



Nawab Shah Alam Khan

COLLEGE OF ENGINEERING & TECHNOLOGY

BE: CE, ME, EEE, ECE, CSE, IT - ME: CSE, Embedded Sys, Structural, HVAC - Polytechnic: CE, ME, EEE, ECE
Approved by AICTE | Affiliated to OU | Accredited to NAAC | Permitted by Govt. of TS | Included in 2F UGC

MECHANICAL ENGINEERING



2020 – 2021



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Mechanical Engineering Department

Hyderabad, Telangana, India



Presents

Mechnopedia

Technical Article

Next Innovative Technologies in HVAC

2020-2021

1. MOHD ASEEMUDDIN.
2. MOHD PARVEZ
3. MOHAMMED JUNAID
4. MOHD SADIQ

Student
Co-ordinator

1. Mohammed Taher.
2. Ahmed Hussain.
3. Syed Aamer Ur Rahman.
4. Shaik Hussain.

Recent breakthrough in renewable energy and smart technology are revolutionizing HVAC, says **Jon Cornachio** in an architizer.com blog, making these systems more sustainable, consuming less energy while promoting healthier indoor and outdoor environments.

Solar-powered air conditioning: Chromasun's Micro-concentrator rooftop panels' special mirrored lenses – automatically follow the sun's path, concentrating and capturing solar energy. That energy is then utilized by the building's HVAC system, converting peak sun loads into efficient air conditioning.

Ice-powered air conditioning: Ice Bear thermal battery transforms existing air conditioners into cost-effective cooling machines. During the night, Ice Bear fills with water and freezes it into a block of ice. During the day, this ice is used to provide air conditioning to the building, without running the air conditioner's compressor. This results in 95% less energy use, cutting both electricity bills and carbon emissions.

Desiccant-Enhanced Evaporative Air Conditioner, or DEV ap developed by National Renewable Energy Laboratory, device combines the cooling power of evaporation with the dehumidifying power of liquefied desiccants — to create an AC that creates cold, dry air at a fraction of the cost. Not yet commercially available, the prototypes have demonstrated a 90% reduction in energy use.

Sustainable Retrofits: Transformative Wave has developed a new generation of sustainable retrofit technology known as 'Catalyst' that installs directly into existing rooftop units, with the features — economizers, variable fan speeds, demand-response ventilation, smart controls and automated capabilities — lead to a 25% to 50% reduction in energy use.

Digital ceiling: The future of building automation is equipped with sensors — detecting motion, occupancy levels, temperature, carbon dioxide levels and more —that converge the building's lighting, security and HVAC systems into a single, easy to manage network. These adaptive sensors learn the daily habits of building occupants and adjust air and light settings accordingly; minimizing energy waste.

Recyclable Ductwork: Gator Duct, a simple cardboard product — treated with a fire-resistant and waterproof coating — takes the place of ordinary HVAC ductwork. These triple-walled cardboard ducts are stronger, lighter, and cheaper, require 20% less insulation than their sheet metal counterparts. Best of all, Gator Ducts are produced from sustainably managed forests and are 100% recyclable.

UV technology to kill corona virus

Since the start of the corona virus pandemic, agencies are installing ultraviolet light systems in heating and air conditioning systems. Intelligent technology can help them in their fight for indoor air quality, concerning how the corona virus might interact, especially relevant for schools that host large number of students circulating in and out of the building.

"Light has been killing germs since the beginning of time, it definitely kills COVID-19." – Terrance Berland, CEO of Violet Defense.

Researchers have shown – when UV light is exposed to the corona virus on surfaces, it can kill its DNA, and prevent it from reproducing. "There is limited published data about the wavelength, dose, and duration of ultraviolet radiation required to inactivate COVID-19." the **US Food and Drug administration** website reads. So, the installation of CDC-recommended air filters that are rated MERV 13 and MERV 9 is advisable. With increased ventilation the use of UV-C lighting has increased effectiveness of the approach to contain spread of the virus.



"The scientist discovers a new type of material or energy and the engineer discovers a new use for it."

