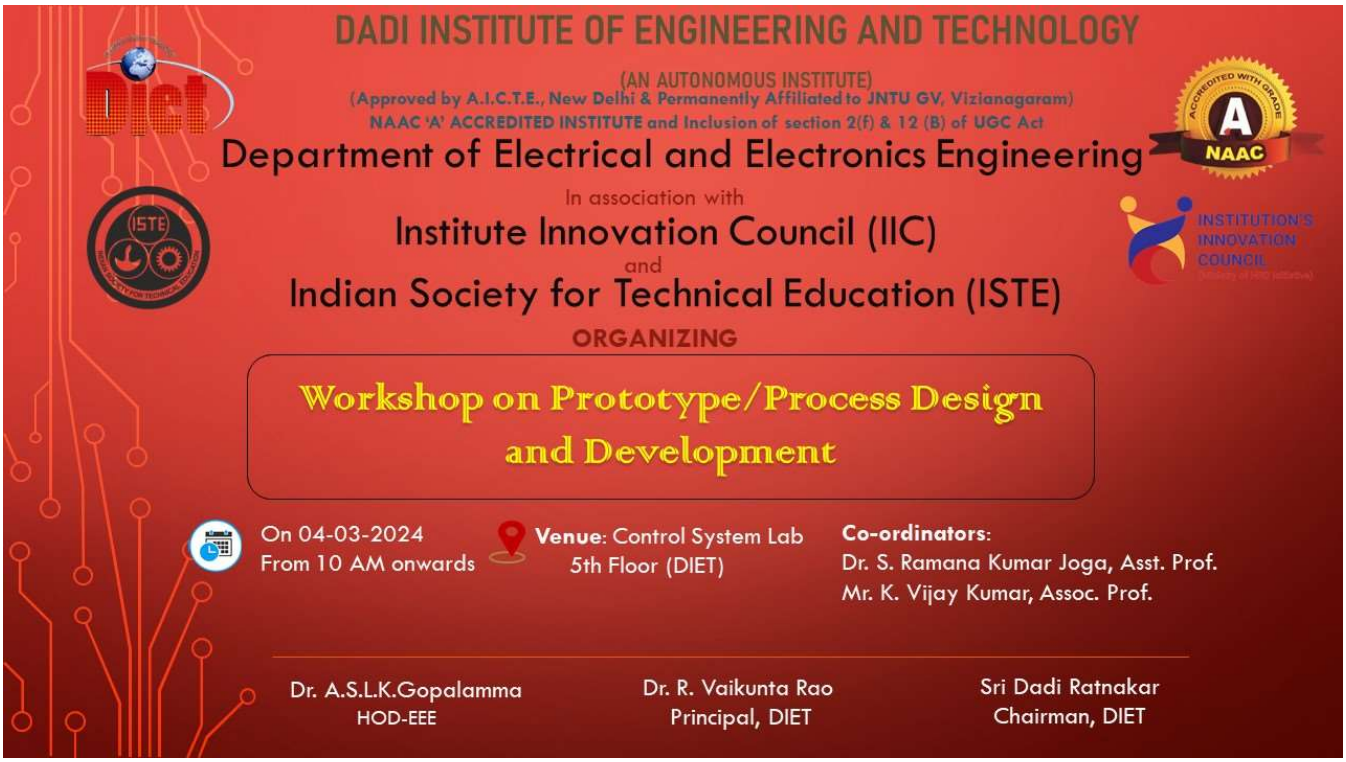
NH-16, Anakapalle – 531002, Visakhapatnam, A.P.
Website: www.diet.edu.in, 9963993229 E-mail:, principal@diet.edu.in

A report on "Workshop on Prototype/Process Design and Development"

The Department of Electrical and Electronics Engineering of Dadi Institute of Engineering & Technology- Autonomous in association with DIET ISTE Student Chapter and Institute Innovation Council (IIC) conducted the Workshop on Prototype/Process Design and Development on 4th March 2024 at Control System Lab in the institute premises. Process Design and Development is a showcase of recent innovations in engineering, provided a platform for brilliant minds to unveil groundbreaking technologies and solutions. The event brought together engineers, innovators, and industry leaders, offering a glimpse into the future of technology. This report outlines some of the remarkable advancements presented during this captivating exhibition.



