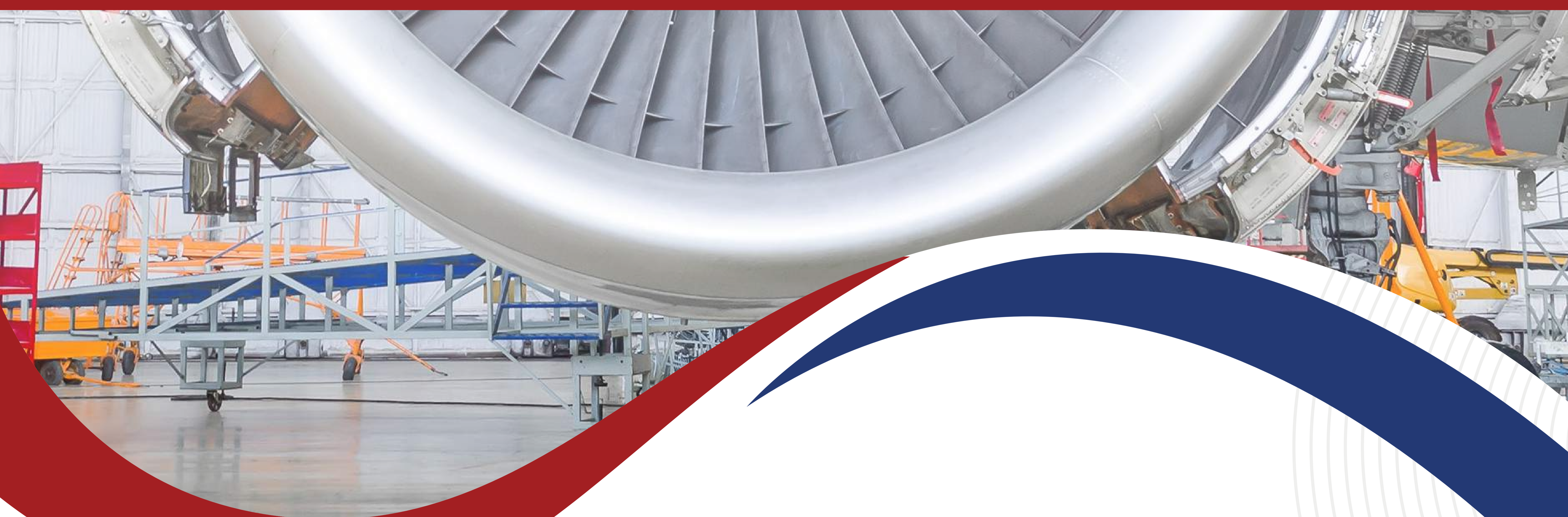




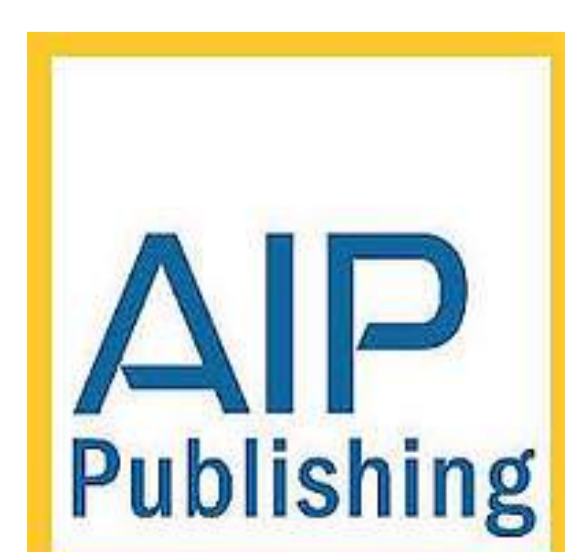
**Vel Tech**  
Rangarajan Dr. Sagunthala  
R&D Institute of Science and Technology  
(Deemed to be University Estd. u/s 3 of UGC Act, 1956)

**5<sup>th</sup> INTERNATIONAL CONFERENCE  
ON  
INNOVATIVE DESIGN, ANALYSIS & DEVELOPMENT  
PRACTICES IN AEROSPACE & AUTOMOTIVE ENGINEERING  
(I - DAD 22)**

