JULY-SEPTEMBER 2020

MECH @ CONNECT

Updates of the Mechanical Department



Work From Home for Engineers

During the covid -19 outbreak , worldwide shutdown forced employees to work from home but Engineers reported no impact on their efficiency and to create awareness helps in mass production of sanitizers and cost effective Ventilators , thermal monitoring devices, etc.



• Webinars series conducted through online platforms.

- An alumni started serving in IES.
- Tokyo 2020 Olympic shifted to July 21'.
- A solar car, Light Year One launched.

The Newsletter of Mechanical Engineering Department is a regularly distributed publication that is generally about the event, programs and achievements of the Department and news related to Mechanical Engineering.

LAKSHMI NARAIN COLLEGE OF TECHNOLOGY, BHOPAL <u>VISION</u>

To be a premier institute where engineering education and research converge to produce engineers as responsible citizens.

<u>MISSION</u>

- To improve continually in the teaching-learning process by strengthening infrastructural facilities and faculty credentials.
- To undertake interdisciplinary research and development by engaging the faculty and students in curricular, co-curricular and industry collaborated projects towards problem solving.
- To enhance proportion of skilled based courses beyond curriculum to create more employable graduates.
- To inculcate human values, ethics, patriotism and responsibility in our outgoing engineers by providing conducive environment.

DEPARTMENT OF MECHANICAL ENGINEERING <u>VISION</u>

To be recognized in academics and research for producing engineers as responsible citizen who are innovative, choice of employers and able to do further studies & research.

MISSION

- To provide knowledge and skills of Mechanical Engineering to the students.
- To impart quality education to make students competent mechanical engineer and responsible citizen.
- To provide facilities and environment conducive to grounding scholars for employability, higher studies and research.
- To prepare its students for successful career in engineering.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

- To make the students able of applying knowledge of mathematics, science and subjects of mechanical engineering in dealing with engineering problems.
- To be able to identify and understand real life problems and suitably design and manufacture, feasible and sustainable mechanical devices and systems.
- To be able to carry out the research work in the field of Mechanical Engineering.
- To be able to use modern tools and techniques for the efficient working and meeting challenges of modern society and industry.

News Highlights

- WEBINAR SERIES WAS CONDUCTED FOR MECHANICAL ENGINEERING STUDENTS THROUGH ONLINE PLATFORM
- 8TH SEMESTER RESULTS OF 2016-2020 WERE ANNOUNCED BY RGPV, BHOPAL
- MECHANICAL STUDENTS QUALIFIED IES & CAT EXAMINATION
- USING TERAHERTZ RADIATION COULD MAKE PARTICLE ACCELERATORS 10 TIMES SMALLER RECENT STUDY SHOWS
- NEW HEAT CONDUCTION TECHNOLOGY A GAME CHANGER FOR SERVER FARMS AND AIRCRAFT
- 4 WAYS ENGINEERING COULD CHANGE AFTER THE COVID-19 PANDEMIC
- CORONAVIRUS: WHAT SPORTING EVENTS ARE AFFECTED BY THE PANDEMIC?
- WHY AUTOMAKERS RUSH TO IMPLEMENT IN-CAR PAYMENT SYSTEMS ?
- SOLAR POWER CARS

EDITORIAL BOARD

Faculty Editors Dr. Shailendra Dwivedi Dr. Neeraj Dubey Student Editors **Rohan Raj**

Campus News

• In these tough times our focus is always on wellbeing, learning and enhancement of ourselves. In order to which our Department of Mechanical Engineering brings us a tremendous and joyful **webinar series** comprises of very interesting and diverse but impactful topics led by the one of the best among their respective field serving to various prestigious institutes in India.



- Autonomation & Industry 4.0 strategies by Dr. Rajeev Agrawal – MANIT, Jaipur
- Renewable Energy Sources & Utilization by Dr. Ajeet Kumar Rai
 – SHUATS, Allahabad
- A webinar on skills for work a student webinar is organized on the topic of presentation skills.
 Presenter: Ian Cawley, Cambridge, UK

- Reverse Engineering by Dr.
 Vandana Agrawal NIT, Allahabad
- Project Completion Ideas for
 Students During Lockdown by
 Dr. Anushka Shrivastava SHUATS,
 Allahabad
- Additive Manufacturing in Biomedical Application by Dr. Richa Pandey – BIT, Mesra



Campus News

PRIDE MOMENTS

- Batch of 2016-2020 is now graduated. We all congratulate them for their journey ahead and wish them luck. As the university announces result of 8th semester. Students of our department again make us feel proud by their achievements and grades acquired by them.
- Student **Mr. Abhishek Singh** topped the RGPV exams for the 8th Semester by achieving 9.17 CGPA.
- Students Mr.Akash Singh Bhati & Udit Singh Tomar induced in NCC , Second Year from Mechanical Engineering selection through Online Interview.
- MR. PRIYANK TURKAR, an alumni 2016 batch of mechanical engineering department is a new sensation among the juniors of department as now he qualifies the IES exam and serving for INDIAN RAILWAYS.
- MR. AKASH CHANDANI BATCH 2011-2015 after qualifying the CAT (Common Aptitude Test) exam with a score of 99.15 percentile reserves a seat in FMS (Faculty of Management Studies).
- MR. VISHAL CHOPDE BATCH 2015-2019 after qualifying the CAT (Common Aptitude Test) exam with a score of 99.54 percentile reserves a seat in IIM (Indian Institute of Management) Kolkata.