Poster of the Innovation Expo

The Innovation Expo started with an Inauguration event by Mr. K. Vijay Kumar, (DIET ISTE Convener), Dr. A.S.L.K. Gopalamma, (HOD-EEE) and other faculty members and students.

DIET Principal Sri. Dr.R Vaikunta Rao addressed the gathering along with HOD EEE and other faculty members.

SMART Electric Bicycle

A smart electric bicycle, also known as an e-bike, is a bicycle with an integrated electric motor that assists the rider's pedal-power. The "smart" aspect typically refers to the integration of technology such as sensors, controllers, and connectivity features that enhance the functionality, safety, and user experience of the bike. Here are some features commonly found in smart electric bicycles:

Electric Motor: The electric motor provides assistance to the rider's pedaling efforts, making it easier to climb hills, ride against the wind, or maintain higher speeds.

Battery: E-bikes are powered by rechargeable batteries, usually lithium-ion. The battery capacity determines the range of the bike, i.e., how far it can travel on a single charge.

Pedal-Assist System: Also known as pedal-assist or pedelec, this system detects when the rider is pedaling and

provides electric assistance accordingly. The level of assistance can often be adjusted by the rider.

Throttle Control: Some e-bikes feature a throttle that allows the rider to control the electric motor without pedaling. This feature is common in electric scooters and motorcycles but is also found in certain types of e-bikes.

Smart Display: A built-in display on the handlebars provides information such as speed, battery level, distance traveled, and assistance mode. Some displays also include GPS navigation, fitness tracking, and smartphone integration.

Connectivity: Smart e-bikes may have Bluetooth or Wi-Fi connectivity, allowing them to communicate with smartphones or other devices. This connectivity can enable features such as remote locking, theft tracking, and firmware updates.

Integrated Lights: Many smart e-bikes come with integrated front and rear lights for improved visibility and safety, especially in low-light conditions.

Security Features: To prevent theft, some e-bikes have built-in alarm systems, GPS tracking, or locking mechanisms that can be controlled remotely via a smartphone app.

App Integration: Manufacturers often provide companion smartphone apps that allow riders to customize settings, track their rides, monitor battery health, and access additional features.

Regenerative Braking: Some e-bikes are equipped with regenerative braking systems that capture energy during braking and feed it back into the battery, extending the range of the bike.
Electric bicycles, often referred to as e-bikes, are bicycles equipped with an electric motor that assists the rider's pedaling effort. They have gained popularity worldwide due to their convenience, versatility, and environmentally friendly nature.

Electric Assistance:

The electric motor on e-bikes provides assistance to the rider's pedaling effort, making cycling easier, especially uphill or over long distances.
The level of assistance can usually be adjusted, allowing riders to choose between different power settings based on their preferences and the terrain.

2. Types of Electric Bicycles:

Electric bicycles come in various designs to suit different riding preferences and purposes.
City commuter e-bikes are designed for urban transportation, featuring comfortable frames, integrated lights, racks, and fenders for carrying cargo.
Mountain e-bikes are built for off-road trails and rugged terrain, equipped with robust frames, suspension systems, and knobby tires for enhanced traction.
Folding e-bikes are compact and portable, ideal for commuters who need to combine cycling with public

transportation or have limited storage space.
3. Battery and Range:

E-bikes are powered by rechargeable lithium-ion batteries, which are typically mounted on the frame or integrated into the bike's design.
The range of an electric bicycle depends on factors such as battery capacity, motor efficiency, terrain, rider weight, and level of pedal assistance.
Modern e-bike batteries can provide ranges ranging from 20 to over 100 miles on a single charge, with higher-capacity batteries offering longer distances.
4. Safety Features:

Electric bicycles often come with safety features such as integrated lights, reflective elements, and hydraulic disc brakes for efficient stopping power.
Some models may also include features like anti-theft systems, GPS tracking, and smartphone connectivity for added security and convenience.
5. Legal Regulations:

Regulations regarding electric bicycles vary by country and region.
In many places, e-bikes are classified based on their maximum motor power output, top speed, and whether they require pedal assistance to engage the motor.
Riders should familiarize themselves with local laws and regulations governing the use of electric bicycles to ensure compliance and safety.
6. Environmental Benefits:

Electric bicycles offer a greener alternative to traditional vehicles, as they produce zero emissions and reduce reliance on fossil fuels.
By encouraging cycling as a mode of transportation, e-bikes contribute to reducing traffic congestion and air pollution in urban areas.
7. Health and Fitness:

While electric bicycles provide assistance, they still require pedaling, offering riders a form of low-impact exercise.
E-bikes can make cycling more accessible to people of varying fitness levels and physical abilities, allowing

more individuals to enjoy the health benefits of cycling.

Smart Electric Bicycle

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Students Engagement in Prototype Workshop

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Students Projects Display

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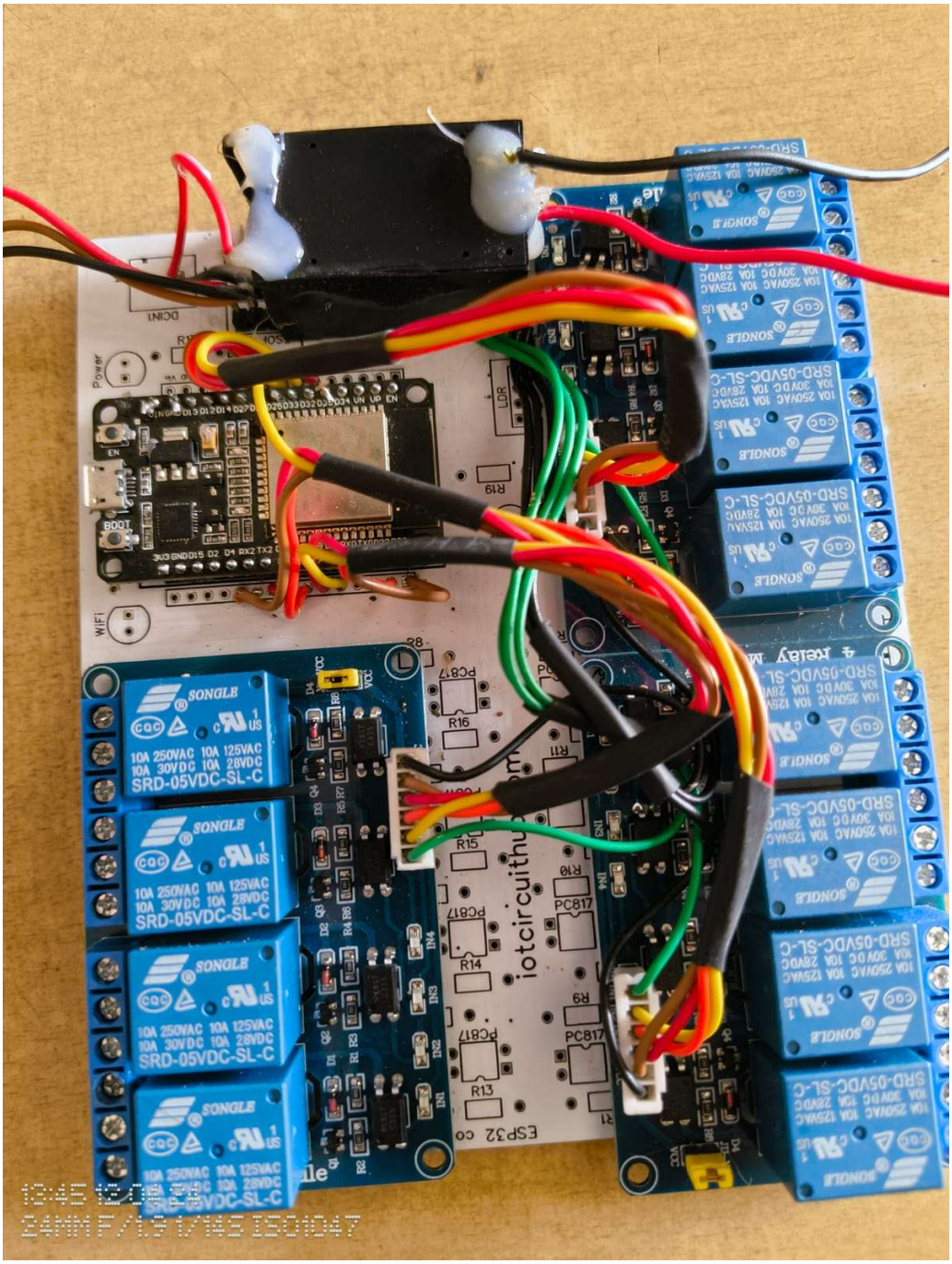

