



NEWS LETTER

2021 ISSUE 1

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VISION

To develop professionally competent electrical and electronic engineers having innovative skills and capabilities to work ethically in consonance with technological demands and developments of industry and society



MISSION

As one of the first few departments to be set up in the year 1958, the Electrical and Electronics Engineering Department offers a diploma certificate for students who complete the course. The three years' course is designed to provide a broad foundation in electrical and electronics engineering and its different applications such as the generation, storage and distribution of electricity, semiconductor technology, biomedical applications, industrial automation... digital media, and computer aided drafting.

- To provide state-of-art resources that contributes to achieve excellence in teaching, learning and development.
- To mould Electrical Engineering professionals in synchronization with the dynamic industry requirement.
- To inculcate ethical education capable of fostering societal responsibilities.
- To enhance creative abilities, leadership skills and entrepreneurial spirit by facilitating interaction with industry

The students are encouraged to become practically skilled through hands-on training in the laboratories designed for the purpose. The courses are also designed to enhance practical experience by collaborating with leading industries. The laboratories designed for the purpose of training students are state of the art and facilities are upgraded frequently so that they provide the right ambience for the students to move in tandem with the latest technologies.



ELECTRICAL AND ELECTRONICS ENGINEERING STUDENTS' ASSOCIATION
CENTRAL POLYTECHNIC COLLEGE, VATTIYOORKAVU



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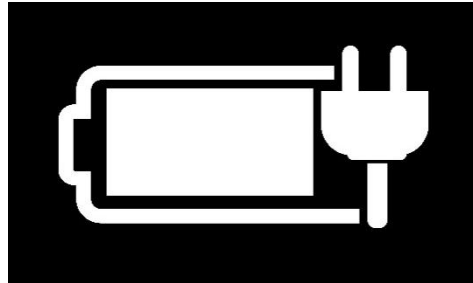
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ENERGY STORAGE TECHNOLOGIES: BATTERIES SUPERCAPACITORS, AND FUEL CELLS



Energy storage technologies play a pivotal role in enabling the transition towards a sustainable and renewable energy future. Batteries, supercapacitors, and fuel cells are key components of energy storage systems, offering diverse applications across various sectors.

FUEL CELLS



HYDROGEN FUEL CELL

Fuel cells are electrochemical devices that convert chemical energy directly into electrical energy through the reaction between hydrogen and oxygen. They offer high efficiency, low emissions, and quiet operation, making them ideal for stationary power generation, backup power systems, and vehicle propulsion. Hydrogen fuel cells, in particular, hold promise as a clean and sustainable energy carrier for transportation and grid applications. Research efforts focus on enhancing fuel cell durability, reducing costs, and expanding hydrogen infrastructure to enable widespread adoption.

BATTERIES

Batteries are perhaps the most familiar form of energy storage technology, widely used in portable electronics, electric vehicles (EVs), and grid-scale energy storage systems. Lithium-ion batteries dominate the market due to their high energy density, long cycle life, and fast charging capabilities. However, research efforts are underway to develop next-generation battery chemistries, such as solid-state batteries and lithium-sulfur batteries, to enhance performance and safety while reducing costs.



EV CAR BATTERY BANK



SUPERCAPACITOR BANK

SUPERCAPACITORS

Supercapacitors, also known as ultracapacitors or electrochemical capacitors, offer high power density and rapid charge/discharge rates compared to conventional batteries. They are well-suited for applications requiring frequent cycling and short bursts of energy, such as regenerative braking in electric vehicles and smoothing power fluctuations in renewable energy systems.

INTEGRATION & DEVELOPMENT

Integration of energy storage technologies into existing infrastructure poses challenges related to system compatibility, efficiency optimization, and cost-effectiveness. Furthermore, advancements in grid management and energy storage control algorithms are essential to maximize the value and reliability of energy storage assets in dynamic grid environments.

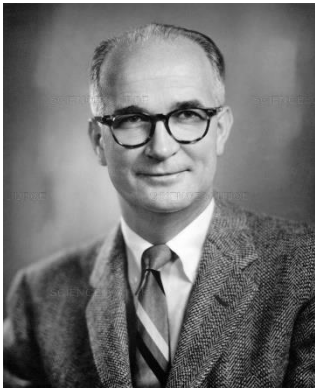
In conclusion, energy storage technologies, including batteries, supercapacitors, and fuel cells, are essential enablers of the transition to a more sustainable and resilient energy system. Continued research and development efforts are essential to overcome technical barriers, enhance performance, and drive down costs, ultimately accelerating the adoption of clean energy solutions worldwide.

MEET THE SCIENTISTS

WILLIAM SHOCKLEY, JOHN BARDEEN, & WALTER BRATTAIN

THE REVOLUTIONIZERS IN TRANSISTERS

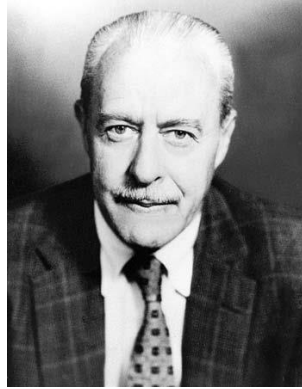
William Shockley, John Bardeen, and Walter Brattain are celebrated as the co-inventors of the transistor, a groundbreaking invention that revolutionized the field of electronics and paved the way for the digital age. Their collaborative efforts led to the development of a device that forever changed the landscape of technology and communication.