News Around World

USING TERAHERTZ RADIATION COULD MAKE PARTICLE ACCELERATORS 10 TIMES SMALLER RECENT STUDY SHOWS



- Particle accelerators generate high-energy beams of electrons, protons and ions for a wide range of applications, including particle colliders that shed light on nature's subatomic components, X-ray lasers that film atoms and molecules during chemical reactions and medical devices for treating cancer. Now, the longer the accelerator, the more powerful it is.
- Now, a team led by scientists at the Department of Energy's SLAC National Accelerator Laboratory has invented a new type of accelerator structure that delivers a 10 times larger energy gain over a given distance than conventional ones. This could make accelerators used for a given application 10 times shorter.
- The key idea behind the technology, described in a recent article in Applied Physics Letters, is to use terahertz radiation to boost particle energies. In today's accelerators, particles draw energy from a radio-frequency (RF) field fed into specifically shaped accelerator structures, or cavities.
- Terahertz and radio waves are both electromagnetic radiation; they differ in their respective wavelengths.
 Because terahertz waves are 10 times shorter than radio waves, cavities in a terahertz accelerator can also be much smaller. In fact, the one invented in this study was only 0.2 inches long!

News Around World

NEW HEAT CONDUCTION TECHNOLOGY A GAME CHANGER FOR SERVER FARMS AND AIRCRAFT



- Jonathan Boreyko, an associate professor in mechanical engineering, has developed an **aircraft thermal management technology** that stands ready for adaptation into other areas. Boreyko's research has shown bridging-droplet thermal diode to be both highly efficient and extremely versatile.
- Diodes are a special kind of device that allows heat to conduct in only one direction by use of engineered materials. For management of heat, diodes are attractive because they enable the dumping of heat entering one side, while resisting heat on the opposite side.
- Boreyko's team **created a diode using two copper plates** in a sealed environment, separated by a microscopic gap. The first plate is engineered with a wick structure to hold water, while the opposite plate is coated with a waterrepelling (hydrophobic) layer.
- The water on the wicking surface receives heat, causing evaporation into steam. As the steam moves across the narrow gap, it cools and condenses into dew droplets on the hydrophobic side. Boreyko's team measured a nearly 100-fold increase in heat conduction when the wicked side was heated, compared to the hydrophobic side.
- This is a significant improvement to existing thermal diodes. According to him, current diodes are either not very effective, only conducting a few times more heat in one direction, or require gravity. This new bridging-droplet thermal diode can be used upright, sideways, or even upside-down, and would even **work in space** where gravity is negligible.

Industrial Expert Talk

4 WAYS ENGINEERING COULD CHANGE AFTER THE COVID-19 PANDEMIC

The devastating spread of Covid-19 touched every aspect of our lives, bringing many challenges – but also opportunities for positive change. Here's how engineering could look after the pandemic.

Collaboration



The engineering response to the sudden demands of the coronavirus was inspiring. Whether building **ventilators**, making personal protective equipment or creating new **hospital capacity**, companies and institutions from across the spectrum came together in a spirit of collaboration.

Even firms traditionally seen as rivals came together, demonstrating what can be achieved when looking beyond profit margins.

Collaboration forged new connections that will carry over into the postpandemic world, said **IMechE** member and Oxford professor Mark Thompson, who led the **Oxvent ventilator project**. He said. "I think everyone will carry forward with them the experience of how they responded. In that sense it will irrevocably change the way that the networks are put together."

Need for Speed

Engineers demonstrated their full capacity when restrictions were lifted, **creating prototypes in days** and complete devices in weeks. Of course, fast-track routes will be tightened after the pandemic, but with other huge and pressing challenges – climate change, for example – governments and regulators have no excuses for constraining work.

"What we've achieved in about four or five weeks would normally take about two-and-a-half years – really quick decision-making, engineering **requalification of components**, supply-chain sourcing," said Sam Turner, chief technology officer for the High Value Manufacturing Catapult, a leading member of the Ventilator Challenge UK.

Industrial Expert Talk

4 WAYS ENGINEERING COULD CHANGE AFTER THE COVID-19 PANDEMIC

Home Working

A Professional Engineering survey found that **18% of respondents** reported no impact on their efficiency while working at home, with a similar number reporting no negative impact on their ability to perform technical engineering tasks.



Engineering companies may well reflect on this and take the opportunity to maintain homeworking for some employees. Workers returning to the office, workshop or factory might also find big changes. Some firms could introduce wearable devices to maintain '**social distancing**', for example. **New Focus**



After the pain and suffering caused by the Covid-19 pandemic, governments must take steps to prevent similar outbreaks. There will be increased demand for engineering that fights, prevents and treats diseases, such as **ventilators**, **anti-bacterial surfaces**, **temperature monitoring devices** and other high-tech solutions.