**24, 25 & 26<sup>th</sup> FEB 2022**



Organized by  
**School of Mechanical & Construction**  
And  
**Office of Research & Development**



Indexed in



**ELSEVIER**  
Scopus

Clarivate  
**Web of Science™**



## **PREAMBLE OF THE CONFERENCE**

---

The Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi, Chennai, Tamilnadu, India is poised to organize the 5<sup>th</sup> International Conference on Innovative Design, Analysis & Development Practices in Aerospace and Automotive Engineering (I-DAD'22) dedicated to bringing together a significant number of diverse scholarly events for presentation within the program.

Scientists invent the existing world while engineers create a new world. For the engineers to be creative, they need to develop new ideas and concepts. These ideas & concepts are to be validated through Innovative Design, Analysis & Development Practices. Keeping in view aforesaid facts the title of conference is chosen as “International Conference on Innovative Design, Analysis & Development Practices in Aerospace and Automotive Engineering (I-DAD'22)”.

The economic growth of a nation largely depends upon the development of new technologies and products that suits to ever changing demands of consumer. The engineers need to cope with the tremendous pressure created by ever changing consumer requirement on the Industry. Engineers need to enhance their creative skills to meet out the challenges being faced by Industry. The conference focuses on the role of engineers in development affordable technologies and concepts to fulfill the consumer requirement. It is important for the engineers to lookout for research and development opportunities.

I-DAD'22 aims to bring together leading academic scientists, researchers & research scholars to exchange and share their experiences and research results on all aspects of Engineering. It also provides a premier interdisciplinary platform for researchers, practitioners and educators to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted in the fields of Engineering.

## ABOUT VEL TECH

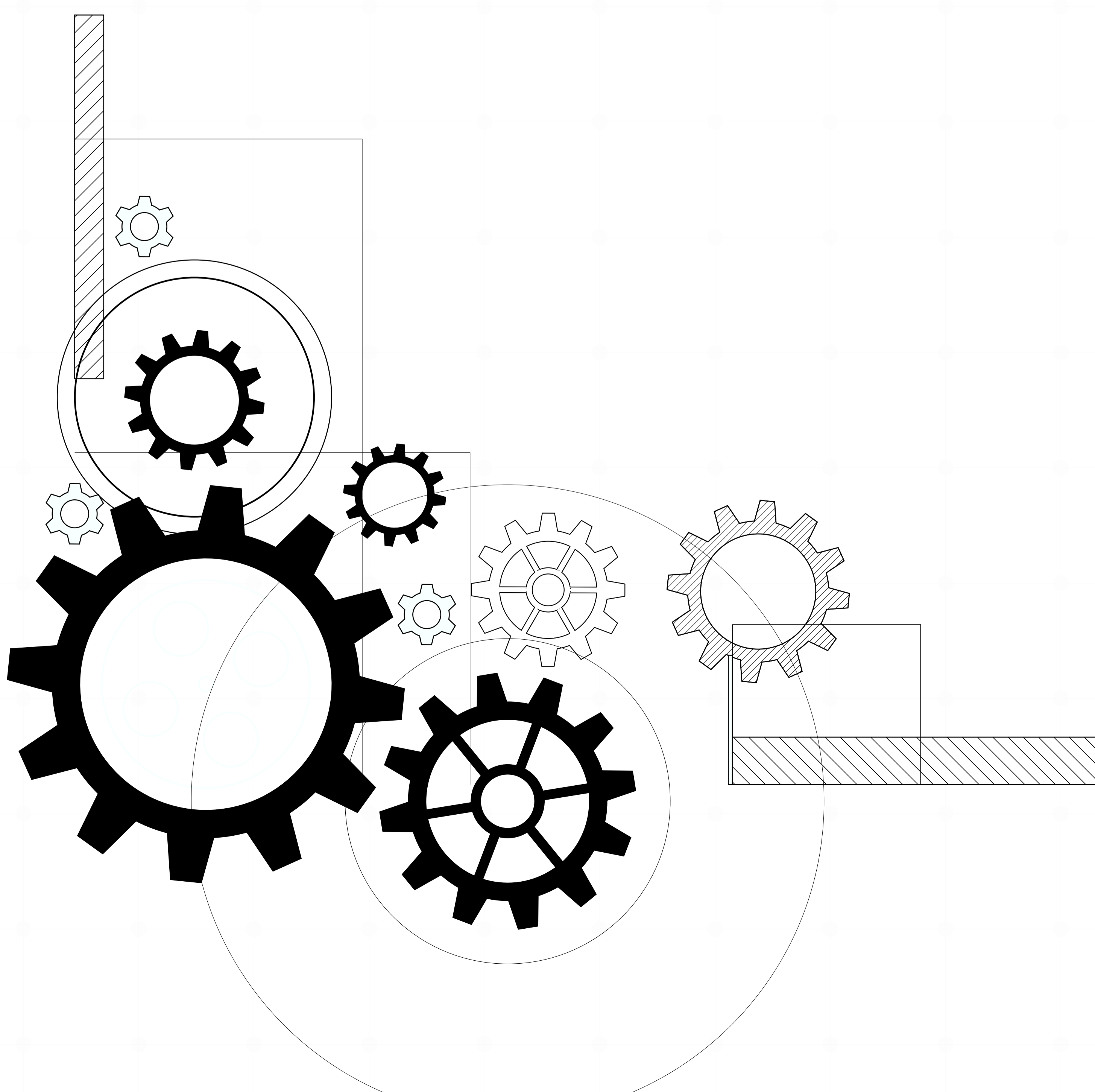
Vel Tech is well-known for its renowned educational practices, which has been recognized and endowed with several awards. The founders of the Institution, Col. Prof. Vel. Dr. R. Rangarajan Chancellor & Founder President and Dr. Sagunthala Rangarajan Foundress President believes in