Smart Home Automation

SMART HOME AUTOMATION:

Smart home automation refers to the integration of technology and devices within a home to enable centralized control and automation of various functions, systems, and appliances. These systems are designed to enhance convenience, comfort, security, and energy efficiency for homeowners.

1. Connectivity and Integration:

Smart home automation systems utilize connectivity technologies such as Wi-Fi, Bluetooth, Zigbee, or Z-Wave to link devices and appliances together.
These devices can include smart thermostats, lighting systems, security cameras, door locks, smart speakers, appliances, and more.
Integration platforms and hubs serve as central control units, allowing users to manage and automate different devices from a single interface, typically through a smartphone app or voice commands.
2. Convenience and Control:

One of the primary benefits of smart home automation is the convenience it offers to homeowners. With centralized control, users can adjust settings, monitor activity, and receive notifications remotely.
For example, homeowners can remotely control lighting, adjust thermostat settings, lock or unlock doors, and even start appliances such as coffee makers or ovens from their smartphone or voice assistant device.
Automated routines and schedules can be set up to perform specific actions automatically at predefined times or in response to triggers, such as motion detection or sunrise/sunset.
3. Energy Efficiency:

Smart home automation systems contribute to energy conservation and efficiency by optimizing the use of energy-consuming devices and appliances.
Features such as programmable thermostats can adjust heating and cooling based on occupancy patterns and preferences, resulting in energy savings.
Smart lighting systems can automatically adjust brightness levels or turn off lights in unoccupied rooms, reducing electricity consumption.
4. Accessibility and Inclusivity:

Smart home automation can improve accessibility and inclusivity for individuals with disabilities or mobility limitations.
Voice-controlled interfaces and remote access enable easier interaction with home devices and systems, empowering users to independently manage their living environment.

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Attendance: (No. of Students: 95)

