

MEXPRESS

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Mechanical Engineering Association
DEPARTMENT OF MECHANICAL ENGINEERING



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From the Editors...

Hello dear readers! The sixth edition of our departmental newsletter, MExpress, is currently in its third issue. You can learn more about the details of the programs that were organised, the programs that our faculty members attended, the papers that our faculty and students published, the faculty members who acted as resources, the faculty members' reviews of manuscripts, the organized industrial visits, and the participation and placement of our students in this issue. The reviewer's points include a student article and three reviews. I hope you all had fun reading.

We sincerely ask every reader to provide us with feedback by using the links provided in the various media on the top page. We also ask our readers to share what they think will be useful

Editors....



STRICTLY TURBULENT – Part 2



Ms. Jobisha Celin
20BME051
3rd year mechanical - B

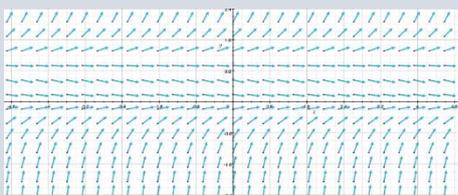
Science is beautiful once we understand it. Following the last article, this part would delve into the science behind turbulence. In order to do that, let's understand what a fluid is. Well, the simple definition from the name would be "something that flows" or having its molecules loosely packed compared to solids. There is more to fluid than this; we are all aware of the



term "shear," which is the deformation of an object in two dimensions. Does water undergo shear deformation? If

[flowing fluid - gas](#)

not, how does it



vector
vector

[Velocity Vector](#)

Following the last article, what really are these streamlines, and what do they even mean to us physically? To put them in simple words, these are paths through which fluid flows. If one needs to understand it through physics, relate it with velocity vectors. When a fluid approaches a point over a field, the path it takes is determined by the direction of the velocity at that point. The velocity vectors can be expressed as the

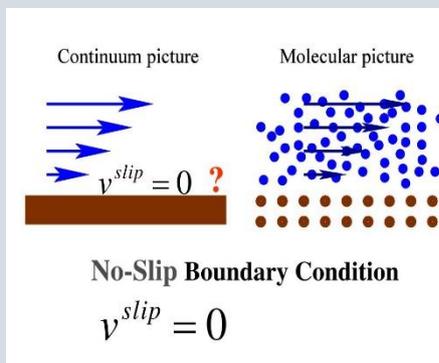
tangents to the streamlines. Therefore, a streamline gives you the direction through which a fluid molecule will flow in the velocity vector field. A fluid flow is made of layers of streamlines; when these streamlines are parallel, meaning



Examples of streamlines around an airfoil (left) and a car (right)

[Streamlines over an air foil and a car](#)

they



No-Slip Boundary Condition

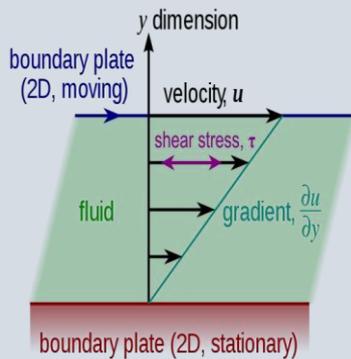
$$v^{slip} = 0$$

[Momentum diffusion](#)

possess the same magnitude of velocity throughout, that flow has no loss of energy whatsoever. Does this flow really happen in reality? because we know that for any process to happen, it doesn't necessarily reach the maximum efficiency; that is the natural rule.

Consider water flowing over another surface; how does the presence of the surface affect the fluid flow? The surface itself is an obstruction, and therefore it must slow down the fluid. Let's assume that the freely flowing fluid has a velocity U_{∞} , as it approaches a surface, the molecules in the streamline closer to the surface stop due to the obstruction caused.

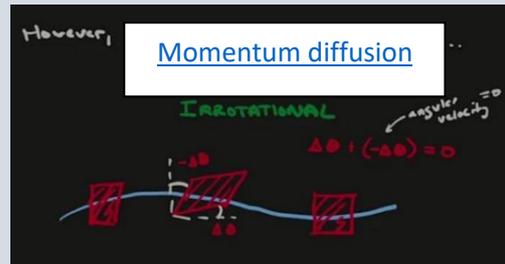
Now let's imagine what the other streamlines of the fluid flow experience because of the sudden stop of the molecule in the lowermost streamline closer to the surface. One can imagine that due to the fluidity of fluids, the presence of the obstruction is slowly felt by the other streamlines, and after a distance, the tendency of the surface to slow down decreases and the fluid flows at the same velocity U_∞ . This is kind of like the diffusion pattern we are all familiar with: the velocity slowly increases, and the presence of the surface is no longer felt by the fluid. This phenomenon is called "momentum diffusion," which expresses itself through the viscosity between layers. If the viscosity is higher, then, the boundary thickness increases, and vice versa. This definition goes well with the fact that viscosity resists the flow.



