



INDIAN RUBBER INSTITUTE

A SHORT TERM COURSE ON

TYRE MANUFACTURING TECHNOLOGY

Upgrade and enhance your knowledge in tyre manufacturing process technology from Industry veterans.



MORE INFORMATION :



Friday & Saturday
06 May to 11 June, 2022



10.30 AM - 12.30 PM



ONLINE PROGRAM

24 HOURS CREDIT

FOR WHOM

Tyre Process Technologists
Manufacturing Technologists
Tyre Designers
Tyre Engineers
R&D Managers
Quality Engineers
Rubber Technologists
Polymer Scientists
Students
Graduate Engineer Trainees

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"You suddenly understand something you have understood all your life, but in a new way"

FACULTY PROFILE



Dr. R Mukhopadhyay, Chairman, IRI

He has more than 48 years of experience in Education, Training and Research in Rubber Science and Tyre Technology. Ph. D in Applied Chemistry from IIT Kharagpur, he started teaching in Applied Chemistry at I.I.T, KGP. He is the Director and CEO of HASETRI since its inception in 1991 and Director (R&D) of JK Tyre since 2001. He is credited with more than 180 research and Technical Papers in National & International journals and seven Patents from his research work. He guided ten scientists to their Ph. D.

He is a Fellow Member of Indian National Academy of Engineers (FNAE), The Institution of Engineers India (FIE), American Chemical Society-Rubber Division, Member Board of Directors of Rubber, Chemical & Petrochemical Skill Development Council (RCPSDC), NSDC, Govt. of India.



Dr. Samar Bandyopadhyay, Hon. Sec. General, IRI & Business Head, Pukhraj Industry

A well experienced rubber technologist with 30+ years of experience in rubber & tyre compounding, material selection and testing. With M. Tech degree in plastic and rubber technology, he did his Ph. D in 2007. After spending 22 years in tyre and rubber industry, he served as Head R&D at Pidilite Industry before moving to Pukhraj Industries as Business head. He is visiting professor in various universities and is permanent faculty member of DIRI course conducted by IRI. He is fellow member of Institute of Engineers, Lead Assessors at NABL. He has 60 Technical papers and various book chapters to his credit.



Dr. M.N. Aji, Global Manager Process Technology, HF Mixing Group, Germany

One of the well-known Mixing specialists with over 27 years of experience, he has an abundant knowledge and skill in the field of Mixing Technology of Tangential, Intermeshing, Tandem and Kneader. He is currently looking after Asian countries at HF mixing group, Germany based out of Bengaluru, INDIA. He is a PhD in Polymer/Rubber Processing and Characterizations Technique. He is a well-known speaker in the field of Mixing Technology and participated several National International Seminars and Conferences. He has also conducted several workshops in India and abroad. Faculty for Universities including Cochin University, MIT, MG University, Karunya University, ISRO, Tire industries and TRG segment's In India and Abroad. Faculty for Rubber Board India, IRMRA, AIRIA, IRI. Advisory member of ICAT (International Centre for Automotive Technology) under Govt. of India Ministry of Transport.



Muraleedharan M.K., Ex Group Manager - Business Excellence, Apollo Tyres.

He has wide exposure in process & quality management of tyre manufacturing process. He was one of the team members who developed boosting technology, a process innovation in bias tyre curing process. Worked with Apollo Tyres for 32 years in various spheres of management – Technical, Quality, manufacturing, Training & skill development. Corporate manufacturing and Business excellence. He also trained employees for DWM activities including measurement & statistical validation of process variables, identifying improvement opportunities and developing capability- stability matrices for process improvements. He was awarded Certificate of excellence by IMC-RBNQA In the year 2016 for demonstrating team leadership in the IMC-RBNQA assessment process.



B Balachandran, Head of Technology, Ralson Tyre

Balachandran B, is having versatile experience in the fields of tyre and steel cord, with a career spanning over 30 years. His core expertise is in the field of reinforcing materials and process. He is currently heading Technology, R&D and Quality in Ralson (India) Ltd. Before joining Ralson he was working with Apollo tyres in R&D as Head of Process Technology Development. He has also worked with NV Bekaert SA as Key account Manager for global tyre customers.



C Manoj Kumar, Plant Technology Head, Ceat Ltd.

C Manoj Kumar has wide exposure in tyre manufacturing process (Bias, Radial, 2W & OHT tyres, tubes, flap, bladder, and retreading materials), quality management, New Product Industrialization, Testing, Supplier audit and outsourcing activities. He is B Tech in polymer science followed by Advance Diploma in Business Management. He has worked in various tyre companies in India and abroad in senior technical position. He is also qualified for internal auditor of quality system and qualified Triz 1 expert.