Gordon Lindsay Glegg,
British engineer and
author

VISION AND MISSION OF THE INSTITUTE

VISION

To impart quality technical education with strong ethics, producing technically sound engineers capable of serving the society and the nation in a responsible manner.

MISSION

- M1:** To provide adequate knowledge encompassing strong technical concepts and soft skills thereby inculcating sound ethics.
- M2:** To provide a conducive environment to nurture creativity in teaching- learning process.
- M3:** To identify and provide facilities which create opportunities for deserving students of all communities to excel in their chosen fields.
- M4:** To strive and contribute to the needs of the society and the nation by applying advanced engineering and technical concepts

VISION AND MISSION OF MECHANICAL ENGINEERING DEPARTMENT

VISION

To achieve excellence in Mechanical Engineering by imparting technical and professional skills along with ethical values to meet social needs via industrial requirements.

MISSION

- M1:** To offer quality education with the supportive facilities to produce efficient and competent engineers through industry-institute interaction.
- M2:** To prepare the students with academic excellence, professional competence, and ethical behavior for a lifelong learning.
- M3:** To inculcate moral & professional values among the students to cater the needs of the society and environment.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

- PEO 1:** Graduates will apply their engineering knowledge and problem solving skills to design mechanical systems and processes.
- PEO 2:** Graduates will embrace leadership skills at various roles in their career and establish excellence in the field of Mechanical Engineering.
- PEO 3:** Graduates will provide engineering solutions to meet industrial requirements there by full fill societal needs

PROGRAM OUTCOMES (POs)

Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

- 1. Problem analysis:** Identify, formulate review research literature and analyze complex engineering problems reaching substantiated conclusions using first principle of mathematics, natural science and engineering science.
- 2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 3. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 4. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- 5. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- 6. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- 7. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- 8. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- 9. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- 10. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- 11. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAM SPECIFIC OUTCOMES (PSOs)

- PSO-1:** Implement new ideas on product design and development with the help of modern computer aided tools, while ensuring best manufacturing practices
- PSO-2:** Impart technical knowledge, ethical values and managerial skills to make successful in career.
- PSO-3:** Develop innovative attitude, critical thinking and problem solving approach for any domains of mechanical engineering



(NCISSET-2021)

Souvenir release ceremony was conducted in the presence of Joint Secretary Mr. Mujahid Alam Khan along with the Conference Committee on the First day of the Two days National Conference on “Innovation and Sustainable Solution in Engineering and Technology” during 9th and 10th July 2021

Nawab Shah Alam Khan College of Engineering and Technology

(Approved by AICTE- New Delhi, affiliated to Osmania University, permitted by Govt. of Telangana)

Accredited by NAAC, included in UGC (2f).

16-4-1, New Malakpet, Near Railway Station, Telangana, Hyderabad-500024.



2-Days Virtual National Conference on “Innovations and Sustainable Solutions in Engineering and Technology-(NCISSET-2021)” on

Day-1, 9th July 2021.

Inaugural Function Programme Schedule

1. Host of the program Mr. Mohammed Khaleel Ahmed, Co-Coordinator of NCISSET-2021.
2. Recitation of *Holy Quran*
by Mr. Abdul Rahman-BE 2nd Year CSE Student -10:00 to 10:03 am-(3 Min)
3. Inviting the Dignitaries on the Platform -10:03 to 10:05 am -(2 Min)
4. Presenting thanks to the dignitaries -10:05 to 10:07 am -(2 Min)
5. Welcome Address
Principal & Program Chair : Dr. Syed Abdul Sattar: -10:07 to 10:12 am – (5 Min)
6. About the Conference
by Co-Convener : Dr. Riyazoddin Siddiqui -10:12 to 10:14 am – (2 Min)
7. Address by Hon'ble Secretary
Janab Mahboob Alam Khan Sahab -10:14 to 10:24 am – (10 Min)
8. Address by Hon'ble Jt. Secretary
Janab Mujahid Alam Khan Sahab -10:24 to 10:34 am – (10 Min)
9. Address by Director
Janab Ahmed Baig Sahab -10:34 to 10:44 am – (10 Min)
10. Address by Prof. Syed Farrukh Anwar,
Vice-Principal(Admin.) -10:44 to 10:46 am –(2 Min)
11. Inaugural Address by Chief Guest
Prof. D. P. Kothari, Chairman BOG, Teleri hydro Institution UK, Ex-Director, IIT Delhi, & Ex-V.C. VITRE Inst. of Tech. -10:46 to 10:56 am –(10 Min)
12. Address by Keynote Speaker :
Dr. Parvez Mahmood Khan, Director, Prof. M. N. Faruqi Computer Center, Aligarh Muslim University. -10:56 to 11:26 am – (30 Min)
13. Release of Conference Souvenir -11:26 to 11:36 am – (10 Min)
14. Vote of Thanks by Dr. Zahir Hasan, Convener -11:28 to 11:40 am – (4 Min)