Shearing

line

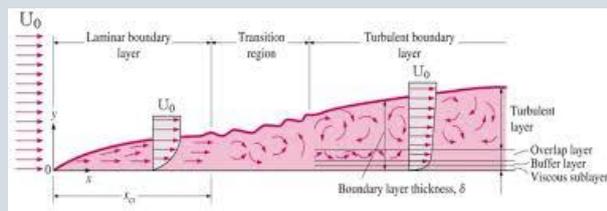
Imagine a fluid flow over a surface, say over the airplane's wings. Divide the fluid into infinitesimally small volume elements, whose volumes tend to 0, in other words, their size is so small



Solid body rotation-zero vorticity

that their volumes are almost negligible. Now imagine one such volume element in flow and imagine the flow in 2 dimensions. The lower moves slowly compared to the upper line; this can be interpreted as the shear deformation we come across or see in solid objects. What happens when the upper layer moves with a faster velocity than the one below? One can feel the rotation occurring here. As mentioned before, shear deformation is the deformation occurring in 2 dimensions and hence, here there will be two angular deformations. What happens when the angular deformations in 2 dimensions are equal but opposite and there is no net resultant. This is called as the solid body rotation and no vortex or rotation occurs here. This is when a liquid is said (or assumed) as irrotational.

Let's understand Reynolds's number. The definition says that it's a ratio between the inertial effects and the viscous effects in a flow. We know that when a fluid flows over a surface, the velocity of the fluid is trying to push the upper layers of the flow, and the



viscosity provides the resistance between the flow streamlines. According to what was discussed before,

laminar-transient-turbulent

no

flow is completely irrotational, and when the fluid shears, this produces the infamous eddies, vortices, or turbulence. In this context, inertia is the inability of the upper layers of the fluid to come to rest while obeying the viscous tendencies of the flowing fluid, i.e., the tendency of the uppermost streamline to flow at the same velocity. This is why, because of a fluid's innate viscosity, as the inertial effects increase, the probability of the flow becoming turbulent increases. And thus, the famous "dimensionless" number came to be something on which whether the flight would take off now or be delayed was decided.

In the next issue, in a pipe flow, if the cross section is taken, there are two surfaces in a 2-dimensional sense. How will the velocity profile look? If, in a vacuum, a drop of honey and a drop of water are dropped, which will move faster?

PROGRAMMES ORGANIZED



A Doctoral Committee Meeting for one of the research scholars of **Dr. C. Velmurugan**, Professor and HoD of the Department, was organized on 27-10-2022. **Dr. S. Senthilkumaran**, Professor, Department of Mechanical Engineering, Anna University, Chennai, and **Dr. S. S. Ramakrishnan**, Adjunct Professor, Department of Mechanical Engineering, Karunya University, Coimbatore, were the doctoral committee members present.

A seminar on “Advanced Technology for Younger Minds - Rapid Prototype” was organised on 13-10-2022 for the students at Government Higher Secondary School, Vellakinar. **Dr. M. A. Vinayagamoorthi**, Assistant Professor – II along with **Mr. K. Jeevabharathi**, **Mr. R. Lokeswaran**, and **Mr. V. Vetrivelan**, Third Year Mechanical Engineering students coordinated the seminar.



A workshop on "Writing an Outstanding Research Article and Project Proposal" was organised in the department on 06-10-2022. **Dr. V. Manivelmuralidaran**, Assistant Professor III, and **Dr. A. P. Arun**, Assistant Professor III, coordinated the workshop. **Mr. Chidambaram Subramanian**, Senior Scientist, Durgapur, West Bengal, was the resource person.





Another seminar “Career Opportunities for Engineering Students through GATE & ESE” for II-year Mechanical Engineering students was organized on 11-10-2022. **Mr. S. Manimohan Trinath** and **Mr. Pabba Ramesh** from ACE Engineering Academy were the resource persons. **Dr. M. Thirumalaimuthukumar**, Assistant Professor - III coordinated the seminar.

A training programme for the World skill Competition for the faculty members was organized on 28-10-2022. **Dr. E. Prakash**, WSTC trained the faculty members. **Dr. M. Thirumalaimuthukumar**, Assistant Professor – III coordinated the training programme.



A guest lecture on “Digital Manufacturing” was organized by the department on 28-10-2022. **Mr. V. Sudhakar**, Application Expert - Aerospace, SECO Tools India Ltd was the resource person. Guest lecture was coordinated by **Dr. M. A. Vinayagamoorthi**, Assistant Professor – II and **Dr. S. Balasubramanian**, Associate Professor.



Another guest lecture on the same topic of “Digital Manufacturing” was organized by the department on 14-10-2022. **Mr. K. Ganesh ram** and **Mr. S. Lakshmi Kanth** from M/s. ALTEM Technologies, Bengaluru, were the resource persons. **Dr. S. Balasubramanian**, Associate Professor, coordinated the event.

