Proceedings of the 3rd National Conference on
Modern Trends in
Mechanical Engineering

7th & 8th April 2014

Organized by

Department of Mechanical Engineering
(NBA Accredited)
Sree Narayana Gurukulam
College of Engineering
Kadayiruppu, Kolenchery, Kerala-682311
An ISO 9001: 2008 Certified Institution
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About the Institution

Sree Narayana Gurukulam College of Engineering is a new age, multi-disciplinary institute offering a portfolio of courses in Engineering, Computer Applications and Management streams. Ensuring the right blend of academic rigor and business focus of the industry, the institution has transformed into a trend setter in professional education since 2002. SNGCE prides itself in creating a congenial academic environment, conducive to learning on the strength of most modern infrastructural facilities provided by the management and a highly motivated and competent team of faculty constantly endeavoring to mould world-class professionals of the future. The college is affiliated to Mahatma Gandhi University, Kottayam, Kerala and approved by the All India Council for Technical Education, New Delhi. SNGCE is an ISO 9001:2008 certified Institute and five departments of which are accredited by NBA. The college offers B. Tech and M.Tech courses in Civil, Mechanical, Electrical and Electronics, Electronics and Communication, Computer Science and Engineering disciplines, apart from PG courses such as MBA and MCA. The institution was initiated by Sree Narayana Gurukulam Trust, a registered charitable trust formed by a group of visionaries, with an aim to uphold the ideals of Sree Narayana Guru (1855-1928), the great sage and social reformer who is considered as the leader of Indian Renaissance movement. The Institution is situated at Kadayiruppu, near Kolenchery town and is in the district of Ernakulam.
About the Department

Since its inception in the year 2004, The Department of Mechanical Engineering has earned many laurels from the engineering community. The department is accredited with NBA and offers B Tech. in Mechanical Engineering and M Tech. in Machine Design with focus on understanding of key concepts including mechanics, kinematics, design, production and thermodynamics. It is equipped with laboratories which are one of the best in its class in Kerala which includes latest CNC machining center and 3D printer. Batches that have completed the course are placed at key positions in core manufacturing sectors and other Industries. 32 members of faculty and 12 non-teaching staff actively participate in the teaching-learning process. In addition to academics, department is giving importance to co-curricular activities through EDC (Entrepreneurship development club), Robotics club, ISHRAE-students’ chapter (Indian Society for Heating, Refrigerating and Air Conditioning Engineers) and RDTEC (Rural development Technology). The department is also focusing attention on R&D activities, joining hands with Industry.
Preface

The National Conference on Modern Trends in Mechanical Engineering (MTiME-14) aims at providing a common platform for professionals, academicians, researchers and industrialists together to share their knowledge and ideas for achieving focused developments and advancements in the emerging fields of mechanical engineering. The conference will help participants to expand their knowledge horizons through active participation and discussions. The Broad themes of the conference include Advanced Materials and Manufacturing Methods, Green Energy Production, Advancement in Thermal Engineering, Application of Nanotechnology in Mechanical Engineering, Advanced Technology for Process/Quality Control and Digital Simulation Technique in Machine Design.
Executive Director’s Message

I am very heartened to know that the department of Mechanical Engineering is hosting a relevant, inspiring and enlightening event MTiME-14 (Modern Trends in Mechanical Engineering). I learn that many technocrats, educationalists and academic personnel from various levels are involved in this National Conference to exchange their experiences in the respective domain. This technical programme brings together academic luminaries.

A conference of this magnitude and importance requires the dedication and effort of remarkably talented individuals. I take this opportunity to congratulate the members of the department for having devoted their time to ensure that the preparations for the smooth conduct of the programme are done properly. I wish the organizing committee, Department of Mechanical Engineering, the very best in their endeavor and my best wishes to all the participants and delegates.

Wish the conference a grand success.

Mr.M.A. Raju
I am extremely happy to know that the Mechanical Engineering Department is organizing a national conference on Modern Trends in Mechanical Engineering (MTiME-14). This conference would definitely be an inspiration and motivation for the students and staff to enhance their knowledge in Mechanical Engineering field. Researchers from various streams of mechanical engineering will be sharing their research work in the conference. Moreover technical talks by well known resource persons and interaction with students will give them knowledge about the present trends in the engineering field.

I congratulate all the members of Mechanical Engineering department for organizing this conference and I wish all the success for their future endeavors. May this conference give them the experience and motivation to conduct an International conference.

