

Air Pollution Control Techniques: Design and Development

September 11 –15, 2017

Overview

The environmental issue has become a major subject in the last few decades, affecting science and technology throughout the world due to the serious environmental impacts caused by air pollution. Air pollution control is very crucial aspect for saving the environment, human life, cleanroom activity, saving precious materials etc. Particles less than 2.5 μm in diameter ($\text{PM}_{2.5}$) are referred to as fine particles and are believed to pose the greatest health risks. Because of their small size, fine particles can lodge deeply in the lungs. Health studies have shown a significant association between exposure to fine particles and premature death. The course will encompass many aspect of air pollution control starting from vehicular emission to industrial pollution control. Removal of very small particles ($\text{PM}_{2.5}$) at a very high level of efficiency is becoming increasingly important as more stringent emission controls are introduced and are regarded as best available technology for industrial exhaust gas cleaning in many industries like power generation, incineration, chemical, steel, cement, food, pharmaceutical, metal working, aggregate, and carbon black industries. Similarly it is also important to remove gases and particulates emitted from vehicle and also to maintain appropriate ambient air quality inside. Further for clean room activities such as tissue culture and manufacturing of large scale integrated circuit, control of particles are extremely important. The course will cover various aspects of air pollution and its control, and development of system design based on specific application. This will be useful to engineers, technicians, scientists, managers, and other personnel involved in gas-solid separation in the process and other industries, - those who are involved in pollution control activity.

Objectives

This Course will be informative, and will emphasise practical aspects in designing filtration system capable to meet stringent air pollution control requirement. The objectives will be as followed;

- ◆ To understand different techniques for air pollution control in different areas (e.g., automotive, industrial, clean room etc)
- ◆ To acquire knowledge on system design and its development for effective pollution control in accordance to international norms
- ◆ Evaluation techniques for air pollution control equipment.
- ◆ To appraise with latest development
- ◆ Manufacturing and testing of filter media

Topics to be covered

- ◆ Air pollution control techniques in different areas (e.g., automotive, industrial, clean room etc)
- ◆ Industrial air filtration: Use of Mechanical separator
- ◆ Use of fabric filter, ESP and wet scrubber for controlling industrial air pollution
- ◆ Fabric filters (surface filters and deep bed filters): System design with filter media
- ◆ Electrostatic precipitators: System design using electrostatic precipitators
- ◆ Wet scrubbers: System design using wet scrubbers
- ◆ Hot gas filtration
- ◆ Raw gas conditioning for industrial air filtration
- ◆ Clean room filters
- ◆ Vehicle emissions filtration (EURO 6. Control of PM_{2.5}, PM₁₀ and NO_x. Selective catalytic reduction)
- ◆ Design of filter units based on industries such as steam/power generation, cement plant, iron and steel industry etc
- ◆ Evaluation and comparison of different air pollution control equipment in industries
- ◆ New developments
- ◆ Characterization of Filter Media

Course duration	September 11 –15, 2017 (5 days)
Who can attend...	<ul style="list-style-type: none"> ◆ Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories. ◆ Student students at all levels (B Tech/MSc/M Tech/PhD) or Faculty from reputed academic institutions and technical institutions.
Fees	<p>The participation fees (excluding lodging and boarding) for taking this course is as follows:</p> <ul style="list-style-type: none"> ◆ Faculty/Scientists/Industry Personnel from abroad : US \$200 ◆ Student participants from abroad : US \$100 ◆ Persons working in Industry/ Consultancy Firms: Rs. 5,000/- ◆ Faculty (Internal & External)/ Scientists from Research Organizations: Rs. 4,000/- ◆ Students: Rs. 1,000/- <p>The above fee includes all instructional materials, computer use for tutorials and assignments, and session refreshments. The participants will be provided with accommodation on payment basis.</p>

The Faculty



Professor **Gernot KRAMMER** is currently Professor at the Institute for Process and Particle Technology at Graz, University of Technology (TUG), Austria where he supervises the Mechanical Process Engineering research group. For more than 25 years he has been lecturing in the fields of process engineering, combustion, particle and environmental technology at bachelor, master and doctoral level at the TUG, Norwegian University of Science and Technology, Trondheim, Norway, and Brown University, Providence, RI, US.

Before re-joining TUG in 2016, he directed the global research and development activities for almost 10 years of the Separation division of Andritz AG, an international company with in total around 25000 employees and a turnover of more than 5 billion US\$. His research interests include the separation of particles from fluids by filtration and sedimentation, reactive gas cleaning and combustion of solid fuels. He has authored or co-authored more than 200 peer reviewed articles, and he holds several patents which are the basis of commercially successful products. Dr. Krammer serves as a referee for numerous scientific journals, a panellist for different national science and research exchange foundations, and an appointed member of the Gas Cleaning Section of the German Chemical Society.



Dr. A Mukhopadhyay's academic and research experience has spanned a wide range of filtration science and technology, but more recently it has focused strongly on a detailed examination of the behavior of fabrics and fabric filter pollution control equipment. His work includes studies of filtration performance as a function of different fabric construction and types, laminated surfaces and surface finishes, stresses such as higher temperatures, abrasion and dust loading and filter bag construction.

He had developed new test equipment for the evaluation of pollution control fabrics. He has also worked extensively on the design and operation of the equipment itself. He published two monographs on pulse jet technology, covering theory, selection and design and characterization and evaluation of filter media. Numerous papers describing his research have been published in international journals and presented at international conferences. He has contributed more than 170 research publications in reputed academic and applied journals, conference proceedings etc. Publication also includes 10 monographs/book chapters encompassing different areas of technical textiles.



Dr A K Choudhary is Associate Professor in the Department of Textile Technology at Dr B R Ambedkar National Institute of Technology, Jalandhar (India). He has contributed more than 40 research papers in International & National journals and Conferences, patents and reports. His area of researches are filter media design, Industrial air pollution, textile testing and garment manufacturing.

One week GIAN
course on

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Course Coordinators

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