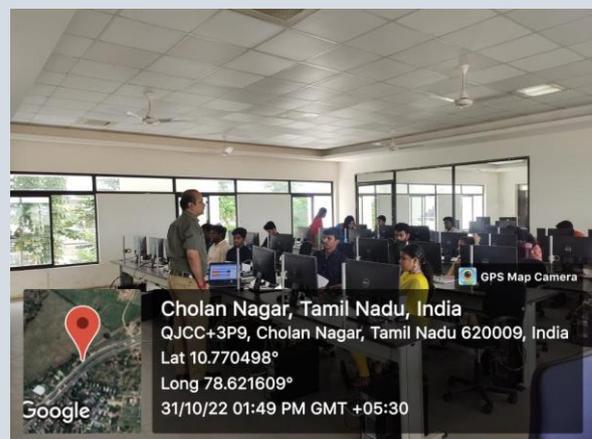
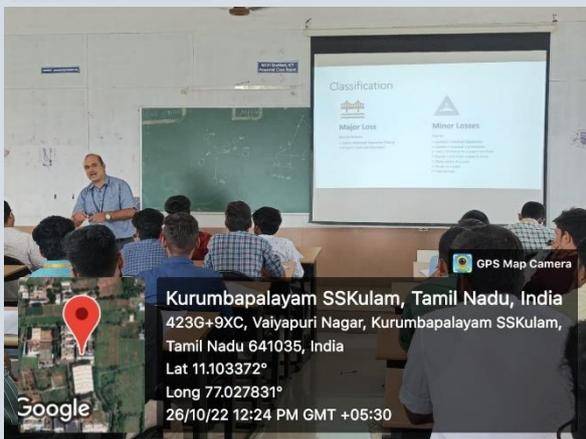
RESOURCE PERSONS



Dr. M. A. Vinayagamoorthi, Assistant Professor II, delivered a guest lecture on "Internet of Things (IoT)" for the School of Computer Science students at PPG College of Arts and Science, Coimbatore, on 21-10-2022. He also delivered another guest lecture on "Rapid Prototyping" for the Government Higher Secondary School, Vellaikinar, Coimbatore, on 13-10-2022.



Dr. S. Bhaskar, Associate Professor, gave a lecture on "Expectations by Kumaraguru College of Technology" for the 2nd year lateral entry students during the Swagatham Event organized by Kumaraguru College of Technology on 11-10-2022. He also gave a speech on "Career Readiness" for 2nd year lateral entry students during the Boot Camp event of Kumaraguru College of Technology on 12-10-2022.



Dr. B. N. Sreeharan, Assistant Professor – II, delivered a Guest Lecture on "Major and Minor Losses in Flow through Pipes" organized by the Department of Mechanical Engineering, SNS College of Engineering, Coimbatore, on 26-10-2022. He also conducted a Hands-on Workshop on "MS Excel" for the final year MBA Students of the CARE School of Business, Trichy, on 31-10-2022.



Dr. S. Balasubramanian, Associate Professor, delivered a guest lecture on "Internet of Things(IoT)" for the School of Computer Science students, PPG College of Arts and Science, Coimbatore on 21-10-2022.



PAPERS PRESENTED



Dr. M. Balaji, Associate Professor, presented a paper entitled "AHP-QFD Integrated Mathematical Study to Enhance the Quality of Outcomes Based Education at an Engineering Institution" in the International Conference on Mathematical Sciences, Modeling and Computational Intelligence - ICMSMCI 2022 organized by the Department of Mathematics, Kumaraguru College of Technology on 29-09-2022.

PAPERS PUBLISHED

Dr. V. Muthukumar, Professor, published a paper entitled "Mechanical and Corrosion Behavior of Plasma Nitrated Tests on SS316L & Ti6Al7NB" in the International Journal of NeuroQuantology, Volume 20, Issue 9, Pages 5965–5970.



Dr. M. A. Vinayagamoorthi, Assistant Professor II, published a paper titled "Design and fabrication of multiple press tools for sheet metal operation" in the International Research Journal of Engineering and Technology (IRJET), Volume: 09, Issue, 09, Pg. No. 1251–1258.

MANUSCRIPTS REVIEWED



Dr. C. Velmurugan, Professor and Head, reviewed a couple of papers entitled "Fatigue performance of the aluminium-magnesium/magnesium aluminate in-situ composites synthesized through manganese dioxide and copper oxide reinforcement" for the International Journal of Material Science and Engineering Technology and "Fabrication and Mechanical Characteristics of Al 6061-Zircon Particulate Composites" for the International Journal - Advances in Materials Science and Engineering.



Dr. S. Balasubramanian, Associate Professor, reviewed a paper entitled "Preparation of Janus PVDF micro/nano fibre membrane with unidirectional water transfer and oil water separation function by centrifugal spinning" for the Textile Research Journal, an international journal.

PATENT FILED

Dr. S. Sivakumar, Assistant Professor – III, filed a patent application No. 202241054176/22-09-22 for the patent titled "Design and Fabrication of Hexapod based Multifunctional Agricultural vehicle".



PROGRAMMES ATTENDED



Mr. P. D. Devan, Assistant Professor – II, participated in an international one-week FDP online on "Trends & Challenges in the Development of Electric Vehicles and Hybrid Electric Vehicles" from 26-09-2022 to 30-09-2022, organized by Lendi Institute of Engineering & Technology, Vizhianagaram, Andhra Pradesh. He also participated in a 2-day national level workshop on "Revised NAAC Accreditation Process: Acing Quantitative and Qualitative Metrics" from 12-10-2022 to 13-10-2022, organized by KCT. Further he obtained a membership International Association of academic plus corporate

(IAAC) society.