Education for All despite their financial means which will promote & uplift the society. In accord to their vision, Vel Tech Mahatma Gandhi Scholarship scheme was started and has supported students since the inception. Vel Tech has bestowed 9500 scholarships worth approximately Rs. 35 Crores until 2019.



# **WE ARE PASSIONATE. DOERS IN INNOVATIVE ENGINEERING EDUCATION**

Global Alliances of Vel Tech has working International Relations with more than 390 Institution across 32 countries and has entered in the Memorandum of Understanding (MoU) with 160 Institutions for various Academic and Research exchange activities. Students, Faculty members, and Researchers get the collaborative platform for Academic projects, explore leading best practices and Research work with International Universities. In Times Higher Education World University Rankings 2022, the Institution was ranked 301-350 band among Universities in the world. The Ministry of Human Resources Department (MHRD), Government of India under National Institutional Ranking Framework (NIRF) for 2021, 93rd rank among Engineering Institutions and standing in row of top 100 in the last five years. It is the first member of Conceive Design Implement Operate (CDIO) initiative from India. Vel Tech believes that there are no boundaries in the pursuit of knowledge. Through these strategic alliances with International Universities, the standard of education at Vel Tech would be on par with the best in the world. For more details visit our website



# SCHOOL OF MECHANICAL AND CONSTRUCTION

The School of Mechanical & Construction comprises the Department of Mechanical Engineering (ME), Aeronautical Engineering (AE), Automobile Engineering (Auto) and Civil Engineering (CE). It offers UG, PG and Ph.D Programs in all departments. The School concentrates on educating its students in all aspects of Mechanical and Construction Engineering including Machinery, Automation, Manufacturing, Building Construction services, Computer-aided design, etc required for understanding the fundamentals of their domain. The School of Mechanical & Construction programmes prepares the students to be solution seekers and contribute to the varied range of Industries and markets.

The Department started in the year 2001, and produces graduates, who can meet the rapidly changing needs of the mechanical core industry which demands the new skills. It is the South India's first deemed to be University to get accredited by NBA TIER - I accreditation for B.Tech Mechanical Engineering Program. It has an ambience and specialized laboratories like Automotive Engine Test Facility supported by ARAI, Pune, High Speed Gas turbine bearing test facility Supported by DRDO, Advanced Materials lab supported by Rane Valves, E-waste management facility by DST, Govt of India and Composite Research lab for New material research supported by DST.