Batch No	HT.No	StudentName	Mentor	Title of the Project	Sign
1	21U45A0272	PAPPALA TEJASRI	Dr. A S L K Gopalamma	Designs Analysis of low water head hydro power utilizing waste water system	
	21U45A0279	VURITI GYANA SABARISH			
	21U45A0251	DEVARAKONDA NAVEEN			
	21U45A0245	BODDU VEERA SAI MANI TEJA			
2	21U45A0238	YAMANA KIRANMAYE	Ms. B. Sowmya	Simulation and Analysis of Power system faults	
	21U45A0264	KUNDRAPU KOUSALYA			
	21U45A0268	MOHAMMAD GULAM MUSTHAFA			
	21U45A0252	DEVARAPU LAXMAN KUMAR			
3	21U45A0282	BYLAPUDI NARAYANARAO	Mrs. M.Hemalatha	Smart power management with controlled electric engine	
	21U45A0239	ADARI SAIKUMAR			
	21U45A0247	CHEKKA SHRI SAI MOUNIKA			
	21U45A0265	MALLA BHARGAV SWAMY			
4	21U45A0241	BAKI KURMAREDDY	Dr. S. Ramana Kumar Joga	load scheduling of building using machine learning	
	21U45A0262	KONATALA MOHAN SAI			
	21U45A0276	SARAGADAM SASHIDHAR			
	21U45A0260	KARRI DEEKSHITH			
5	21U45A0269	MULAPARTHI ADITYA SAI	Mr. K. Srinivas rao	Fault Protection using wavelet multiresolution Analysis and data mining	
	21U45A0246	Buddha Lohith Kumar			
	21U45A0254	GALLA SRINIVASARAO			
	21U45A0277	SOHAN DAS			
6	21U45A0243	BODDETI ANUSHA	Mr. J. Deleep Kumar	Efficient	
	21U45A0261	KISHAN KUMAR			
	21U45A0248	Dadisetty Gowtham Sai Karthik			
	21U45A0280	THANNA VAMSI			
7	21U45A0270	MUMMINA PUSHPA	Mr. B. V Siva Prasad	Quad pst converter for Electric vehicle	
	21U45A0255	GOKULAPATI GANESH			
	21U45A0266	MANGARAJU SWATHI			
	21U45A0274	RAMBUDDI UMA SANKAR			
8	21U45A0258	KANDREGULA YOGITHA SUBHADRA	Mrs. K.Alfoni Jose	Hybrid solar power inverter with	
	21U45A0242	BETHA BALAJI			
	21U45A0257	KADIMI HARINADH			
	21U45A0244	BODDETI PAVAN VAMSI			
9	21U45A0263	KORIBILLI VEERA VENKATA SAI BHAVANI	Mr. G. Jagadeesh	Solar electric bicycle	
	21U45A0275	RAPETI KUSUMA KOMALI			
	21U45A0278	VEMPARALA VENKATA NAGA VAMSI KRISHNA			
	20U45A0227	KARNAM SYAM KUMAR			
10	21U45A0267	MARISETTY NEERAJ	Mr. K. Vijay Kumar	Reactive Power Compensation on V2G bydirectional off-board Charger	
	21U45A0259	KANNAM CHUHITHA			
	21U45A0281	MANYAM SAI JAYA KRISHNA			
	20U45A0259	VINDULA CHARAN SAI TEJA			
11	21U45A0273	PERLA SANDHYA	Mrs. Ch. Lakshmi Prasanna	Power Quality Disturbances Detection and classification	
	21U45A0253	DURGA PRASAD PRASADULA			
	21U45A0240	Amarapini Kushal			
	20U45A0265	KOYYA NAVEEN			
12	21U45A0249	DASARI VINAY	Mrs. P. Sravana Lakshmi	Control and Mangement of Railway System	
	21U45A0250	DEPURI NAGARAJU			
	21U45A0256	JALLU TULASI RAM			