Dr. V. R. Murugantham, Associate Professor, participated in a workshop on "Writing an Outstanding Research Article and Project Proposal" on 06-10-2022 organized by KCT. He also participated in a one-week international online FDP on "Trends & Challenges in the Development of Electric Vehicles and Hybrid Electric Vehicles" from 26-09-2022 to 30-09-2022, organized by the Lendi Institute of Engineering & Technology, Vizhianagaram, Andhra Pradesh. Further, he participated in a one-day workshop on "Design and Development of Outcome Based Curriculum" on 07-10-2022, organized by KLDA, KCT. Later, he participated in another 2-day national-level workshop on "Revised NAAC Accreditation Process: Acing Quantitative and Qualitative Metrics" from 12-10-2022 to 13-10-2022, organized by KCT.



Dr. S. Thirumurugaveerakumar, Associate Professor, participated in a workshop on "Writing an Outstanding Research Article and Project Proposal" on 06-10-2022 organized by KCT.



Dr. S. Sivakumar, Assistant Professor III, participated in an international one-week FDP on "Trends & Challenges in the Development of Electric Vehicles and Hybrid Electric Vehicles" from 26-09-2023 to 30-09-2023, organized by Lendi Institute of Engineering & Technology, Vizhianagaram, Andhra Pradesh. He also participated in a one-day workshop on "Design and Development of Outcome Based Curriculum" on 17-10-2022 organized by KLDA, KCT.

Dr. M. Thirumalaimuthukumar, Assistant Professor – III, participated in a webinar on "How to Get Published: - Open Access Webinar" on 19-10-2022 organized by SAGE Publishers. He also participated in a seminar on "Registration of Intellectual Property Rights (IPR) without Legal Assistance" on 29-10-2022 to 29-10-2022, organized by the Institution of Engineers, CLC, PSGCT.



Dr. M. Balaji, Associate Professor, participated in a one-day workshop on "Design and Development of Outcome Based Curriculum" on 17-10-2022 organized by KLDA, KCT.

Dr. M. A. Vinayagamoorthi, Assistant Professor – II, participated in a workshop on "Writing an Outstanding Research Article and Project Proposal" on 06-10-2022 organized by KCT.



Dr. K. M. Senthilkumar, Associate Professor, participated in a one-day workshop on "Design and Development of Outcome Based Curriculum" on 17-10-2022 organized by KLDA, KCT.

Dr. B. N. Sreeharan, Assistant Professor – II, participated in a workshop on "Writing an Outstanding Research Article and Project Proposal" on 06-10-2022 organized by KCT.



Dr. V. R. Muruganatham, Associate Professor, and **Mr. P. D. Devan**, Assistant Professor – II, interacted with NACC expert member Dr. Ramakrishna Malkapuram, Dean IQAC & Professor in the Department of Mechanical Engineering, VIGNAN's Foundation for Science, Guntur, about Revised NAAC Accreditation Process on 12-10-2022.



INDUSTRIAL VISITS



An industrial visit has been arranged to III-year students to Sakthi Auto Components Private Limited, Pallagoundanpalayam on 29-10-2022.

Dr. V. R. Muruganatham, Associate Professor, **Dr. S. Thirumurugaveerakumar**, Associate Professor, **Mr. S. Sivakumar**, Assistant Professor - II, accompanied the Industrial visit.



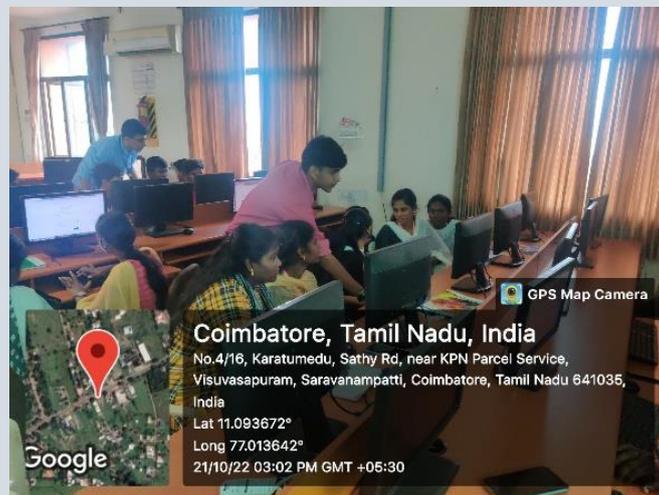
An Industrial visit to Benchmark Tea Factory, Doddabetta, Ooty was arranged on 01-10-2022 for 3rd year students. **Dr. S. Balasubramanian**, Associate Professor, accompanied the students.



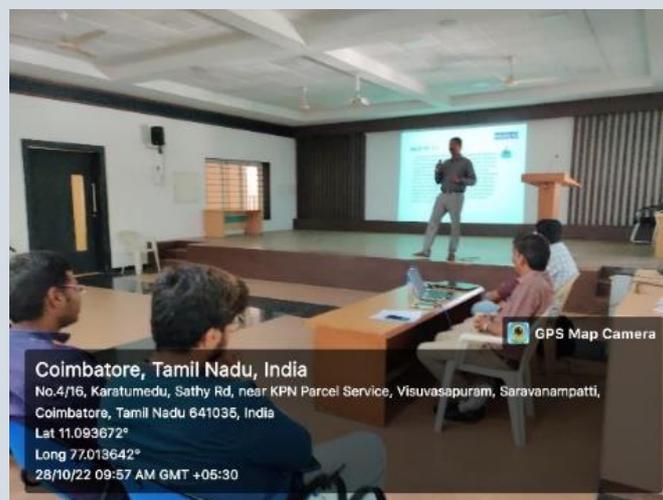
SNAPSHOTS



Seminar on “Advanced Technology for Younger Minds - Rapid Prototype”



