

# BULK SOLIDS HANDLING: TECHNOLOGY AND DEVELOPMENT FOR THE 21ST CENTURY.

Institution of  
**MECHANICAL  
ENGINEERS**

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regulatory requirements to stay ahead

22-23 November 2011  
Larsen & Toubro, Chennai, India

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- Evaluate the latest design methods and technologies
- Understand how reliability reduces equipment complexity and maintenance
- Examine how system layout can improve constructability

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# BULK SOLIDS HANDLING: TECHNOLOGY AND DEVELOPMENT FOR THE 21ST CENTURY.

## EVENT ORGANISING COMMITTEE



### GRAHAM LEASON

Tech-A Ltd, Director/Consultant  
Institution of Mechanical Engineers,  
Bulk Materials Handling Committee  
Chairman

### CHAIRMAN'S COMMENT

We're looking forward to our first bulk materials handling event in India and the opportunity to meet engineers involved in our industry. We are confident that the programme we have organised for our seminar, at Larsen & Toubro's impressive convention centre, will be both interesting and rewarding. Eur Ing Graham Leason



### D.R. RAY

Executive Vice President  
& Head, Metallurgical  
& Material Handling  
Independent Company,  
Larsen & Toubro



### NIGEL MAINWARING

Technical Director,  
Russell Finex Ltd



### KUMAR VIKRAM

Vice President & Head, Bulk  
Material Handling Business  
Unit, Larsen & Toubro



### RAJEEV B BHATNAGAR

Head - Human Resources,  
MMH IC, Larsen & Toubro



### ALAN JACKSON

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Alan Jackson Engineering  
Services Ltd



### EDDIE MCGEE

Technical Director,  
AJAX Equipment Ltd



### PABAK MUKHOPADHYAY

Head, Ports & Speciality  
Conveyor Segment, Bulk  
Material Handling BU,  
Larsen & Toubro



### RALPH KNIGHT

Consultant Engineer,  
R K Bulk Handling



### DIPANKAR ROY

Vice President & Head –  
Engg. Design & Research  
Centre, MMH IC  
Larsen & Toubro



### JOHN PETHULLIS

Director & General  
Manager, Portasilto Ltd



### P. SRINIVASAN

Manager, Human Resources,  
MMH IC, Larsen & Toubro



This two day seminar  
will be held at Larsen  
& Toubro's impressive  
Convention Centre in  
Chennai, India.

# BULK SOLIDS HANDLING: TECHNOLOGY AND DEVELOPMENT FOR THE 21ST CENTURY.

Gain comprehensive insights into the leading-edge technology used to handle bulk materials such as mined ores, stone and coal. Enhance your knowledge of industry best practice and regulatory requirements to help you stay ahead in this competitive market.

Day one will present rail unloading, storage and reclaim as well as ship loading and unloading. Day two will present belt conveying, plant layout, control and operation.

## THIS EVENT WILL ATTRACT:

- plant managers and operators
- design engineers and consultants
- mining and process feasibility specialists and consultants
- project managers
- procurement specialists
- infrastructure and logistics specialists
- young engineers

## FROM THE FOLLOWING INDUSTRY SECTORS:

- construction
- mining companies
- Indian resource management organisations
- materials handling specialists
- bulk shipping
- power plant infrastructure

## TECHNICAL ADVANTAGES:

- Gain insight into the latest operation methods and control systems for bulk handling systems
- Learn and apply best practice when handling bulk materials
- Gain updates on the latest techniques for design and operation of systems

## ATTENDING WILL HELP YOU:

- Consider problems and solutions to dry bulk handling in ports, rail and mines
- Understand the effectiveness of using hydraulic drives in bulk handling equipment
- Learn the best practices for conveyor design to influence the performance, safety and reliability of the systems

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## SUPPORTING ORGANISATIONS





# **BULK SOLIDS HANDLING: TECHNOLOGY AND DEVELOPMENT FOR THE 21ST CENTURY. 22-23 NOVEMBER 2011 LARSEN & TOUBRO, CHENNAI, INDIA**

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## **DAY ONE – 22 NOVEMBER 2011**

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### **08:30 REGISTRATION AND REFRESHMENTS**

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### **09:30 WELCOME AND INTRODUCTION**