The Student in the department gets the opportunity to involve them in high-end research work to build skills beyond curriculum. In addition to classes, the department organizes regular Lectures by Industry Experts, international faculty from USA, Germany and Taiwan and also arranges industrial visits.



Research and development efforts of the School are supported by Government Supported research Organizations like ARAI, DRDO, DST and Industry partners like Wabco, Rane Group and Volkswagen etc., Students of the School consistently participate and win awards in International Events. Students & faculty work on cutting edge projects in MBDA missile system, ISRO, Ashok Leyland, Bosh etc.,

## **THE PRIME FOCUS IS TO**

- Impart progressive and Quality learning techniques to constitute the new wave in Mechanical & Construction Engineering.
- Encourages Research and projects that contribute to active learning & constitutes strongly toward practical learning concepts.
- Leverage International collaborations & Industry Integration to deliver global exposure.

## **PRECEDED CONFERENCES**

Vel Tech is continuously organizing International Conference on Design and Analysis of Aerospace and Automobile Engineering, (IDAD) once in every two years. This IDAD'22 is 5th conference in this series. Further Department of Mechanical Engineering is organizing National Conference on Design, Materials, Cryogenics and Constructions (NCDMC) in every year since 2014 and also organized one international conference in this version ICDMC19.

## CONFERENCE SCOPE

Ever growing diverse needs of people necessitate innovative thinking for engineering intelligent things & applications. It is essential to possess interdisciplinary knowledge for engineering intelligent things & applications. The IDAD'22 would provide scope for sharing advanced knowledge in Design and Analysis of Aerospace and Automobile Engineering encompassing interdisciplinary areas from Mechanical, Automobile, Aeronautical & Civil Engineering. Further, it would foster networking of researchers across the globe for initiating collaborative research & its continuance.

## CONFERENCE OBJECTIVES

### **The primary objectives of IDAD'22 are to:**

- Provide a platform for international researchers to share their new findings / innovative applications in Design & Analysis of Aerospace and Automobile Engineering with peers.
- Facilitate networking among leading academicians, scientists, researchers, engineers and industry professionals for fostering collaborative research.





## CONFERENCE OUTCOMES

### **The outcomes of IDAD'22 are:**

- Enhanced understanding of scope for researching in the areas of one's interest
- Revelation of contemporary thinking on future research
- Constructive suggestions for overcoming snags in research ideas
- Nomination of the papers presented in the conference for inclusion in SCl and Scopus Indexed Journals.

## **CALL FOR PAPER SUBMISSION**

The papers submitted would be peer reviewed & such of those papers recommended by the re-viewers are scheduled for presentation. However, it is mandatory that atleast one of the authors would register for presenting the paper. The papers presented would be published in the conference proceedings, in print as well as electronic form. On the recommendation of the reviewers / session chairs, the papers presented would be nominated for inclusion in SCl and Scopus indexed journals subject to the satisfaction of the Rules & Regulations.

# TOPICS

Innovations and Challenges in Aerospace	Innovations and Challenges in Automobile	Innovations and Challenges in Design	Innovations and Challenges in Materials & Manufacturing Engineering	Innovations and Challenges in Thermal Engineering	Innovations and Challenges in Civil & Infrastructure Engineering
Aerodynamics	Intelligent Hybrid & Electric Vehicles	Applied Mechanics	Green Manufacturing	Computational Fluid Dynamics	Structural Health Monitoring
Aeroacoustics	Automotive design & vehicle electronics	Bio-mechanics	Material Characterization	Carbon-dioxide Capture and Sequestration	Composite Structures
Avionics	Automotive safety	Computer aided engineering design	Additive Manufacturing	Refrigeration and Heat Transfer	Advancements in Construction Techniques and Materials
Air Transport Systems	NVH in automobiles	Finite element analysis	Polymers and Composites	Phase Change Materials	Application of Remote Sensing and GIS
Aerothermodynamics	Powertrain controls	Industrial Tribology	Lean Systems	Green Energy and Green	Ground improvement Techniques
Aircraft Design	Energy Storage & Fuel Cells	Machine Design	Digital Manufacturing	Thermal and Fluid Flow	Advanced Surveying
Satellite Communications	Battery Materials & Battery Management	Robotics and Automation	Micro - Nano electro mechanical	Energy and Thermofluids	Prevention of Ground Water Contamination
Unmanned Aerial Systems	Electric Vehicle Architecture	Dynamics and Vibration	Industry 4.0	Fuels and Combustion	Solid & Hazardous Waste Management
Space Propulsion	Vehicle body dynamics	Modeling of Manufacturing Systems	Industrial Engineering & optimization	Turbomachinery	Advanced Water and Wastewater Treatment