Training on "Internet of Things (IoT)"



Guest Lecture on "Digital Manufacturing”



Industrial Visit "M/s. Sakthi Auto Components"



Department Faculty Team with NACC expert member **Dr. Ramakrishna Malkapuram**, Dean IQAC



Industrial Visit "M/s. Benchmark Tea Factory"

STUDENT PARTICIPATIONS

Mr. Vaseekaran S L – (20BME120) of Mechanical Engineering, Third Year, C Section, attended a national level event named "What the Hack!" organized by Manipal University Jaipur from 09/09/2022 to 11/09/2022.

Mr. Gowshick G – (20BME034) of the Mechanical Engineering A section of the third year attended a national-level event named "Asatha Povathu Yaaru" and "Mime" organized by the National Institute of Technology, Trichy, from 30/09/2022 to 02/10/2022.

Mr. Gowshick G – (20BME034) of Third Year Mechanical Engineering A Section and **Mr. Gokulakrishnan M** – (21BME024) of Second Year Mechanical Engineering B Section have attended a regional level event named "Pep Talk - ADZAP" organized by the ECE Department of KCT from 13/10/2022 to 14/10/2022.

Mr. Akshay Kanna B– (21BME008) of Second Year Mechanical Engineering, B Section, attended a regional level workshop named "Fusion 360" organized by fleschool from 23/09/2022 to 26/09/2022.

Mr. Akash Velanganni D – (20BME008) of Third year Mechanical Engineering A section attended a National level event named as "Paper Dressing" organized by FESTEMBER, NIT, Trichy from 30/09/2022 to 02/10/2022 and also attended a National level event named as "Tag Team Art" organized by Pondicherry Institute of Medical sciences from 27/10/2022 to 28/10/2022.

STUDENT PUBLICATIONS

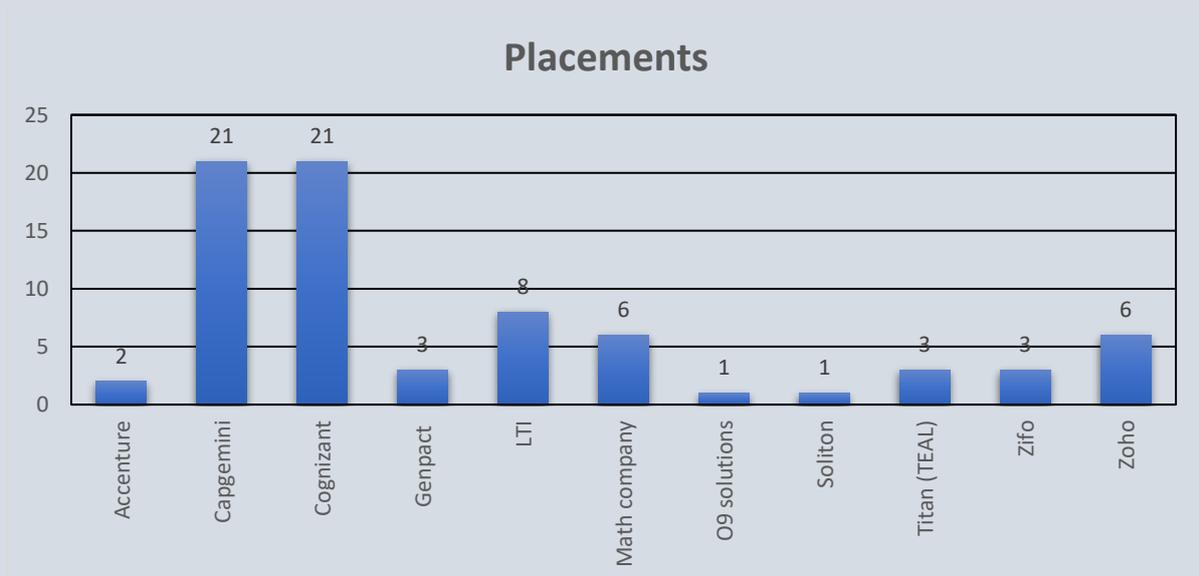
Mr. Prabhakaran P, Mr. Dinesh S, Mr. Akilesh M, along with **Dr. Vinayagamoorthi M A**, their faculty guide published their paper titled "Design and fabrication of multiple press tools for sheet metal operation" in the International Research Journal of Engineering and Technology (IRJET), Volume: 09 Issue: 09, Pg. No. 1251-1258.

