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**INTERNATIONAL CONFERENCE ON  
COMPUTATIONAL AND EXPERIMENTAL  
METHODS IN MECHANICAL ENGINEERING**

**(UNDER THE BANNER OF IEEE-UP SECTION)**



**ICCEMME-17**

**G. L. BAJAJ INSTITUTE OF TECHNOLOGY &  
MANAGEMENT, GREATER NOIDA**

**8<sup>th</sup> & 9<sup>th</sup> December, 2017**

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## *Preface*

Conference World and AR Research Publication is fast growing group of academicians in Engineering, Sciences and Management. AR Research Publication is also known for fast reply and zero error work. Conference world has organized a various conferences at renowned places.

We are very pleased to introduce the proceedings of the *International Conference on Computational & Experimental Methods in Mechanical Engineering*. As for previous conferences, the theme was the link between the information provided by conference world and the use made of this information in assessing structural integrity. These were the issues addressed by the papers presented at the conference. The level of interest in the subject matter of the conference was maintained from previous events.

Total 165 papers were received for the conference and 100 papers were shortlisted by the committee.

Papers were well represented in the conference to arouse a high level of international interest. Three countries were represented in the final program from Europe, Africa and Asia. In the event, the conference was highly successful. The presented papers maintained the high promise suggested by the written abstracts and the program was chaired in a professional and efficient way by the session chairmen who were selected for their international standing in the subject. The number of delegates was also highly gratifying, showing the high level of international interest in the subject. This is also indicated by the large number of countries, 04 represented by the delegates. This Proceeding provides the permanent record of what was presented. They indicate the state of development at the time of writing of all aspects of this important topic and will be invaluable to all workers in the field for that reason. Finally, it is appropriate that we record our thanks to our fellow members of the Technical Advisory Committee for encouraging participation from those areas. We are also indebted to those who served as chairmen, without their support, the conference could not have been the success that it was. We also acknowledge the authors themselves, without whose expert input there would have been no conference. Their efforts made a great contribution to its success.

Proceeding of the conference has been published with **ISBN: 978-93-86171-85-6**

## **Welcome letter**

We feel immense pleasure while inviting you to ICCEMME-2017 which is scheduled to be held in December 2017 at GLBITM, Greater Noida, India. The event is being organized by Department of Mechanical Engineering, G. L. Bajaj Institute of Technology and Management (GLBITM), Greater Noida. Vision of this conference is to promote excellence in Technical knowledge and innovations in mechanical engineering. The conference aims to provide a forum to researchers around the globe to explore and discuss on various aspects of mechanical engineering. The conference consists of various sessions and includes keynote and parallel sessions. Each session will be addressed by outstanding experts who will highlight recent advances in various facets of mechanical engineering. It will also offer budding researchers an opportunity to present their work in front of eminent experts of their fields. Attending ICCEMME-2017 at GLBITM, Greater Noida means you will also experience New Delhi and Agra, beautiful cities renowned for their historical importance and inspiring diversities. The distance between Greater Noida and New Delhi is 42 kilometer and 185 kilometer between Greater Noida and Agra. The city is emerging as one of the smartest cities of India and NCR's most modern urban and fastest developing center. You'll find a friendly population, world-famous gastronomy, and an atmosphere of celebration. ICCEMME-2017 will be an exceptional conference for sharing the latest academic insights as well as experiencing the unique culture of National Capital Region (NCR), India. We thank you for your participation and look forward to seeing you in Greater Noida, India.

## **About the Institute**

G.L. Bajaj Institute of Technology & Management is the 6th Institute established under the prestigious banner of R. K. Group.

The institute is approved by All India Council for Technical Education (AICTE), Ministry of HRD, Government of India and Affiliated to Dr. A. P. J. Abdul Kalam Technical University (Formerly UPTU Lucknow).

As a part of commitment towards quality technical education and excellence, G. L. Bajaj has embarked on promoting National and International Conferences, Seminars and Symposium, which culminates into major interface with industry which play a comprehensive role in the overall grooming of our students.

The previous conferences were supported by DST, DRDO, ISRO, CSIR, BSNL and GBTU through sponsorship and with technical support of reputed journals such as IEEE, Delhi.

## **Department of Mechanical Engineering**

The Department of Mechanical Engineering is committed to provide students with sound mechanical engineering education, enhance the understanding and application of mechanical engineering principles, for techno-economic development of the country, and improve the quality of life of our citizens through teaching, research and outreach programs.

The mission is further to provide an environment where students have extensive avenues to excel, improve technical exposure and develop personality and then get placed in PSUs, MNCs and reputed companies with good future so that students have global presence, in various roles and responsibilities. With excellent teaching and learning environment it provides a platform to instill high motivation, moral values and leadership in its students.

## **Objective of Conference**

The best quality of radical persons is their ability to think out of the box. With their innovations, creativity and researches they make this planet a better world to live. The birth of International Conference on Computational and Experimental Methods in Mechanical Engineering (ICCEMME-2017) happened as the product of out of the box thinkers. ICCEMME-2017 is an international forum to exchange research results and address issues in all aspects of Mechanical Engineering. The idea of this conference is for the academicians, scientists, scholars, engineers and students from universities all around the world and the industry to present ongoing research activities. The conference, obviously, will also foster research relations between industry and academia. A special provision for discussion among various disciplines involved in Mechanical Engineering is being arranged to present the concept of computational and experimental methods in mechanical engineering as accomplished field of research.

## **Resource persons**

Eminent speakers have been invited from foreign universities, IITs, NITs, R&D centers and industries from India and abroad to share their experiences and research work in the field of Mechanical Engineering.

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Aerodynamics and Fluid Mechanics

Internal Combustion Engines and Thermal Systems

Heating and Ventilation Air Conditioning Systems

Turbo machinery

Combustion

Heat and Mass Transfer

Gas Turbines

Gas Dynamics

Automobile Engineering

Computational Fluid Dynamics

Alternate Fuels

Renewable Sources of Energy

Micro fluidics

Energy Management and Audit

### **Track 02 (Machine Design)**

Design for Manufacturing and Assembly

Design of Mechanical Systems

Micro and Nano-mechanics

Solid Mechanics and Structural Mechanics

Automation and Robotics

Noise and Vibration

Product Design and Development

Rapid Manufacturing Technologies and Prototyping

Modeling, Simulation and Optimization

CAD / CAE

Mechanisms

Condition Monitoring

Tribology

Finite Element Methods

Fatigue Fracture and Failure Analysis

Analysis and Design of Mechanical Systems

Rotor Dynamics

Robust Design Vehicle Dynamics

### **Track 03 (Materials & Manufacturing)**

Conventional Machining

Un-conventional Machining

Flexible Manufacturing Systems

Micro and Nano Manufacturing

Modeling and Simulation of Manufacturing Systems

Advances in Welding/Casting/Forming Processes

Non-destructive Testing

Composite Materials

Powder Metallurgy

Nano Materials Processing

Materials Characterization

### **Track 04 (Industrial Engineering)**

Manufacturing Management

Supply Chain Management

Entrepreneurship Development

Design and Analysis of Experiments

Reliability Engineering

Product Life cycle Management

Lean Manufacturing

Quality Engineering

Soft Computing Techniques

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