

SPEAKERS



Mr. B. R. Galgali : Former Quality Head at Commercial Vehicle Business Unit, Tata Motors, Pune and has worked for 36 years. He has completed Graduated in Metallurgical from NVIT, Nagpur and also has ME by research. Throughout career, he worked as metallurgist and successfully handled areas like metallurgical & materials engineering - raw materials, forging, casting, failure analysis, heat treatment, surface treatments, induction hardening. The significant contribution was in steel development specifically a micro-alloyed steels for critical applications like crankshafts, connecting rods, etc. Also he has contributed in the development of HSS & AHSS for auto body light weighting. Failure analysis & steel development have been the main focus areas in his career. He is currently the chairman of ASM Pune chapter & freelance consultant.



Mr. S. G. Kulkarni : Consulting Metallurgist. Presently Working as a Director – Technical at SHRID Metals Industries and Chairman - Technical Program Committee of ASM Pune Chapter. Graduate in Metallurgy and Expert in Forging and Heat Treatment. He has over 4 decades of experience.



Mr. Udayan Pathak : Chairman- Public Relations Committee, ASM Pune Chapter and Assistant General Manager- Materials Engineering in Engineering Research Centre, Tata Motors Limited, Pune. He has completed B. E (Metallurgy) from Visvesvaraya Regional College of Engineering (Now VNIT), Member of Institution of Engineers (India) and He has 1 International & 4 National Patents to his credit. Previously worked with John Deere, DGP Hinoday, Spicer India, Bharat Forge. Expert in Material forming and Heat-Treatment, Materials Selection & Testing, Technology Strategist. He has over 25+ Years of professional experience.



Mr. Rahul Gupta : Secretary of ASM International Pune Chapter and Partner in N D Gupta Enterprises. He has completed M.E. in Metallurgy, from College of Engg, Pune. Worked in Mukand Iron & Steel and Noduron Foundry (Now Maval Foundry). Practicing Metallurgist for Steel making, Heat-Treatment, Surface Treatment, and Foundry. He has over 30 Years of experience.



Mr. Prashant Jadhav : Currently working with ECM Technologies, France (Vacuum Furnace manufacturer), he has completed BE Metallurgy from Govt. College of Engineering., Pune. Having 10 years' experience of Vacuum Heat treatment. Previously worked with Mahindra & Mahindra, Fiat India, Carraro India & Bombay Forge.



Mr. N. A. Sakle : Manager, ARAI Academy, Pune. He has done BE and ME in Mechanical Engineering. He has worked as a senior lecturer in Engineering College in Pune University for 8 years He was instrumental in establishment of ARAI Academy at Kothrud initially and presently is responsible for Learning Centre of ARAI Academy at Chakan.

3 Day Proficiency Improvement Programme on Basic and Advances in Heat Treatment

at ARAI-Forging Industry Division

from 29th to 31st August 2018 (Wednesday 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 27th August 2018 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 3966 95/ 90/ 91

Email: training.pga@araiindia.com; nadeshmukh.pga@araiindia.com; patil.pga@araiindia.com;

Please visit www.araiindia.com & academy.araiindia.com for more information.



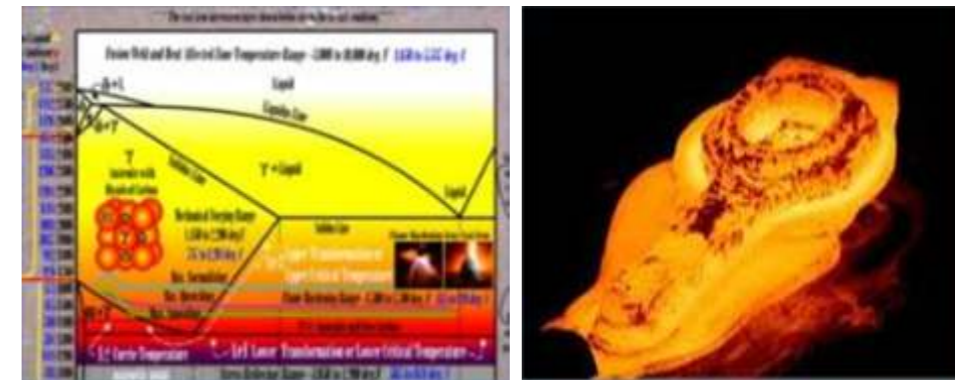
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3 Day Proficiency Improvement Programme on Basic and Advances in Heat Treatment



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 29th to 31st August 2018 (Wednesday to Friday)

Jointly Organized by



BACKGROUND & OBJECTIVES

Heat Treatment (HT) process has graduated from being an art to advanced technologies like vacuum heat treating, laser, surface hardening, plasma nitriding, etc. To remain competitive the heat treating industry must understand and adopt these techniques. This training course consists of metallurgical, technological & operational background to heat treatment process of cast & forged products. It explains HT process basics, process controls, and how structures & mechanical properties can be achieved. It also elaborates process problems & their remedies, as also quality control procedures. Faculty working in HT will brief fundamentals of steel heat treatment & metallurgical processing, atmosphere control, quenching, temperature control and type of equipment for different types of heat treating operations. Advanced concepts in thermal and thermo-chemical surface treatments, such as case hardening, and principles of thermal engineering will also be covered.

The course is designed for participants having limited metallurgical training but have basic understanding of simple chemistry and physics.