PLACEMENTS

Placement Summary

Name of the Company	Nos. Placed
Accenture	2
Capgemini	21
Cognizant	21
Genpact	3
LTI	8
Math company	6
O9 solutions	1
Soliton	1
Titan (TEAL)	3
Zifo	3
Zoho	6
No. of placements	75

No. of students placed: 49



Placed Students List

Roll No.	Candidate Full Name	Highest Salary (LPA)	Company 1	Company 2	Company 3
19BME050	Jaswanth kumar.G	10.18	O9 solutions		
19BME088	AMMAR HUSAIN M F	8	Soliton		
19BME095	ANANTH. S	6.3	Genpact		
19BME045	Sabarishkumar. R. K	5.75	Capgemini	Zifo	Cognizant
19BME087	Abishek S P	5.75	Capgemini		
19BME153	Barathraj P	5.75	Capgemini		
19BME226	NALAN .M	5.75	Capgemini	Math company	Cognizant
19BME058	KAMALESH S	5.6	Zoho		
19BME006	Manav R Samant	5	Capgemini	Math company	
19BME007	GEORGE JOHN PANICKER	5	Math company		
19BME008	Lalith H N	5	Titan (TEAL)		
19BME027	MOHAMED RISWAN U	5	Math company		
19BME031	Kamalesh.S	5	Titan (TEAL)	Capgemini	Cognizant
19BME069	ASWIN BAALAJE R	5	Math company	Cognizant	
19BME079	Jana Krishnan.T	5	Math company	Cognizant	
19BME103	BHUVANESH.D	5	Capgemini	LTI	
19BME229	Prabhakaran P	5	Titan (TEAL)		
19BME034	OBLI KARTHI M	4.75	Capgemini	Accenture	LTI
19BME035	NAVANEETHAN M	4.75	Zifo		
19BME076	SHYAM S B	4.75	Capgemini	Zifo	
19BME022	Monish R	4.5	Zoho		
19BME049	JAGATHEESWARAN S	4.5	Zoho		
19BME057	NAVEENKUMAR S N	4.5	Zoho		
19BME060	TAMIL SELVAN M	4.5	Zoho		
19BME071	CHARUNIKA.A	4.5	Accenture	Capgemini	

Roll No.	Candidate Full Name	Highest Salary (LPA)	Company 1	Company 2	Company 3
19BME110	Raja sekar H	4.5	Zoho		
19BME013	KISHORE KRISNA S	4.25	Capgemini	Cognizant	
19BME098	YOGESHKUMAR S	4.25	Capgemini		
19BME100	SUVANRAJ R	4.25	Capgemini	Cognizant	
19BME102	VIGNESHRAJ S	4.25	Capgemini	Cognizant	
19BME108	HARSHAVARDHAN K	4.25	Cognizant	Capgemini	
19BME111	VETTRIVEL S	4.25	Capgemini	Cognizant	LTI
19BME114	MANIMARAN B	4.25	Capgemini		
19BME118	ABDUL ANAS S	4.25	Capgemini		
19BME150	GOPALAKRISHNAN V	4.25	Capgemini		
19BME210	BARATH KUMAR S	4.25	Capgemini	Genpact	Cognizant
19BME219	Jayabalu S	4.25	Capgemini		
19BME003	Ashokkumar .C	4	Cognizant		
19BME037	Sanjay s	4	Cognizant	Genpact	
19BME046	ROSHAN LOUIE.R	4	Cognizant		
19BME066	Thiruchitrambalam M	4	Cognizant	LTI	
19BME077	Harshavarthan K S	4	Cognizant	LTI	
19BME092	HRITHIKARUNKUMAR M	4	LTI		
19BME126	KAVI ARASU L	4	Cognizant		
19BME133	ROHITH P	4	LTI		
19BME136	KISSAN U	4	Cognizant		
19BME137	MANIBHARATHI R	4	Cognizant		
19BME139	Anbarasu K	4	Cognizant	LTI	
19BME233	RAJ KUMAR R	4	Cognizant		

Congratulations

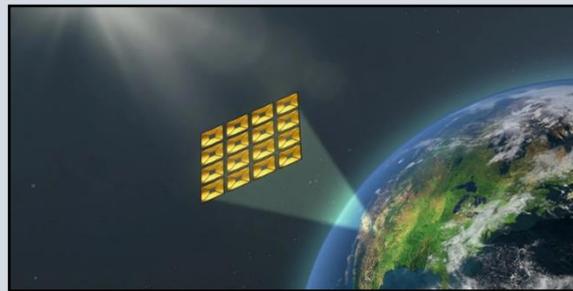
CLEAN ENERGY FROM SPACE



Mr. Nithin Karthik S
20BME081
3rd year mechanical - B

Collecting solar energy from space and using it on Earth was considered science fiction. Several researchers from the California Institute of Technology, through the Space-based Solar Power Project, are working on deploying groups of modular spacecraft that convert solar energy to electric energy and pass it wirelessly to places wherever needed. This technology can be used in places where electricity is not available.

"This is an extraordinary and unprecedented project," says Harry Atwater, an SSPP researcher and Otis Booth Leadership Chair of Caltech's Division of Engineering and Applied Science. "It exemplifies the boldness and ambition needed to address one of the most significant challenges of our time: providing clean and affordable energy to the world."



Atwater, a Howard Hughes Professor of Applied Physics and Materials Science, leads the team of three researchers. The other two researchers are Ali Hajimiri, Bren Professor of Electrical Engineering and co-director of SSPP, and Sergio Pellegrino, Joyce and Kent Kresa Professor of Aerospace and Civil Engineering, co-director of SSPP, and a senior research scientist at the Jet Propulsion Laboratory (JPL).