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2-Days Virtual National Conference on “Innovations and Sustainable Solutions in Engineering and Technology-(NCISSET-2021)” on

Day-2, 10th July 2021.

Valedictory Function Programme Schedule

1. Host of the program Mr. Mohammed Khaleel Ahmed, Co-Coordinator of NCISSET-2021.
2. Inviting the Dignitaries on the Platform -02:00 to 02:02 pm -(2 Min)
3. Welcome Address
by Principal & Program Chair : Dr. Syed Abdul Sattar: -02:02 to 02:07 pm -(5 Min)
4. Conference Report by Coordinator-NCISSET-2021
Dr. Mohammad Sanaullah Qaseem -02:07 to 02:10 pm – (3 Min)
5. Address by Hon'ble Secretary
Janab Mahboob Alam Khan Sahab -02:10 to 02:15 pm – (5 Min)
6. Address by Hon'ble Jt. Secretary
Janab Mujahid Alam Khan Sahab -02:15 to 02:20 pm – (5 Min)
7. Dr. Mir Moazzam Ali, BOG Member-NSAKCET. -02:20 to 02:23 pm – (3 Min)
8. Dr. S. Mujahid Hussaini, Prof. & Head-MED . -02:23 to 02:25 pm – (2 Min)
9. Address by Chief Guest
Prof. P. Laxminarayana, Registrar, Osmania University, Hyderabad. -02:25 to 02:35 pm – (10 Min)
10. Address by Guest of Honor
Prof. Masood Ahmad Khan -02:35 to 02:45 pm – (10 Min)
Exec. Engineer, Department of Geology and Mining, Ministry of Mining, J & K.
11. Questions & Answers: Dr. Md. Ishaq, Co-Convener -02:45 to 02:50 pm – (5 Min)
12. Vote of Thanks
Mr. Md. Khaleel Ahmed, Co-coordinator-NSISSET -02:50 to 03:00 pm – (10 Min)



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MECHANICAL ENGINEERING DEPARTMENT

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FINAL YEAR PROJECT MODEL EXPO - 2021

- | | |
|---|--|
| 1. Floor cleaning and Metal detection Device. | 11. Solar E-Bicycle |
| 2. IOT Operated Pneumatic Vice | 12. Electric Scooter |
| 3. Electromagnetic Braking System. | 13. Solar Water Heater |
| 4. Enhancement of Oxygen Concentrator. | 14. Power Generation by Railway Tracking |
| 5. Portable Exercise Machine for Joint Pain | 15. Screw Turbine for Electricity Generation |
| 6. Stair Lifting Chair | 16. Solar Refrigerator Without Compressor |
| 7. Two-Bay Crack Arrest Metallic Fuselage | 17. Pneumatic Paper Cup Making Machine. |
| 8. Energy Harvesting through Exercise Machine | 18. Four-way Motorized Hacksaw |
| 9. Dual Axis Solar Tracking System | |
| 10. Hybrid Power Generation from Solar and Wind | |

DR. SYED MUJAHED HUSSAINI
HEAD-MED



Stair Lifting Chair



Solar E- Bicycle



Hybrid power Generation from
solar and Wind



Electric Scooter



Floor cleaning and Metal detection device



IOT operated Pneumatic Vice

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Webinar

**Webinar Series on
Future Opportunities in Engineering**

**1st Webinar on
Engineering is Key for Human Development**

Speaker:
Prof (Dr). SM Hussaini
Director, Head-MED, Former Scientist/Engineer, ISRO,
Govt. of India, Sriharikota. Ex Faculty, BITS-Pilani