Thanks to the good work already done by many **manufacturers** to pivot **production**, some companies might make a permanent shift towards technology that helps save lives.

Source :- <u>https://www.imeche.org/new</u> <u>s-article/4-ways-engineering-could-</u> <u>change-after-the-covid-19-pandemic</u>

Sports News

CORONAVIRUS: WHAT SPORTING EVENTS ARE AFFECTED BY THE PANDEMIC?

National/International

1.The most significant one that was due to take place in Japan this summer was the **Tokyo 2020 Olympics**. However, the International Olympic Committee and Japan's Prime Minister Shinzo Abe have postponed the event to next year, where it will now take place from **July 23 to August 8, 2021**.



- 2.The postponed Paralympic Games will run from August 24-September 5, 2021.
- 3.The **World Athletics Championships** scheduled to take place in Oregon in August 2021 have been **pushed back to July 2022** to avoid clashing with the rescheduled Olympic Games, the sport's governing body said on April 8.



4.**Formula One** plans to start its season behind closed doors in Austria from July 3-5, followed by the British Grand Prix at Silverstone under similar conditions, but has yet to publish a revised calendar.

- 5.**The Hungarian Formula One Grand Prix**, which was scheduled originally for August 2, can only **take place without spectators**, organisers said.
- 6.The **French Open** has been **postponed** until September 20 October 4, organisers said on March 17. The clay-court major was originally scheduled to be played from May 24-June 7.

Check Your Knowledge

1.In process boilers steam generation capacity ranges from

QUIZ

(A)170 kg/h to 550 kg/h (B)2000 kg/h to 55000 kg/h (C)200 kg/h to 55000 kg h (D)175 kg/h to 55000 kg/h

2. A valve designed to sense the difference between steam and condensate, and drain the condensate from line.is called as

(A)Steam Trap(B)Shuttle Valve(C)Steam Valve(D)Throttle Valve

3. Is the example of Micro Hybrid.....

(A)Tata Tiago (B)Mahindra Scorpio (C)Tata Nexon (D)Honda Civic

4. Lead Acid Batteries used for Starting ,Lightening, Ignition(SLI) application in automobiles because of

(A)Lead can be recycled(B)These batteries available cheaper in cost(C) Both A & B(D)None of the above

5. The example of series parallel hybrid vehicle

(A)Honda civic(B)Toyota prius(C)Toyota Camry(D)All of the above

6. Which Indian company launched first electric scooters in the market with the highest speed.

(A)Bajaj Auto
(B)Okinawa
(C)TVS
(D)Hero

Answer

1.(D) 2.(A) 3.(B) 4.(C) 5.(D) 6.(B)

Articles

WHY AUTOMAKERS RUSH TO IMPLEMENT IN-CAR PAYMENT SYSTEMS ?

Incar payment technology is nothing new per se. Payment functionality can be enabled with the help of either:

- Long-**range radio frequency identification** (RFID) tags that can send payment data over the air.
- Embedded **BLE hardware** modules that can transmit data at a higher range than NFC protocols used by most mobile payment apps.



Development of such in-car payment system can be relatively fast with the right development team on board, and the implementation tradeoffs can be massive. The Digital Drive Report 2019, published by PYMNTS, estimate that commuters are available for together

already spending \$212 billion a year conducting commerce in their cars. What's more important though is that 66% of commuters, who are currently using their smartphones for purchases, state they would shop more frequently if in-car purchasing integrations and payments were available.

- Today, 99 million connected commuters in the US are spending approximately \$62.3 billion on gas, \$16.7 billion on coffee, \$43.9 billion on groceries, \$47.2 billion on food and \$5.8 billion on parking, yet most OEMs are still missing out on getting a share of these revenues.
- In-car payment systems are definitely upon us. Some proactive OEM's and auto manufacturers are already taking action to gain a competitive edge. Honda recently collaborated with Visa and developed a prototype for an in-vehicle payment app. New GM vehicles are also coming equipped with payment technology and even an in-dash goods and services marketplace.
- **Hyundai** is partnering with Xevo to develop a connected car experience with a payment component that will give drivers the ability to pay for gas, parking and other goods/services.

Articles

SOLAR POWERED CARS

• The "world's first long-range solar car"

Back in June, **Dutch** startup Light Year unveiled a prototype for what they call the first car capable of driving long distances powered only by the Sun.

- The car, called **Lightyear One**, has a roof and hood made up of five square meters of integrated solar cells.
- The solar panels are encased in safety glass, "so strong that a fullygrown adult can [safely] walk on them," the company claims.



- The car is made out of strong, but lightweight, materials to allow it the longest range possible. This, the company says, enables the car to have a range of 725 km (WLTP). Light Year says its car uses 83 Wh/km (WLTP) and accelerates from 0-100 in ten seconds.
- The Lightyear One's solar array adds 12 km of range per hour when in the sun.

SEGMENT EDITORS

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Published - 1 October, 2020 For Feedback , Contact us : menewsletter@lnct.ac.in

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