Prof.(Dr.)C.E. Krishnan
Principal’s Message

I recognize that national conference MTiME-14 (Modern Trends in Mechanical Engineering) is the culmination of enormous collective hard work by the department of Mechanical Engineering. The various sessions of the event are skillfully crafted to enhance and develop the technical knowledge of the students and the participants. The purpose of this conference is to bring together researchers, experts from industry, academia, and other interested organizations to meet, exchange information’s and ideas about the developments in the field of Mechanical Engineering.

I would like to express my appreciation to the coordinators, for their effort, in organizing the conference which is of National relevance. I hope this conference MTiME-14 will be enjoyable, memorable and productive for the participants and looking forward to further technological events that results from your networking and discussions.

I wish good luck for the conference.

Prof.(Dr.)Saji C.B
HOD’S Message

National Conferences are being organized by the department of Mechanical engineering in serial and MTiME-14 is the conference of the year 2014. It is an occasion when everybody in the department moves in harmony to put in their intellectual & physical energy for the culmination in to a successful conference, counted in National level. The response from academia, industry and research organizations is indeed encouraging. Year by year the ‘MTiME’ is growing in dimension through number of participants, papers being received, subjects deliberated and the depth of probing into technology. The chief guest inaugurating the conference is a renowned engineer & scientist in the field of space technology, Padma Vibhushan Dr.G. Madhavan Nair, Former Chairman, ISRO. The event is slated to be conducted in 2 days, 7th & 8th of April 2014.

With the ample support from management and concerted efforts by the team behind MTiME-14, I hope the conference will be a success and I wish all the best.

Prof.K.R. Rajan
Conference Committee

Patrons:
Mr. K.K. Karnan (President, SNG Trust)
Adv. T.A. Vijayan (Secretary, SNG Trust)
Mr. M.A. Raju (Executive Director, SNGCE)
Prof. (Dr.) C.E. Krishnan (Director, SNGCE)

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(Principal, MACE, Kothamangalam)
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(Professor, TKMCE, Kollam)
Dr. M.S. Jayamohan
(HOD, Dept. of ME, RIT, Kottayam)

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Convener:
Prof. K.R. Rajan (HOD, Dept. of ME)

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Prof. (Dr.) K.R. Sivadas
(Professor, Dept. of ME)

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Assoc. Prof. Arun Mohan

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Assoc. Prof. Jayashree K.S.
Assoc. Prof. Binu PP.
Assoc. Prof. Rajesh R.
Assoc. Prof. Vinod Kumar E.
Assoc. Prof. Jiju P. P.
Assoc. Prof. Tilson Thomas
Asst. Prof. Alex S.
Asst. Prof. Rajesh Ramakrishnan
Asst. Prof. Padmakumar P.
Asst. Prof. Nithish Babu K. V.
### PROGRAMME SCHEDULE

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<td>9.00 am-10.00 am</td>
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| 9.30 am-10.45 am | **Inaugural Function**  
Chief Guest: Dr. G. Madhavan Nair, Former Chairman, ISRO |                                        |                                        |
| 10.40 am-12.30 pm | **Interaction of Chief Guest**  
Dr. G. Madhavan Nair with Students |                                        |                                        |
| 12.30 pm-1.30 pm | Lunch Break |                                        |                                        |
| 1.30 pm – 2.30 pm | **Keynote Address:**  
Dr. K. Prabhakaran Nair, NIT, Calicut |                                        |                                        |
| 2.30 pm-4.00 pm | **Session I - Chaired by**  
Dr. Brijesh Paul, MA College of Engineering, Kothamangalam | **Session II - Chaired by**  
Dr. Manoj Kumar P, SCMS, Karukutty |                                        |
| **08.04.2014, Tuesday** | 9.00 am-10.30 am | **Session III- Technical Talk**  
Dr. N R Manoj, Scientist- F, NPOL, Thrikkakkara |                                        |
| 10.30 am-10.45 am | Tea Break |                                        |                                        |
| 11.00 am-12.30 pm | **Session IV-Chaired by**  
Dr. Jeoju M Issac, MA College of Engineering, Kothamangalam | **Session V- Chaired by**  
Dr. P V Shouri, MEC, Thrikkakkara |                                        |
| 12.30 pm-1.30 pm | Lunch Break |                                        |                                        |
| 1.30 pm-3.00 pm | **Session VI- Chaired by**  
Dr. Pramod, VJCET, Vazhakkulam |                                        |                                        |
| 3.00 pm to 3.15 pm | Tea Break |                                        |                                        |
| 3.15 pm-4.20 pm | Valedictory Function |                                        |                                        |
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