THURSDAY - 12-AUG-2021 - 7:30 to 8:30 PM

Zoom Link: ID - 775 6443 0389 PWD - NSAKCET <https://www.youtube.com/watch?v=Ma7uhig7xdl>

Speaker :- Prof. (Dr). Syed Mujahed Hussaini, former Scientist / Engineer, ISRO, Govt. of India and Ex. faculty BITS-Pilani in India. Going to talk on Engineering is Key for Human Development and Share education and informative videos on Engineering, Science, Technology and General things.

Webinar



Webinar Series on **Future Opportunities in Engineering**

2nd Webinar
Automation and Robotics for Engineers

Speaker:
Dr. Arshad Javed
Asst. Prof., Department of Mechanical Engineering, BITS Pilani (Hyderabad Campus)

THURSDAY - 19-AUG-2021 - 7:30 to 8:30 PM

Zoom Link: ID - 775 6443 0389 PWD - NSAKCET <https://www.youtube.com/watch?v=Ma7uhig7xdl>

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Webinar Series on **Future Opportunities in Engineering**

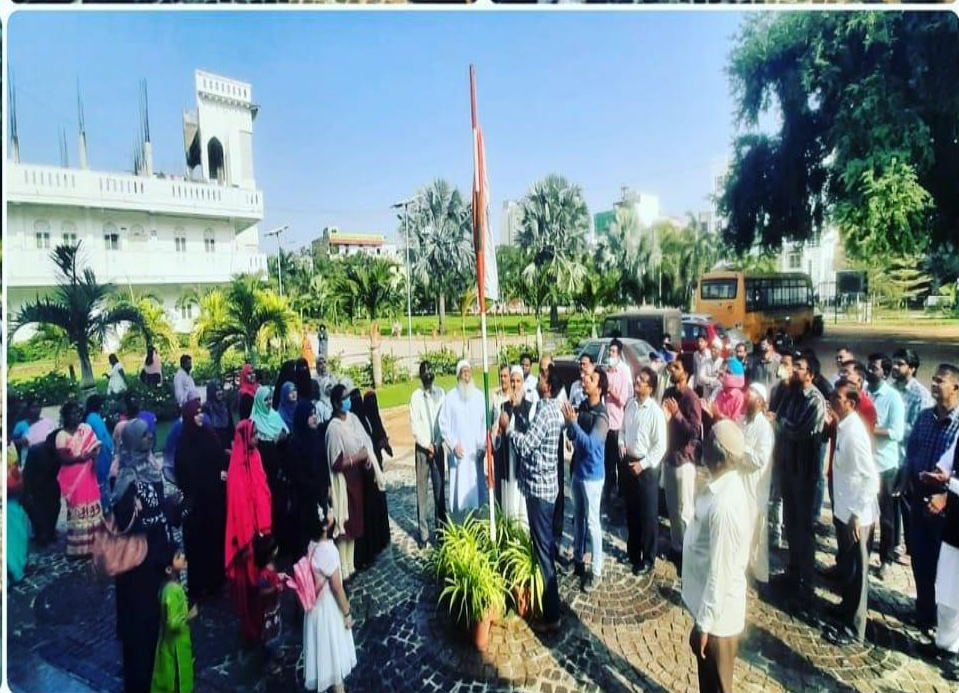
3rd Webinar
Mechanical Engineering & Building MEP Services

Speaker:
Er. Mohammed Kaleemullah
Managing Director, M/S Ecopact Constructions & MEP Academy, Hyderabad, India

THURSDAY
26-AUG-2021
7:30-8:30 PM

Zoom Link: ID - 775 6443 0389 PWD - NSAKCET <https://www.youtube.com/watch?v=Ma7uhig7xdl>

HAPPY
**REPUBLIC
DAY**
26TH JANUARY



The 72th Republic Day of India was celebrated with gaiety and patriotic fervour at Nawab Shah Alam Khan College of Engineering & Technology amidst the foggy morning of 26th January, 2021. The ceremony took place in the presence of Dr. Syed Abdul Sattar, Professor, Director (R&D) & Principal, Dr. Syed Mujahed Hussaini, former Scientist / Engineer, ISRO, Govt. of India, Dr. Amaresh Babu, Professor & HOD Civil Engg, Dr. Mohammed Sanaullah Qaseem, Professor & Head, CSE Dept. Vice Principal and IEEE Counselor, IEEE SB, Prof. Syed Farrukh Anwar, Professor Civil, Associate staff and HoDs of various departments, faculty, staff members and students.