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### **09:40 WELCOME BY LARSEN & TOUBRO**

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### **09:55 LAMP LIGHTING CEREMONY**

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#### **10:00 PLENARY PAPER MATERIAL CHARACTERISATION FOR BULK MATERIALS HANDLING EQUIPMENT DESIGN**

**Professor Michael Bradley, Director, The Wolfson Centre for Bulk Solids Handling Technology, University of Greenwich, UK**

- Materials behaviour is vital to facilitating design for efficiency and low-cost operation
- Learn how to choose correct measurements according to the handling being undertaken
- How to use measurements to achieve successful plant design

Michael Bradley joined The Wolfson Centre initially as a consultant, eventually being appointed Director. He also holds the post of Professor of Bulk and Particulate Technologies at the University of Greenwich, UK.

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## **SESSION 1 – RAIL UNLOADING**

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### **10:30 WAGON UNLOADING & TRAIN HANDLING – WAGON TIPPLER SYSTEMS**

**Joe Dudman, Project Manager, Ashton Bulk Ltd, UK**

- The format and types of wagon unloading systems
- The advantages of the wagon tipplers and the flexibility of multiple systems
- How to address land availability restrictions
- The effects on system cost, maintenance and life by design and analytical improvements
- The future of wagon tippler systems and an introduction to new technologies

Joe Dudman is Project Director at Ashton Bulk Materials Handling in the UK with 35 years experience in various worldwide projects, primarily in train unloading systems and stockyard machines.

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### **10:50 IMPLICATIONS OF THE NEW RDSO REQUIREMENTS FOR RAILCAR DUMPER DESIGN IN INDIA**

**Dave Hicken, VP BMH Global Sales, Mining & Construction Technology, Metso Minerals, UK/USA**

**Nick Smith, Product Support Global Sales, Metso Minerals**

- The new RDSO requirements (G-33 technical pamphlet) came into effect at the start of 2011
- The requirements and their specific implications on the Railcar Dumper design
- Comparison of the two resulting designs

Nick Smith is a Minerals Processing Engineer with 18 years experience in the mining and process industry.

Dave Hicken is a Mechanical Engineer with over 20 years experience in the bulk materials handling industry.

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## **11:10 QUESTION AND ANSWER SESSION**

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## **11:30 REFRESHMENTS**

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## **SESSION 2 – STORAGE AND RECLAIM**

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### **12:00 THE SILO DISCHARGE SYSTEM 'EXTROMAT' – IRON ORE CASE STUDY**

**Hendrik Schnelle, Manager, Sales & Service, Maschinenfabrik Besta & Meyer GmbH, Germany**

- Predictions
- Advantages of the system
- Solution and installation

Hendrik Schnelle graduated in 1976 from the Gesamthochschule Wuppertal, Germany, with a Master's in Business and Economics. From 1977 to 1990 he was engaged in international sales activities for several companies. Since 1990 he has been Manager, Sales & Service at Besta & Meyer, Germany.

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### **12:20 BUILDING IN RELIABILITY**

**Ian Trotter, Director – Machines Division, Don Valley Engineering Co Ltd, UK**

- Simplification of equipment layout
- Reduction of equipment quantity and complexity, therefore increased reliability
- Reduction of maintenance requirements

Ian Trotter has worked in the Screens & Machines Division of Don Valley Engineering since 2008, having previously spent over 22 years in the automated material handling industry.

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## **12:40 QUESTION AND ANSWER SESSION**

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## **13:00 LUNCH**

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## **SESSION 3 – SHIP LOADING AND UNLOADING**

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### **14:00 DRY BULK HANDLING IN PORTS: SYSTEMS, PROBLEMS AND SOLUTIONS**

**Balan Velan, Managing Director, Scorpio Engineering Pvt Ltd, India**

- The variety of dry bulk being handled in ports
- Characteristics and optimum handling methods for efficient port handling
- Environmental considerations and operational productivity
- Planning and design considerations

Balan Velan is a mechanical engineer from the University of Madras (now Chennai) and has 25 years' operating and design experience in dry bulk materials handling, specialising in pneumatic conveying and the associated technologies needed for clean, green and efficient port dry bulk operations.