WILLIAM SHOCKLEY



JOHN BARDEEN



WALTER BRATTAIN

COLLABORATIVE EFFORTS

The invention of the transistor was the result of collaborative research and experimentation by Shockley, Bardeen, and Brattain at Bell Laboratories. Their interdisciplinary approach combined expertise in physics, engineering, and materials science to overcome technical challenges and unlock the potential of semiconductors. Through perseverance and ingenuity, they succeeded in fabricating the first working transistor, marking a historic milestone in scientific discovery.

IMPACT & LEGACY

The transistor's impact on society cannot be overstated. Its miniaturization and reliability revolutionized the electronics industry, enabling the development of integrated circuits, microprocessors, and semiconductor technologies that power the digital age. From telecommunications to medical devices, the transistor's versatility and versatility have transformed every aspect of modern life, driving innovation and economic growth worldwide.

William Shockley, John Bardeen, and Walter Brattain's invention of the transistor stands as one of the most significant achievements in the history of science and technology. Their pioneering work laid the groundwork for the modern era of electronics, opening doors to countless innovations and advancements that continue to shape our world. As we reflect on their contributions, we honor their legacy and the enduring impact of their groundbreaking invention.

THE TRANSISTERS

The transistor, invented in 1947 at Bell Laboratories, represented a paradigm shift in electronics. Unlike bulky and unreliable vacuum tubes, transistors were small, reliable, and energy-efficient solid-state devices capable of amplifying and controlling electrical signals. This breakthrough innovation laid the foundation for modern electronics, enabling the development of computers, smartphones, and countless other electronic devices that shape our lives today.

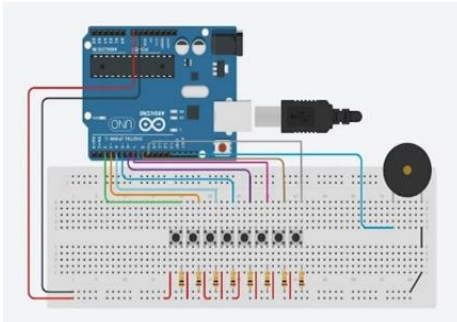
EVOLUTION OF TRANSISTORS

- 1947 – POINT CONTACT TRANSISTOR
- 1951 – JUNCTION TRANSISTOR
- 1959 – PLANAR TRANSISTOR
- 1960 – MOSFET
- 21ST CENTURY – NOVEL TRANSISTOR DESIGNS



CREATIVE SPARK

ELECTRONIC PIANO



CIRCUIT DIAGRAM

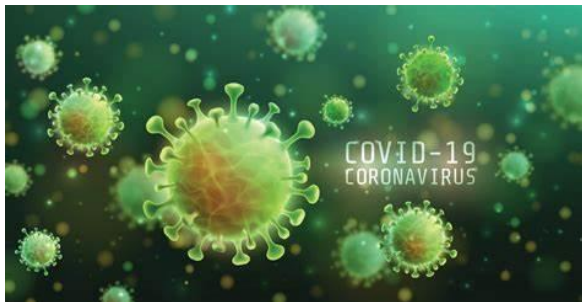
The Arduino-based electronic piano offers a harmonious blend of creativity and technology, transforming traditional piano melodies into an innovative digital experience. Utilizing Arduino's versatile microcontroller, this musical instrument synthesizes notes through programmed algorithms, allowing for customizability and experimentation. With its compact design and affordability, the Arduino electronic piano democratizes music production, inviting enthusiasts of all levels to explore the realms of composition and performance.



MOHAMMED SINSHAD (SI)

From hobbyists tinkering with circuits to musicians seeking unconventional sounds, this device bridges the gap between classical craftsmanship and modern innovation, promising endless possibilities for sonic exploration and expression.

COVID 19 AWARENESS



COVID-19, shorthand for "coronavirus disease 2019," represents one of the most significant global health crises in recent memory. Emerging as a novel strain of coronavirus in late 2019, it swiftly evolved into a pandemic, upending lives, economies, and healthcare systems worldwide. Its impact has been profound, reshaping the way people live, work, and interact with one another.

COVID-19, caused by the novel coronavirus SARS-CoV-2, emerged in late 2019 and swiftly evolved into a global pandemic. Characterized by respiratory symptoms ranging from mild cough and fever to severe pneumonia and organ failure, it has impacted millions worldwide. Its transmission primarily occurs through respiratory droplets, making person-to-person spread rapid, especially in crowded or poorly ventilated spaces. The virus's high transmissibility, coupled with its ability to be asymptomatic in carriers, poses significant challenges for containment efforts. COVID-19 has not only strained healthcare systems but also triggered socio-economic disruptions, leading to job losses, educational setbacks, and mental health crises. Vaccines and public health measures such as mask-wearing and social distancing have been crucial in mitigating its spread, but variants and vaccine hesitancy continue to pose threats. The pandemic has underscored the importance of global cooperation, scientific innovation, and resilience in combating emerging infectious diseases.