(Left to right) Professors Sergio Pellegrino, Harry Atwater, and Ali Hajimiri. Credit: Steve Babuljak for Caltech

Every professor has a team. Team 1, led by Atwater, is designing materials that convert light into electricity (ultralight, high-efficiency photovoltaics) that function in space and are compatible with a transmission system and an integrated power conversion system.

Team 2, led by Hajimiri, is developing a technology to convert direct current power to radio frequency power, which must be low cost and light weight. The professor says that the process is safe, and if it malfunctions or is damaged, the system will automatically shut down.



The third team, led by Pellegrino, is inventing an ultralight, foldable, and ultrathin space structure to hold the photovoltaics and the components to convert and transmit the radio frequency power to the desired location.

The researchers plan to do all this on a 4 x 4 inch tile that weighs less than 0.0028 kg. Thousands of tiles are combined and made into a flying system like a satellite that gathers light when opened. Its size will be around 9.06496 square kilometers.

This project is about to reach a major milestone as the prototypes will be launched into space in December 2022.

TVS RONIN



Mr. Nithesh S V
20BME080
3rd year Mechanical - B

Introduction:

TVS Motor Company is an Indian multinational company that manufactures motorcycles and is headquartered in Chennai, Tamil Nadu, India. It is the third largest company in terms of generating revenues of about Rs 20,000 crore per year. Currently, they have launched their new motorcycle, named "Ronin 225."



The TVS Ronin 225 is the motorcycle that was launched on July 6, 2022, by TVS Motors. It is a 225 CC engine, which is a powerful single-cylinder, 4-stroke, petrol engine that is oil-cooled. It produces a maximum power of 20.4 PS at 7750 rpm and has a maximum torque of 19.93 Nm at 3750 rpm. It has a manual 5-speed transmission. The instrument cluster is fully packed with digital. It has the speedometer, tachometer, odometer, and other basics. At the front, it gets differently structured LED headlights with a T-shaped LED DRL and small LED blinkers.

It is structured as a race type bike, which has a 41 mm USD front suspension and the rear gets a mono shock absorber that is 7-step adjusted. The front and rear get disc brakes with an ABS system, and both wheels are alloy. The front tyre measures 110/70 R17, whereas the rear tyre is 130/70 R17. Overall, the alloy design looks pretty good. The entire structure of the vehicle feels good because of its aggressive appearance. It has only self-started; the kicker is absent.

The fuel tank capacity is 14 liters, and the mileage is claimed to be around 40 kpl. Currently, it is available in six color variants: Lightning black, Stargaze black, Galactic grey, Delta blue, Magma red, and Dawn orange. This bike's pricing ranges from Rs. 1.49 lakhs and goes up to Rs. 1.69 lakhs..



MERCEDES-BENZ EQS 580 4MATIC



Mr. Prasath D M
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3rd year mechanical - B

Introduction:

The Mercedes-Benz EQS 580 4Matic is the most awaited car in the Indian automobile industry. It is the first all-electric Mercedes to be assembled in India, the first EQS to be assembled outside



Germany. The company's first born-electric luxury sedan. Built from a clean sheet of paper, with no space set aside for an engine, gearbox, fuel tank, or even a traditional radiator, this is the first Mercedes to move drastically away from the template set by the 1902 Mercedes Simplex.

DESIGN:



The EQS is built on Mercedes' born-electric EVA2 architecture. Designed to be as aerodynamically efficient as possible with a monovolume shape, with its short, tucked-in bonnet, low-slung roof, and tapering rear, it looks more like a CLS than a three-box S-Class. All the investment in aerodynamics has paid off because the EQS has a record-

breaking drag coefficient of 0.20 Cd, the best of any car in production. The grille with the central star is carried over from other EQ cars, but here you get high-tech anti-dazzle headlights that get 1.3 million pixels per headlamp. As can be seen from the profile, the car is extremely long and built on a substantial wheelbase.

INTERIOR TECH:

While many of the MBUX features are common among higher-end Mercs, features that stand out are the 3D maps, navigation prompts overlaid on video of the road ahead, and Merc's zero layer mode that displays new data or information in small windows or tabs; it works a treat.



Other neat features include exterior mirrors that adjust if you stare at them hard. No, seriously; face and voice recognition for the driver, which some Bollywood stars are likely to disable, an automatic passenger screen that dims if the driver looks at it (and they work superbly), multiple

gesture controls, including some to turn reading lights on, fun games like Tetris a la Tesla, an improved "Hey Mercedes" voice prompt you tend to use more and more, and swiping LED warning lights that indicate if you have the traffic coming towards you as you are about to open a door.

PERFORMANCE:

The e-motors are also capable of giving a high torque. In Comfort, driving along in this mode feels like you have a hulking, big V8 (the engine used in the G-series Mercedes cars) under your right foot with the mute button engaged. Sport mode gives you food for the hungry car guy. It's here that the EQS feels quite different from a regular Mercedes. Flat out, the performance of a car this heavy is impressive. It will sprint from 0 to 100 kph in 4.3 seconds, and, 'spacey' EV-like 'exhaust' note adds the power of a powerful engine to it. But it lasts for only a short distance. It's better to revel in the silence of the cabin.