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### **14:20 GRAB TYPE SHIP UNLOADERS**

**Speaker tbc, Anupam Industries Ltd/Mitsubishi Heavy Industries Ltd, India**

- Benefits and limits of grab bucket type ship unloaders
  - Electronic anti-sway control and semi-automatic operation
  - Condition monitoring and maintenance assistance system
  - Dust emission control to meet current environmental concerns
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**14:40 EFFECTIVENESS OF USING HYDRAULIC DRIVES IN BULK HANDLING EQUIPMENT – A STUDY**

Dipankar Roy, Head – EDRC (MMH IC), Larsen & Toubro, Chennai, India

- Application areas where use of hydraulic systems has improved the operational performance
  - Where use of hydraulics does not make any difference in performance but leads to higher power consumption
  - Specific cases will be discussed to reach a guideline for stacker reclaimer, wagon tippler, apron feeder, paddle feeder, conveyor, belt feeder etc
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**15:00 REFRESHMENTS**

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**15:30 THE COAL TERMINALS OF UST LUGA AND WANINO – A COMPARISON OF LAYOUT AND EQUIPMENT**

Gopal Kalyanakrishnan, TAKRAF India Pvt. Ltd, India  
Co-author: Holger Lieberwirth, CEO Asia, TAKRAF GmbH

- Overview of layout, material flow and equipment installed at these two greenfield coal terminals
- Terminal layouts, wagon tipplers, stackers, reclaimers and stacker/reclaimers as well as ship loaders

Gopal Kalyanakrishnan has over 20 years' experience working in different capacities in the field of mining and bulk materials handling equipment.

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**15:50 PORT HANDLING SYSTEMS**

Heinz Kaenel, Vice-President Material Handling Sales & Technology, FLSmidth Wadgassen GmbH, Germany

- Overview of the type and application of a range of port equipment
  - Explain the capabilities of the different systems for various ship sizes and capacities
  - Outline the power consumption and environmental aspects of the equipment
  - Compare the various types of Ship Unloaders & Ship Loaders
  - Present a case study
- 

**16:10 QUESTION AND ANSWER SESSION**

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**16:30 CHAIR'S CLOSING REMARKS FOR DAY ONE**

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**16:40 VISIT TO HOLCK LARSEN MUSEUM (ON SITE)**

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**17:10 CLOSE OF DAY ONE**

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**19:00 DRINKS RECEPTION & NETWORKING BANQUET AT RAINTREE HOTEL, ANNA SALAI, CHENNAI**

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**DAY TWO – 23 NOVEMBER 2011**

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**09:00 REGISTRATION AND REFRESHMENTS**

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**09:30 CHAIRMAN'S WELCOME AND INTRODUCTION**

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**09:40 PLENARY PAPER: LONG-DISTANCE CONVEYORS – SPECIAL DESIGN CONSIDERATIONS**

Graham Leason, Director, Tech-A, UK

- Defining the performance criteria to satisfy expectations
- Exploiting the benefits of long-distance systems
- Loading and discharge considerations for long conveyors
- Route geometry design criteria
- Operational factors
- Selection of the different types of system

Graham Leason has worked in the materials handling industry for 33 years. Currently, he runs an independent engineering consultancy, is chair of the IMechE Bulk Materials Handling Committee and sits on the British Standards MHE/9 Committee.

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**SESSION 4 – BELT CONVEYING**

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**10:10 ELEMENTS AND PRINCIPLE OF BELT CONVEYORS STATIC CALCULATIONS**

Francis Lemaire, Managing Director and Owner, FLCE Francis Lemaire Conseils Etudes, France

- Elements and principle of belt conveyors static calculations
- Comparison between DIN22101, ISO 5048 and CEMA Standards

Francis Lemaire started his career in 1975 as a French high school engineer and has devoted his 36 years of experience to design, engineering and construction of equipment for bulk continuous handling.

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**10:30 IMPROVING BULK MATERIALS HANDLING PERFORMANCE AND SAFETY WITH A NEW CONVEYOR ARCHITECTURE**

James Turner, Vice President, Sales & Marketing, Martin Engineering, Illinois, USA

- Using a 'back to the drawing board' new design standard to improve performance
- Service and serviceability benefits of new designs for components
- Case studies and lessons learned from several applications of this new technology

James Turner is in charge of global sales and marketing for Martin Engineering. He recently spearheaded Martin Engineering's opening of a business unit in Pune, India.