# GUIDELINES FOR AUTHORS

All submissions will be peer reviewed by experts in the field based on originality, significance, quality and clarity. All contributions must be original, should not have been published elsewhere and should not be intended to be published elsewhere during the review period.

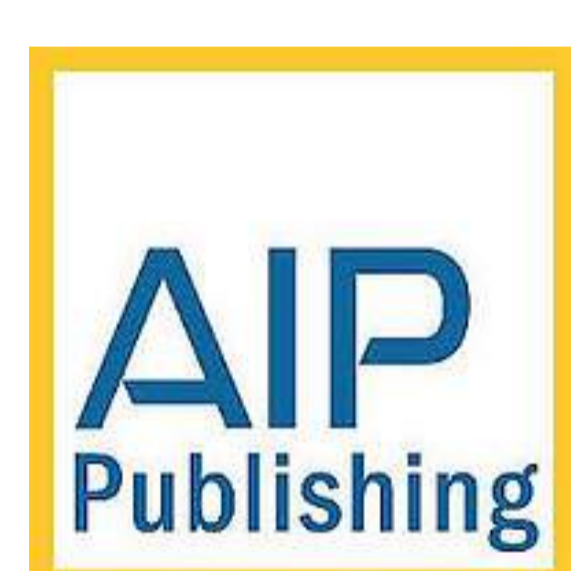
At least one author must register & present his/her accepted manuscript in the conference. Author should choose the journal of publication during the submission of manuscript. Registration fee includes proceedings, conference kit, lunch, tea & certificate. Conference kit will be provided to registered authors & participants only. Manuscript format can be downloaded from conference website.

## PUBLICATIONS: CONFERENCE PROCEEDINGS AND JOURNALS

The papers accepted for oral presentation would be published in the proceedings of conference in electronic form with ISBN, provided that at least one of authors of the paper should be registered for attending the conference by paying the prescribed registration fee. Further, the extended version of the presented papers would be recommended for publication in reputed Journal (indexed by SCI/Scopus) with the consent of authors in below listed journals.

- AIP Conference Proceedings (WoS / SCOPUS)

*\*Extra processing fee based on author consent.*



Indexed in



ELSEVIER  
Scopus

Clarivate  
Web of Science™

## POLICY ON PLAGIARISM

Authors are requested to kindly refrain from plagiarism in any form. Authors should submit their original & unpublished research work not under consideration for publication elsewhere. Manuscript found to be plagiarized during any stage of review shall be rejected. As per copyright transfer agreement, authors as deemed to be individually & collectively responsible for the content of manuscripts published by them. Hence, it is the responsibility of each author to strive for the highest ethical standards with respect to plagiarism.

# ABOUT CHENNAI



Chennai also known by its former name Madras is the capital of the Indian state of Tamil Nadu. Located on the Coromandel Coast off the Bay of Bengal, it is one of the biggest cultural, economic and educational centers of India. According to the Indian census, it is the sixth-largest city and fourth-most populous urban agglomeration in India. The city together with the adjoining regions constitute the Chennai Metropolitan Area, which is the 36<sup>th</sup> largest urban area by population in the world.

