

SPEAKERS



Dr. Avinash Dharmadhikari : General Manager (Quality Systems and Reliability), Tata Motors, Pune. His responsibilities include assessment of reliability and durability of new automobiles at design and development stage. Prior to joining TML, he was a Professor at Department of Statistics at Pune University, Pune. He received Ph.D. degrees from IIT Bombay. As a visiting Professor, he has taught at Michigan state University, USA, Wright State University, USA and Waterloo University, Canada. He is a member of ISO-TC 69 committee on six sigma. The committee is responsible to develop statistical documents for user community.



Dr. M. D. Jaybhaye : Associate Professor at COE, Pune. He has completed Masters in Manufacturing Engineering and Automation and Ph.D from SRTM University, Nanded. He has Published around 11 National and 18 International papers in various conferences. He is Life Member of Indian society for Technical Education, Operation Research Society of India, Tribology Society of India. He is PhD Guide in Production Engineering for Savitribai Phule Pune University.



Dr. R. Ramanujam : Associate Professor at VIT University, Vellore. He has completed Ph.D. in Mechanical Engineering from Anna University with specialization in Manufacturing Engineering. Over all 14+ years of experience in teaching. He has published more than 20 conference papers and 30+ Scopus indexed Journal papers. Expertise in the field of Industrial Engineering.



Mr. Arun Kothari : Currently Working leading Quality, Reliability and service functions at Cummins Emission Solution. He is a certified Six Sigma Master Black Belt and has been associated with Six Sigma for 10years. He is M. Tech in Mechanical Engineering from Indian Institute of Technology, Kanpur and has 13years of Professional Experience



Mr. Bimal Kumar Kesh : Sr. Statistician & Training Manager, working in Qsutra, Bangalore to help professionals to appreciate and harness the power of statistics in using data to solve problems. He is a Minitab Certified Trainer which he received after a rigorous training and guidance by Minitab Inc. USA. He is an experienced professional & trainer for statistical analysis required for Quality Improvement methodology like Six Sigma, Lean Six Sigma, CMMI and QbD etc. He has delivered lectures in various Seminars, Conventions.



Mr. Mahesh Masurkar : Chief Manager-Six Sigma, currently working with John Deere India, Pune. Graduation in Mechanical Engineering from COEP, Pune, Masters in Mechanical Engineering from-IITSc, Bangalore, EPGDBM - SIBM, Pune Certified Master Black Belt (MBB) & Project Management Professional (PMP)



Mr. Rahul Pathare : He has completed ME in Design Engineering from Sinhgad College of Engineering, Pune University and MBA in Operations Management from Symbiosis College. He is Certified Six Sigma GBPL-Green Belt Project Leader for Vehicle Design, Certified APOQ (Advanced Product Quality Planning). He has experience over 15 years at Dow Automotive (R&D), ARAI, Mahindra & Mahindra Ltd (R&D) & Infinite Solutions. He has 11 Research Publications at International (SAE) & National Conferences.



Dr. K. C. Vora : Sr. Dy. Director & Head of Academy at ARAI, Pune. He has his Ph.D. from IIT-Bombay. He has a vast industrial & academic experience of 30+ years. He has specialized in the field of Automotive Education, Technology Development, Knowledge Management, Engine R&D and Emission Controls. He was instrumental in starting ARAI Academy, which conducts Graduate, Post Graduate and Doctoral Courses in Automotive Engineering. He is the Advisor in various activities of SAEINDIA, under which he conducts series of students' activities like AWIM & BAJA SAEINDIA. He is Chairman of technical committee of FISITA 2018.



N. A. Sakle : He has completed his BE and ME in Mechanical engineering. He has worked as a senior lecturer in Engineering College in Pune University for 8 years and presently working as Manager in ARAI from last 8 years. He was instrumental in establishment of ARAI Academy at Kothrud initially and presently is responsible for Training Centre at ARAI-Forging Industry Division at Chakan.

5 Day Proficiency Improvement Programme on Design & Analysis of Experiments at ARAI-Forging Industry Division

from 17th to 21st April 2017 (Monday to Friday)

REGISTRATION FORM

Name, Designation, Dept., Office No., Mobile No. & Email ID :	
Delegate - 1	
Delegate - 2	
Delegate - 3	
Company Name & Address	
Co-ordinator's Name, Designation, Contact No., Email ID	
100% Advance Payment Details	