Sunil Kumar Jagasia, Chairman Education Committee, IRI- Rajasthan Chapter

A licensiate in Rubber from Plastic & Rubber Institute, London, He has over 40 years of experience in tyre industry in a leading position in technology department. He has worked as technology head in leading tyre companies of India like JK Tyre, Falcon Tyre & Future Tyre. He is mastered in curing and heat engineering apart from other process areas. He has travelled extensively across the globe for RM development, machine procurement etc. He is currently full time Independent consultant for many projects within India and overseas.

" learning is a lifelong process of keeping abreast of change"

COURSE CONTENT

Module 1 Overview of tyre Industry & Manufacturing Technology at a glance

- Rubber, a versatile material
- Tyre a Hi-tech composite
- Brief introduction of tyre technology (Bias Vs. Radial, Tube Vs. Tubeless)
- Present & future trends in tyre manufacturing technology

Module 2 Understanding Raw Material... Rubber & Others

- Importance of elastomeric material in tyre industry
- Different elastomeric materials (GPR, SBR, SSBR, BR, IIR, XIIR, EPDM, Rubber Blends)
- Reinforcing fillers (carbon black, silica) & other rubber ingredients (accelerators, activators, cross linking agents, anti oxidants, processing aids, adhesion promoters) used in tyre industry.

Module 3 Compounding Technology

- Vendor Development process of raw materials
- Basic compounding approach and selection of different ingredients for meeting specific processing & performance requirements of different tyre components.
- Compounding approach for meeting the present and emerging need of tyre industry.
- Sustainability and Circular Economy in tyre industry.

Module 4 Mixing Technology

- Principal of Mixing Technology (Temperature, Energy, Heat)
- Types of Mixers (External Mixing / Internal Mixing), their components and principal of working
- Master / Final Compound, repress & Importance of good dispersion and blending
- Quality Control and Troubleshooting, effect of RAM pressure, change in speed of rotor, cooling system
- Advance Mixing Technology

Module 5 Rubber Extrusion Process... Hot & Cold

- Principal of Extrusion & rubber extrusion process
- Types of extruders- Hot, Cold, Dual, Triplex, Pentaplex etc.
- Benefits of extrusion, profile design & making, Die making, die swell
- Tread / Sidewall and other component extrusion
- Quality control and troubleshooting, effect of cooling line, skiving, booking temperature, line speed

Module 6 Reinforcement Technology, Part I – Textile

- Types of fabric , Dipping technology, explanation of components, stretch calculations
- 4 roll calendars, principal, and explanation, Quality Control & trouble shooting
- Fabric cutting technology... Low table bias cutter, high table bias cutter, Chafer / Flipper preparation

Module 7 Reinforcement Technology, Part II – Steel

- Types of Steel Wire used in tyre Industry
- Creel Room system 7 set up, quality controls, and checks
- Steel Wire Calendaring , wire cutting & Splicing technology

Module 8 Component Making

- Calendar for Squeezee and Inner Liners
- Irradiation Technology
- Bead Making system, principle, and machine explanation

Module 9 Tyre Building – Bias & Radial

- Bias Tyre – Band Building Vs. Ply method
 - OTR Building technology, Strip Winder system
- Radial Tyre
 - Two Stage vs Uni stage explanation
- Trouble Shooting, precautions and quality checks

Module 10 Curing Technology & Heat Engineering

- Vulcanization process, Press types, functions and operations, Platen vs Dome types
- Heat Engineering... Steam Curing, Hot water curing, Nitrogen Curing
- Thermocouple analysis

Module 11 Final Finish & Quality Checks

- Quality Checks... Visual Inspection
- Uniformity, Balancing, X-Ray and Shearography

Module 12 Quality Control & Assurance Plan

- Cost of quality
- Process failures, corrective, and preventive system
- Quality Controls at various processes

COURSE FEE (PER DELEGATE)

Indian (General) : INR 11,999/-
Non- Indian (General) : US\$ 199/-

Indian (Students) : INR 7,499/-
Non- Indian (Students) : US\$ 124/-

- 18% GST Extra (For Indians Only)
 - 5% Discount on nomination of 5 delegates from same organization
 - Students must be presently enrolled in full time in an accredited Institute/ university
- Course fee includes Certificate and Study Material.
 - Fee is non-refundable / Non- Adjustable, however change in nomination can be accepted

INDIAN RUBBER INSTITUTE

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Program Co-Ordinator — Vitesh Kumar Giri, Founder, CRYT Innovation (www.cryt.in)