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Batch No	HT.No	StudentName	Mentor	Title of the Project	Sign
1	21U45A0233	PEDIREDLA KARTHIK	Dr. A S L K Gopalamma	IIoT for Energy management towards Sustainability	P.Karthik
	20U41A0203	PEYYALA MOHAN			P.Mohan
	21U45A0209	GANDRETI GOWTHAM PATNAIK			G.Patnaik
	20U41A0212	KATARI VENKATESH			K.Venkatesh
2	21U45A0221	MADAKA RAMA KRISHNA	Mr. J Shiva	Hy brid power filter for harmonic Compensation in Critical Non-linear loads	M.Rama krishna
	21U45A0225	MARISERLA VENKATA SAI			M.Venkata Sai
	20U41A0215	KAKARLAMOODI VISHNU VARDHAN			K.Vishnu Vardhan
	21U45A0231	PATTA JYOTHI AMAR SWAROOP			P.Amar
3	21U45A0234	PILLA VENKATA RAMANA	Mr. B V V Anjaneyulu	Design and simulation of Permanent magnet based energy ultra low emission vehicle	P.Ramana
	21U45A0223	MALLA HARIKA			M.Harika
	21U45A0207	DUKKA SRINIVASA REDDY			D.Srinivas
	21U45A0214	KALLEMPUDI SAI			K.Sai
4	21U45A0208	DULLA PAVAN KUMAR	Mr. B V Siva Prasad	Solar PV Powered SRM drive for EV's with Novel flexible Energy control	D.Pavan Kumar
	20U41A0209	GEDDAM BHARATHI			G.Bharathi
	21U45A0224	MALLA VENKATA KUMAR			M.Venkat
	21U45A0210	GANGUPAM DURGA SAI PRASAD			G.Durga Sai Prasad
5	21U45A0202	ATHAVA PRAVEEN KUMAR	Mr. K Srinivas Rao	Smart home automation using IOT	A.Praveen
	20U41A0202	ORUPULA PUJA HEMANTH			O.Hemanth
	21U45A0217	KANUMAREDDY LEELA VARAHA LAVANYA			K.Lavanya
	21U45A0206	DASARI YASWANTH			D.Yaswanth
6	21U45A0222	MADETI MANIKANTA	Mr. G. Jagadeesh	Modelling of lithium ion batter & estimation of soc using matlab/simulink	M.Manikanta
	21U45A0236	S VAMSI KRISHNA			S.Vamsi
	20U41A0207	BODDAPU MANIKANTA			B.Manikanta
	20U41A0210	CHEEPURUPALLI MAHESH			C.Mahesh
7	21U45A0235	REYYI VENU	Dr. S. Ramana Kumar Joga	Fault detection and classification of PV arrays using machine learning	R.Venu
	21U45A0218	KORUKONDA YAMINI PRIYANKA			K.Priyanka
	21U45A0213	GOPASANA YASWANTH SURYA PADMAKAR			G.Surya Padmakar
	21U45A0220	CHODIPALLI MUTYALA NAIDU			Ch.Naidu
8	21U45A0212	GINNI NAVEEN KUMAR	Mr. A. Krishna Nag	SIMULATION AND ANALASIS OF EV2G WITH REACTIVE POWER CONTROL	G.Naveen
	21U45A0226	MEESALA NAGARAJU			M.Nagaraju
	21U45A0229	NAGA DURGA PRASAD KODIBOYINA			K.Prasad
	20U41A0208	GANTA VISWESWARA RAO			G.Viswa
9	21U45A0230	PALAKA GAYATHRI	Mr. V Sudhakar	Battery and super capacitor fed BLDC motor for EV Application	P.Gayathri
	21U45A0216	KANDREGULA BHARGAVI			K.Bhargavi
	20U41A0211	SAMMIDI SURYA ROHIT			S.Surya
	20U41A0213	BUDDHA SHYAM SUNDHAR			B.Shyam
10	21U45A0219	KUNDALA BHANU SAI KRISHNA	Mrs. K Alfoni Jose	Solar powered outdoor air purifier with air quality monitoring system	K.Bhanu Sai Krishna
	21U45A0211	GANNU UMA MAHESWARI			G.Uma
	21U45A0205	DAKAMARRI RAMU			D.Ramu
	21U45A0227	MERUGU PRAMODH			M.Pramodh
11	21U45A0228	MUMMANA VINAY KUMAR	Mr. J Deleep Kumar	Minimize Battery degradation in electric vehicles	M.Vinay Kumar
	21U45A0201	ARREPU NOOKESH KUMAR			A.Nookesh
	21U45A0203	BARNIKANA GOVINDA			B.Govinda
	20U41A0214	ANGA SRINIVAS			A.Srinivas
12	21U45A0232	PEBBULI LAXMAN SAI	Mr. K Vijay Kumar	Advanced hybrid energy storage system by using PMSM Regenerative system	P.Laxman Sai
	20U41A0206	SIYYADRI JAGAN KUMAR			Jagan Kumar
	21U45A0237	VIRODHULA MANIKUMAR			V.Manikumar
	20U41A0205	KASIREDDY SAI YASWANTH			K.Yaswanth

Coordinator

(Dr. SRK Joga).

HoD, EEE

Head of the Department
Electrical & Electronics Engg.
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Anakapalle - 531 002

Conclusion:

Innovation Expo served as a testament to the relentless pursuit of innovation within the engineering community. The showcased advancements not only reflected the current state of the industry but also hinted at the exciting possibilities that lie ahead. As these technologies continue to evolve, their impact on society, the environment, and the way we live and work is poised to be transformative. The event left attendees inspired and eager to witness the real-world implementation of these groundbreaking engineering innovations.