## CONFERENCE REGISTRATION FEE (VIRTUAL MODE)

Online Registration link: <https://www.veltech.edu.in/idad2022/reg/>

CATEGORY	REGISTRATION FEE (EARLY BIRD)	REGISTRATION FEE
Foreign Delegates	USD50*	USD100*
Industry, R&D and Academicians	INR1000*	INR1500*
Research Scholars / PG Students /UG Students	INR500*	INR1000*
Co Author / Participants	INR250	

“\*Publication fee additional for publication in AIP Conference Proceedings(Scopus Indexed)”

**All the accepted manuscripts have an opportunity to be published in SCI / Scopus Indexed Journal.**

For more information, log on to the Online Registration link:

<https://www.veltech.edu.in/idad2022/reg/>

## ADVISORY COMMITTEE

*Dr. Adam Khan. M, KLU, Krishnancoil*

*Prof. Dr. Amit Singh, MNIT Jaipur*

*Prof. Dr. Anbumalar.V, VCET, Madurai*

*Prof. Dr. Angappa Gunasekaran, California State University, USA*

*Prof. Dr. Arockia Rajan. A, IIT, Madras*

*Prof. Dr. M. Arul Prakasa Jothi, Vel Tech, Chennai*

*Dr. K. Balaji, VIT, Vellore*

*Dr. Basil Kuriachen, NIT Calicut*

*Prof. Dr. S. Christopher, Vel Tech, Chennai*

*Prof. Dr. David Lin, National Tainan University, Taiwan*

*Prof. Dr. D. Deenadayalan, SMEC, Chennai*

*Dr. Dheepa Srinivasan, IIT, Ropar*

*Dr. P. Ganeshkumar, Yungnam University, Korea*

*Prof. Dr. Ing Ali C Benim, Dusseldorf University, Germany*

*Dr. Jai Chandar. P, Vel Tech, Chennai*

*Dr. Jeyakrishna Kandasasmy, VIT, Vellore*

*Prof. Dr. Kanmanisubbu, IIT, Palakkad*

*Dr. P. Karthik, Concordia University, Canada*

*Dr. Mahadevan. R, India Pistons, Chennai*

*Prof. Dr. T. Maridurai, Saveetha University, Chennai*

*Prof. Dr. Muthukumaran, NIT Trichy*

*Dr. S. Padmanabhan, Vel Tech*

*Dr. S. Jaichandar, Vel Tech*

*Dr. Vinothkumar, Vel Tech*

*Dr. J. V. Sai Prasanna Kumar*

*Dr. R. Narensankar*

*Prof. Dr. Nachiappan. S, University of Sussex, UK*

*Dr. Nageswara Rao. P, TAFE Limited, Chennai*

*Prof. Dr. P. N. Rao, IOWA University, USA*

*Dr. R. Prabhakaran, Yungnam University, Korea*

*Dr. Praveen. A. S., Vel Tech, Chennai*

*Dr. Praveen. G, VIT, Vellore*

*Dr. Rajan. T. P. D., Principal Scientist, CSIR, Trivandrum*

*Dr. Rathnasuriyan. C, Vel Tech, Chennai*

*Dr. Sachin Salunkhe, Vel Tech, Chennai*

*Dr. Sakthivadivel, VIT, Vellore*

*Dr. Shunmuga Sundaram. M, CMR Tech, Hyderabad*

*Dr. Selvakumar. G, SSN College of Engineering, Chennai*

*Dr. Sivakumar. P, Mahsa University, Malaysia*

*Prof. Dr. Soundarapandian. S, IIT, Madras*

*Dr. Srinivasan. A., Senior Scientist, CSIR, Trivandrum*

*Dr. Sundararajan. T, Wheels India Limited*

*Prof. Dr. Uthayakumar. P, KLU, Krishnancoil*

*Dr. Uthayaprakash. J, Vel Tech, Chennai*

*Dr. V. S. Vigneshwaran, Saveetha University, Chennai*

*Dr. S. Vinoth Kumar, Shandong University, China*

*Prof. Dr. Vipul. L. Tanna, IPR, Gujarat*

*Prof. Dr. Yuh-Chung Hu, National Ilan University, Taiwan*

*Dr. N. Yuvaraj, Vel Tech, Chennai*

## COORDINATORS

1. G Boopathy

2. N. Murugunachiappan

3. N Sridhar

# IMPORTANT DATES

1. Last Date of submission for abstract Extended : 05.01.2022
2. Date of notifying abstract acceptance : 10.01.2022
3. Last Date for submission of full-length paper : 19.01.2022
4. Date of notifying paper acceptance : 24.01.2022
5. Submission of camera ready paper : 29.01.2022
6. Payment of registration fee (Early Bird) : 19.01.2022
7. Last date for registration fee : 14.02.2022