BATTERY:

The batteries used are the record-breaking 107.8 kWh battery pack that can uniquely be made by using pouch type or cylindrical batteries. Weighing in at 708 kg, the battery gives the EQS a lab-tested range of 857 km under ARAI test conditions. When it comes to powering the EQS, this version gets a pair of permanent magnet synchronous motors, one over each axle that put out a combined 523 hp and 855 Nm. The kerb weight stands at 2.6 tons, and a lot of metal, rubber, leather, and batteries to move.



JAWA 42 BOBBER



Mr. Nikil R
20BME233
3rd year Mechanical - B

Introduction:

After a long wait, Jawa has launched its new model of cruiser, the Jawa 42 Bobber, in India. It comes in a single variant with three color options, with the top variant's price starting at Rs. 2,09,187. It is powered by a 334 cc BS6 engine, which develops 30.2 bhp and a torque of 32.74 Nm. With both front and rear disc brakes, the Jawa 42 Bobber comes with an anti-lock braking system.



FEATURES:

It comes with a 334-cc, single-cylinder, liquid-cooled engine and a 6-speed transmission. It produces a maximum output of 30.2 bhp and 32.74 Nm of torque.



It comprises a round headlight with chrome mask, a flat handlebar, bar-end mirrors, a tear-drop-shaped fuel tank, a two-step adjustable rider-only saddle, and twin-sided chopped-style exhaust canisters. The fuel tank features knee recesses with tank pads, while the fenders and side panels feature a gloss black finish.

Some interesting features include full-LED lighting in the digital instrument cluster, a Continental dual-channel ABS system . and switch gear. and so is the USB charging setup. It comprises telescopic front forks and a rear mainshock to handle suspension for smooth and comfortable riding The braking includes single disc brakes on both wheels.

The Jawa 42 Bobber claimed mileage of 30 kpl and has four valves per cylinder, a single cylinder wet multi disc clutch, a fuel injection system, floating type calipers, and spoke wheels for both the front and back wheels with a 17 inch front wheel and an 18-inch back wheel.

The overall performance of this cruiser is excellent. It has a smooth ride quality, , convenient for daily usage , long rides great comfort and precise handling .

The Jawa 42 series rivals the likes of the Royal Enfield Meteor 350, the Honda CB350, and the Benelli Imperiale 400.





KUMARAGURU
college of technology

COIMBATORE – 641 049

Department of Mechanical Engineering

INSTITUTE VISION:

The vision of the college is to become a technical university of International Standards through continuous improvement.

INSTITUTE MISSION:

Kumaraguru College of Technology (KCT) is committed to providing quality Education and Training in Engineering and Technology to prepare students for life and work equipping them to contribute to the technological, economic, and social development of India. The College pursues excellence in providing training to develop a sense of professional responsibility, social and cultural awareness and set students on the path to leadership.

DEPARTMENT VISION:

To emerge as a centre, that imparts quality higher education through the programme in the field of Mechanical Engineering and to meet the changing needs of the society.

DEPARTMENT MISSION:

The department involves in sustained curricular and co-curricular activities with competent faculty through teaching and research that generates technically capable Mechanical Engineering professionals to serve the society with delight and gratification.

B. E. MECHANICAL ENGINEERING

PROGRAM EDUCATIONAL OUTCOMES (PEO's):

- PEO 1 :** Graduates will take up career in manufacturing and design related disciplines.
- PEO 2 :** Graduates will be involved in the execution of Mechanical Engineering projects.
- PEO 3 :** Graduates will take up educational programme in mastering Mechanical sciences and management studies.

PROGRAM OUTCOMES (PO's):

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

2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **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.
4. **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.
5. **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.
6. **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.
7. **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.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **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.
11. **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.
12. **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 (PSO's):

1. Apply the fundamentals of science and mathematics to solve complex problems in the field of design and thermal sciences.
2. Apply the concepts of production planning and industrial engineering techniques in the field of manufacturing engineering.

M. E. INDUSTRIAL ENGINEERING

PROGRAM EDUCATIONAL OBJECTIVES (PEO's):

- PEO 1 :** Graduates will be mid to higher level management / engineering professionals with responsibilities in engineering management, data analysis and business operations.
- PEO 2 :** Graduates will be engineering professionals, and technology leaders who would manage such functions as plant engineering, production, supply chain and quality management.
- PEO3 :** Graduates would function as educators or researchers in academic institutions.

PROGRAM OUTCOMES (PO's):

- P01 :** An ability to independently carry out research /investigation and development work to solve practical problems.
- P02 :** An ability to write and present a substantial technical report/document.
- P03 :** Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.
- P04 :** Apply knowledge and competencies in manufacturing, analytics, supply chain, quality and engineering management.
- P05 :** Apply principles of industrial engineering to solve problems in industry.
- P06 :** An ability to work as part of interdisciplinary teams, communicate effectively, model and design engineering systems optimally.

PROGRAM SPECIFIC OUTCOMES (PSO's):

- PSO1 :** Graduates will be able to apply the engineering management and data management concepts in industrial engineering areas.
- PSO2 :** Graduates will be able to apply industrial engineering skills and knowledge to effectively manage the functions of production and supply chain management.