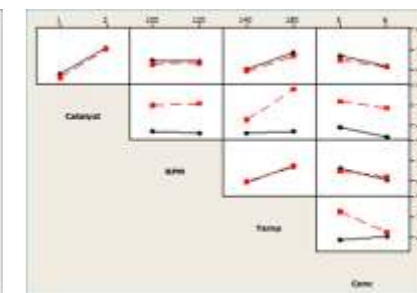
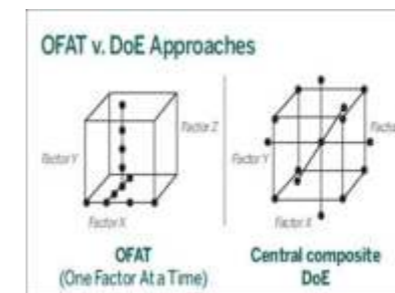
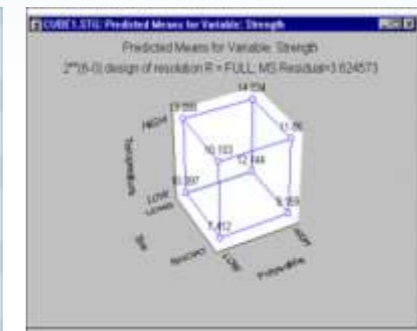
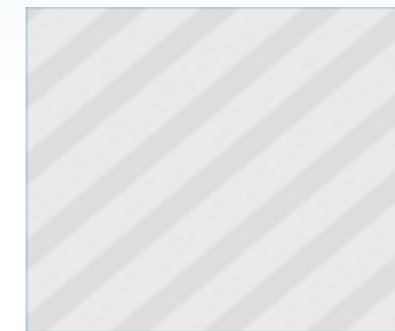
Please email/post duly filled-in registration form on or before 14th April 2017 to :

Dr. K. C. Vora, Sr. Dy. Director & Head, ARAI Academy
 ARAI-Forging Industry Division, Chakan, B-16/1, MIDC Chakan, Taluka Khed, Dist Pune 410 501 (INDIA),
 Contact No : (02135) 396 660, 61 & 66, 25 9595; 25 9042 / 44
 Email : nadeshmukh.fid@araiindia.com; sakle.fid@araiindia.com; training.fid@araiindia.com



5 Day Proficiency Improvement Programme on

Design & Analysis of Experiments



2015



2011

at
ARAI-Forging Industry Division,
 (The Automotive Research Association of India)
 Plot No.B-16/1, MIDC, Chakan, Taluka: Khed, Dist: Pune 410 501.

From
17th to 21st April 2017 (Monday to Friday)

Jointly Organized by



BACKGROUND & OBJECTIVES

Design of Experiments (DOE) has been one of the most powerful tools to evaluate and quantify contribution of various input factors on output or response and widely used in variety of experimental situations. In Statistically Designed Experiments (SDE), the idea is to minimize cost and efforts of the experimentation but still obtain maximum information about a process.

DOE technique is widely accepted when more than one input factor is suspected of influencing an output. DOE can also be used to confirm suspected input/output relationships and to develop a predictive equation suitable for performing what-if analysis. DOE allows multiple input factors to be manipulated, determining their effect on a desired output (response). By manipulating multiple inputs at the same time, DOE can identify important interactions that may be missed when experimenting with one factor at a time. All possible combinations (full factorial) or only a portion of the possible combinations (fractional factorial) can be investigated. A strategically planned and executed experiment may provide a great deal of information about the effect on a response variable due to one or more factors. Key concepts in creating a designed experiment include blocking, randomization and replication. A well-performed experiment may provide answers to questions such as:

- What are the key factors in a process?
- At what settings would the process deliver acceptable performance?
- What are the key, main and interaction effects in the process?
- What settings would bring about less variation in the output?

INTENDED LEARNING OUTCOMES

On the completion of program, Participant will be able to implement techniques related to their work and will be able to:

- Understand the basic principles of DOE: Full and Fractional Factorial Designs.
- Calculate main effects and interactions among factors.
- Identify optimum parameter settings of processes.
- Plan and execute designed experiments to optimize processes/designs.
- Demonstrate independent learning ability that is necessary for seeking professional development.
- Become self-disciplined, self-motivated, demonstrating personal responsibility in the pursuit of studies and professional practice.

- Tea Break @ 11.00 to 11.15 Hrs & 15.30-15.45 Hrs
- Lunch @ 13.00-14.00 Hrs

Note : ARAI reserves the right to change the dates, schedule, contents, speakers, venue etc. for the programme without any notice.

PROGRAMME

Day One

- 08.30 - Registration
- 09.00 - Inauguration & Welcome Address
- 09.15 - Quiz
- 09.30 - Overview of Basic Statistical Concepts
- 11.15 - Introduction to Design of Experiments
- 13.00 - Lunch Break
- 14.00 - Guideline, Terminology, ANOVA for Designing Experiments
- 15.45 - Taguchi Methods
- 17.00 - Conclusion

Day Two

- 09.00 - Single Factor Experiments
- 13.00 - Lunch Break
- 14.00 - Robust Design Process
- 15.45 - Orthogonal Experiments
- 17.00 - Conclusion

Day Three

- 09.00 - Two Factor Factorial Design
- 11.15 - Full Factorial Design
- 13.00 - Lunch Break
- 14.00 - Fractional Replication and Factors
- 15.45 - Case Study: Automotive Domain Problem using Design of Experimentation methodology
- 17.00 - Conclusion