# KEYNOTE SPEAKERS



Dr. Manoj Gupta,  
Professor in Mechanical Engineering,  
National University of Singapore,  
Singapore



Prof. K. Gireesan  
Scientific Officer F, Material science  
division  
IGCAR, Kalpakkam



Prof. Lung-Jieh Yang,  
Tamkang University, Taiwan .



Prof. Chiranjith Sarkar,  
IIT Patna.



Prof. Ing Ali C Benim  
Professor  
Dusseldorf University, Germany



Dr Basil Kuriachen  
Asso. Professor  
NIT, Calicut



Prof. Smagul Zh. Karazhanov,  
Senior scientist,  
IFE, Norway.



Prof. B. Shahul Hameed Khan,  
Assistant professor,  
IIIT&D, Kanchipuram



Prof. Jephias Gwamuri  
Professor  
NUST, Zimbabwe



Prof. M. Mathirajan  
Chief Research Scientist  
IISC, Bangalore



Prof. S. Nachiappan,  
University of Sussex, UK.



Prof. A. Arockiarajan,  
Professor,  
IIT Madras.



Dr Deepa Srinivasan,  
Chief Engineer,  
Pratt & Whitney R&D Center  
United Technologies Corp. India Pvt.  
Ltd.



Prof. S. S. Mahapatra  
Professor (HAG)  
NIT, Rourkela

# ORGANIZING COMMITTEE

## CHIEF PATRONS

*Col. Prof. Vel Dr. R. Rangarajan*  
Founder Chancellor & President  
*Dr. Sagunthala Rangarajan*  
Foundress President

## CO-PATRONS

*Prof. Dr. E. Kannan*  
Registrar  
*Prof. Dr. A. T. Ravichandran*  
Dean Academics  
*Prof. Dr. E. Balasubramanian*  
Dean Research & Development  
*Prof. Dr. S. Irudayaraj*  
Dean School of Mechanical and  
Construction

## CONVENORS

*Dr. P. Anand*  
Associate Professor, Dept of Mech  
*Dr. M. Meikandan*  
Associate Professor, Dept of Mech

## PATRONS

*Prof. Dr. S. Salivahnan*  
Vice Chancellor

## CONFERENCE CHAIR

*Dr. N. Lenin*  
Professor & Head, Dept of Mech

## CONFERENCE CO-CHAIRS

*Dr. Amala Justus Selvam*  
Professor & Head, Dept of Auto

*Dr. R. Jaganraj*  
Professor & Head, Dept of Aero

*Dr. A. Geetha Selvarani*  
Professor & Head, Dept of Civil

# FOR FURTHER INFORMATION CONTACT CONVENORS – IDAD'22,

Dr. P.Anand & Dr. M. Meikandan,  
Associate Professor in Mechanical Engineering  
Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology  
No.42,Avadi - Vel Tech Road,Avadi, Chennai - 62, Tamil Nadu, India

 [idad@veltech.edu.in](mailto:idad@veltech.edu.in)

 [www.veltech.edu.in/idad2022](http://www.veltech.edu.in/idad2022)

 +91 986 561 4107, +91 999 478 0999

## KNOWLEDGE PARTNERS



# VENUE

## Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science & Technology

*No. 42, Avadi - Vel Tech Road, Avadi, Chennai - 62,  
Tamil nadu, India*

*Call Us: +91 986 561 4107, +91 999 478 0999*

*E-Mail Us: [idad@veltech.edu.in](mailto:idad@veltech.edu.in)*



*View Us*

[www.veltech.edu.in](http://www.veltech.edu.in)



*Like Us*

[www.facebook.com/veltech](http://www.facebook.com/veltech)



*Connect with us*

[www.linkedin.com/in/veltech](http://www.linkedin.com/in/veltech)



*Follow Us*

*@veltech*