The ceremony commenced with the unfurling of the National Flag by the Dr. Syed Abdul Sattar, Professor. This was accompanied by the rendition of National Anthem led by the college's Students and staff. The programme moved forward with an incredible display of parade by the National Cadet Corps(NCC) cadets. The energetic performances by the Dramatics Club and the infectious beats of bhangra filled the crowd with great energy and enthusiasm. The heartfelt renditions of patriotic songs aroused feelings of love and brotherhood among all

Dr. Syed Abdul Sattar, Professor, Dr. Mohammed Sanaullah Qaseem, Professor and Prof. Syed Farrukh Anwar addressed the gathering and highlighted the achievements of the college. He underscored the steps the college has taken to ensure an overall development of its students and took pride in mentioning that the college is well ahead of the academic standards. He emphasized upon the quality education which would help in the development of the city and the country at large. He briefly discussed the issues that the nation is currently facing and urged everyone to unite and stand against them. The hour long ceremony culminated with the release of tri-coloured balloons.





One more achievement by Mech. Engg student from Mr. Zeeshan Ali Khan, Roll no 17RT1AO364, B Tech Mech. Engg, from NSAKCET Nawab Shah Alam Khan College of Engg & Tech, along with other volunteers has so far performed the last rituals of over 1,800 people across the state.



Vaporized Disinfectant Cave: Like sanitization, disinfection also involves killing microbes on a surface or object. While disinfectants generally kill more microbes than sanitizers, disinfectants do not completely eliminate all microbes from a surface or object. They reduce the amount of microbes so that it is safer for human contact. For disinfectants to work properly, the area should be cleaned first. This reduces inhibition of the disinfectant by soil or other organic material. As with sanitizers, the amount of time the disinfectant is in contact with the surface (i.e., “dwell” time) is important to be more effectively reduce microbes.

Environmental surfaces are more likely to be contaminated with the COVID-19 virus in health-care settings where certain medical procedures are performed. Therefore, these surfaces, especially where patients with COVID-19 are being cared for, must be properly cleaned and disinfected to prevent further transmission. Similarly, this advice applies to alternative settings for isolation of persons with COVID-19 experiencing uncomplicated and mild illness, including households and non-traditional facilities. Transmission of the COVID-19 virus has been



linked to close contact between individuals within closed settings, such as households, health facilities, assisted living and residential institution environments. In addition, community settings outside of health-care settings have been found vulnerable to COVID-19 transmission events including publicly accessible

The purpose of this project is to provide guidance on the cleaning and disinfection of environmental surfaces in the context of COVID-19. This Project is intended for health-care professionals, public health professionals and health authorities that are developing and implementing policies and standard operating procedures (SOP) on the cleaning and disinfection of environmental surfaces in the context of COVID-19. In indoor spaces, routine application of disinfectants to environmental surfaces by spraying or fogging (also known as fumigation or misting) is not recommended for COVID19. One study has shown that spraying as a primary disinfection strategy is ineffective in removing contaminants outside of direct spray zones. Moreover, spraying disinfectants can result in risks to the eyes, respiratory or skin irritation and the resulting health effects. Spraying or fogging of certain chemicals, such as formaldehyde, chlorine based agents or quaternary ammonium compounds, is not recommended due to adverse health effects on workers in facilities where these methods have been utilized. Spraying environmental surfaces in both health-care and non health care settings such as patient households with disinfectants may not be effective in removing organic material and may miss surfaces shielded by objects, folded fabrics or surfaces with intricate designs. If disinfectants are to be applied, this should be done with a cloth or wipe that has been soaked in disinfectant.