Delegates will get an understanding of:

- 1. Softening :** Reduce strength or hardness, remove residual stresses, improve toughness, restore ductility, refine grain size I.
- 2. Hardening:** Hardening of steels is done to increase the strength and wear properties.
- 3. Material Modification:** To modify properties of materials in addition to hardening and softening in a beneficial manner depending upon service condition.
- 4. Surface treatments** such as Nitriding, carburising, induction. Additionally, the program also covers practical heat treating of carbon, alloy, stainless and tool steels. Heat treatment of Non-ferrous metals will be covered.

INTENDED LEARNING OUTCOMES

On the completion of program, participants will be able to implement techniques & standard practices related to their work and will be able to:

- Understand importance & application of Iron Cementite diagram.
- Understand and describe the Time Temperature Transformation (TTT) diagram and its influence on phase transformations and microstructure.
- Understand fundamentals of four purposes for doing HT process.
- Understand the effect on mechanical properties & microstructures resulting from heat treatment initiated by thermal transformation.
- Understand the factors affecting heat treatment process.
- Understand Heat treatment of cast iron, stainless steels, and tool steels.
- Summarize the principles of Surface Modification (Casehardening).
- Explain the principles of furnace design and thermal system maintenance.
- Describe vacuum heat treatment and principles of vacuum technology.

PROGRAMME

Day One

- 09.30 - Brief overview on engineering materials Grades and Standards.
- 10.15 - Iron-Carbon Equilibrium Diagram and Basics of metallurgy Grain, Grain Size, allotropy, and different Phases
- 11.00 - Fundamentals of Heat Treatment, Types of Heat Treatment Processes
- 11.15 - Tea Break
- 12.15 - Bulk Heat Treatment: Casting and Forging
- 13.15 - Lunch Break
- 14.15 - Effects of alloying elements on Steels
- 14.45 - Hardness, Hardenability and Hardening of Steel, Factors affecting Hardening and Austenite & its transformation
- 15.30 - Tea
- 15.45 - Case hardening, induction heat treatments, Vacuum heat treating and Advances in Heat Treatments
- 16.15 - Various Microstructures and its property relations
- 17.00 - Conclusion

Day Two

- 09.00 - Heat treatment of Cast Iron
- 11.00 - Tea
- 11.15 - Heat treatment of Stainless Steels
- 12.15 - Heat treatment of Tool Steels
- 13.15 - Lunch Break
- 14.15 - Testing of Mechanical properties
- 15.30 - Tea
- 15.45 - Metallurgy Laboratory: Microstructures and Hardness Measurement
- 17.00 - Conclusion

Day Three

- 09.00 - Heat Treatment of Non-Ferrous Materials (Majorly Aluminium and Magnesium)
- 10.30 - Tea
- 10.45 - CQI 9 (AIAl - Heat Treatment System Assessment Standard) and/or Check points / Audit points for HT Process Auditing
- 11.45 - Defects in Heat Treatment process; Failures in Heat Treatment process and Products.
- 13.15 - Lunch Break
- 14.15 - Furnaces and Types used in a heat treatment process
- 15.00 - Written Test
- 15.45 - Tea Break
- 16.00 - Certificate Distribution & Valedictory Function
- 17.00 - Conclusion

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

WHO SHOULD ATTEND ?

The program will be extremely useful to users of Heat Treating Industry. This training is useful for all industry professionals, who needs to have comprehensive understanding of Heat Treatments, its working and best practices followed in it and are working in the area of:

- Users of Heat Treating Industry (OEM's or Tier1 companies)
- Heat Treaters and Shop Personnel
- Heat Treating Designers, Manager & Technicians
- Sales Professionals of HT Equipment, Material and Fuels
- Academicians, student and faculties
- Engineers / Managers working as Supervisors, Technicians, Graduate /
- Diploma Trainees & Executives, who are responsible for end product

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).

KNOWLEDGE CENTRE It has collection of around 24,600 books, standards, project reports, seminar/conference proceedings and around 75,000 SAE technical papers. It also has 450 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.

TRAINING CENTRE: In line with Post Graduate and Doctoral Programs conducted by various universities abroad, ARAI Academy has devised various Proficiency Improvement Programmes (PIPs & ePIPs), 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

REGISTRATION FEES

Category	Registration Fees (Rs.) (per participant)	Total Fees including Tax of 18% (Rs.) (per participant)
Engineers & Professionals	8,000.00	9,440.00
Teaching Faculty	6,000.00	7,080.00
Engineering College Students	4,000.00	4,720.00

Registration fees include:

- Breakfast
- Lunch
- Delegate Kit

formulating automotive engineering solutions in terms of their function and performance, through optional modules.

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.

Please visit www.araiindia.com & academy.araiindia.com for more information.

About ASM International Pune Chapter:

ASM is a society dedicated to serving the materials science and engineering profession. Through its network of 36,000 members worldwide, ASM provides authoritative information and knowledge on materials and processes, from the structural to the nano scale. As an engineering and scientific society, ASM International is led by members, guided by member needs and fuelled by member participation. ASM members share information and ideas through international conferences and expositions, seminars and local Chapter meetings, through publications like Advanced Materials & Processes and the renowned ASM Handbook series, and online through the ASM Community website. The Pune Chapter of ASM International was founded in the year 1991, which has been furthering the mission objectives through various activities. The chapter is very interactive with many societies, chapters and organizations, and also has a MOU with the ASM Detroit Chapter which is one of the oldest chapters. ASM Pune Chapter also supports two student chapters at the College of Engineering, Pune and Sinhgad Institute of Technology, Pune.

Please visit: www.asmpune.org for more information.