Day Four

- 09.00 - DoE at Ease using Software- Minitab 17
- 13.00 - Lunch Break
- 14.00 - DoE at Ease using Software- Minitab 17
- 17.00 - Conclusion

Day Five

- 09.00 - Case Study: A system Approach to Lower Emission
- 11.15 - Case Study: Automotive Structural & Crash Safety Design, using design of experiment approach
- 13.00 - Lunch Break
- 14.00 - Case Study: Automotive Structural & Crash Safety Design, using design of experiment approach
- 15.45 - Written Test
- 16.15 - Certificate Distribution & Valedictory Function
- 17.00 - Conclusion

WHO SHOULD ATTEND ?

- Product / Process Design, Development & optimization
- Quality Assurance & Improvement
- Reliability testing & problem solving
- Service & Production Department
- Supplier Improvement & vendor development
- Others responsible for continuous improvement.
- Professors / Engineering Students

MODE OF PAYMENT

At Par / Multicity cheque or demand draft in favour of
The Automotive Research Association of India
 payable at Pune.

ARAI, over five decades, has provided its design and development expertise to the Indian automotive industry, focusing on the testing and evaluation of components and systems to meet national and international standards. ARAI strives to achieve international recognition in these areas. In keeping with the globalization of economy and business, ARAI continues to enlarge its scope of services to meet the requirements of automotive industries around the world. In addition to utilizing state-of-the-art technology, laboratories and highly-trained personnel, ARAI recognizes the need to develop a new generation of engineers to meet the demands of the automotive industry, not just in India but across the globe.

ARAI ACADEMY is classified into three divisions:

LEARNING CENTRE has embarked upon a programme of building up human resources by commencing educational programme (Graduate, Post graduate & Doctoral) with specialization in Automotive Engineering. It has tied up with VIT University (Vellore), Veltech University (Chennai), College of Engineering (Pune), Christ University (Bangalore), University of Alabama (USA), Tennessee Tech University (USA), Loughborough University (UK) and University of Braunschweig (Germany).

TRAINING CENTRE, In line with Post Graduate and Doctoral Programs conducted by various universities abroad, ARAI Academy has devised various Proficiency Improvement Programmes (PIPs), to be taught by ARAI, Academia & Industry Experts. PIP gives engineers, faculty and student's knowledge and technical expertise in a wide range of automotive disciplines. It helps in understanding system's view point for automotive design and manufacture, with specific skills in formulating automotive engineering solutions in terms of their function and performance, through optional modules.

REGISTRATION FEES

Category	Registration Fees (Rs.) (per participant)	Total Fees including Tax of 15% (Rs.)* (per participant)
Engineers & Professionals	25000.00	28750.00
Teaching Faculty	15000.00	17250.00
Engineering College Students	10000.00	11500.00

*Service Tax is as applicable at the time of program.

Registration fees include:

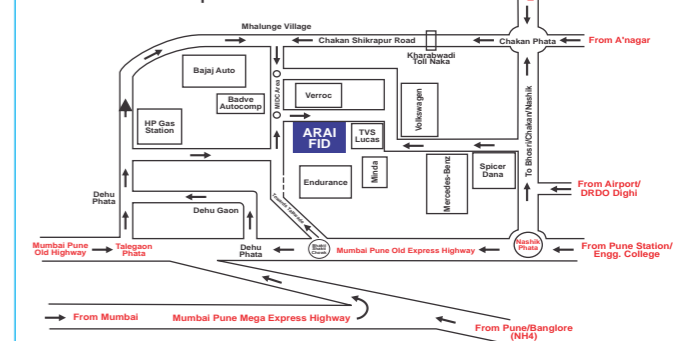
- Breakfast
- Lunch
- Delegate Kit

Based on the present system in universities, credits are proposed for each module, so that the graduate engineers can attend various modules and sum-up the credits required for Master's or Doctoral Programs. Participants also get chance to visit related laboratories of ARAI and get hands on experience. Certificates are issued on the basis of attendance & written test conducted at the end of the programme. We also conduct Training Programmes through WEBEX and Domain Training Programmes for Automotive Industry.

KNOWLEDGE CENTRE It has collection of around 23,000 books, standards, project reports, seminar/conference proceedings and around 75,000 SAE technical papers. It also has 237 eBooks. It subscribes to 40 national and international journals. It regularly publishes a monthly magazine 'Automotive Abstracts'. It also conducts literature / patent search for customer's projects.

Please visit www.araiindia.com for more information.

Direction Map :



Training Program Venue Address :
ARAI-Forging Industry Division, Chakan
 B-16/1, MIDC, Chakan, Taluka Khed, District PUNE - 410 501 (INDIA).
 Contact No : (02135) 396 660, 61 & 66 or 25 9595; 25 9042 / 44