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**10:50 RBCT PHASE 5 EXPANSION PROJECT CASE STUDY, AND FOCUS ON BELT FEEDER USING DEM**

Rudolf Hose, Mechanical Engineer, Batemans Engineered Technologies, South Africa

- Brownfields project with high-capacity conveying
- Overview of belt feeder loads
- DEM calibration and belt feeder simulation

Rudolf Hose graduated in Engineering from the University of the Witwatersrand, Johannesburg – School of Mechanical, Industrial and Aeronautical Engineering. He worked as Project Commissioning Engineer on the conveyor portion of the RBCT Phase 5 Expansion Project, and has more than ten years' experience in the materials handling industry.

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## 11:10 REFRESHMENTS

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### 11:40 SOFT BRAKING SOLUTION FOR THE CONVEYOR AND MH EQUIPMENT: A CASE STUDY OF 15KM NALCO DOWNHILL CABLE BELT CONVEYOR

Ganesh Babu Kumaran, National Sales Manager , Svendborg Brakes India Pvt. Ltd, India

- Analysing the importance of an advanced and intelligent braking solution for conveyors, in particular for downhill and inclined application
- Review of the practical implications in the case of the NALCO downhill conveyor
- Advantages and benefits to the operation and safety for men and machine for such applications

Ganesh Babu Kumaran qualified as a Diploma Engineer in 1990, working for the Steel Authority of India Durgapur and Larsen & Toubro. He joined Svendborg Brakes in 2010.

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### 12:00 AN OVERVIEW OF BULK COAL HANDLING FACILITIES IN INDIAN MINES

Arun Kumar Dey, Adviser, MMH IC BMH BU, ECC, Larsen & Toubro, India

- Analysis of present coal production scenario
- Future coal production programme
- Current coal handling facilities
- Future coal handling facilities and challenges

Arun Kumar Dey is a Mechanical Engineer and the former Chief General Manager (E&M), CMPDI/Coal India, working in planning, design and execution of engineering infrastructures for coal mines, particularly large-capacity bulk coal handling facilities.

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## 12:20 QUESTION AND ANSWER SESSION

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## 12:40 LUNCH

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## SESSION 5 INSTALLATION, CONTROL AND OPERATION

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### 13:40 SYSTEM LAYOUT OPTIMISATION TO IMPROVE CONSTRUCTABILITY

T Venkatesh Rao, Joint General Manager, Head of Engineering, Bulk Material Handling, Larsen & Toubro, ECC – Division (MMH-IC), India

Co-author: M Balasubramani, Chief Engineering Manager, Bulk Material Handling, Larsen & Toubro, India

- Layout for bulk material handling plants
- Construction methodologies
- Comparative study
- Standardisation of study
- Case studies

T Venkatesh Rao completed his Master's in 1982 with the Indian Institute of Science (IISC) Bangalore. He joined the ECC division of L&T in the design department and was involved in such projects as India's first super thermal power plant at Singrauli, Lafarge plant at Meghalaya and Kaiga nuclear power plant.

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### 14:00 MANAGING MATERIAL FLOWS AND INVENTORY OF BULK MATERIALS IN A MINERALS PLANT

Hans-Helmuth Jung, Global Head, ABB CPM Minerals, India

- Operation planning based on material arrivals, shipments and equipment availability
- Stockyard management systems

- Operation recording including reporting and 'key performance indicator' calculations
  - Material balancing
  - Interface to 'enterprise resource planning' systems
- 

### 14:20 COMPUTER MANAGEMENT OF RAW MATERIAL STOCKYARDS

Atul Joshi, Chief Manager, Siemens Ltd, India

- Continuous monitoring and 3D visualisation for better blending
- Importing and exporting materials based on real-time information
- Effective stockpile management
- Efficient utilisation of resources – human and machine

Atul Joshi has worked in the area of mining and material handling projects for more than 20 years. He is experienced in automation systems for mining and material handling projects and provides technical support for Siemens' offices in Thailand, Malaysia, Indonesia and Saudi Arabia.

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## 14:40 QUESTIONS AND ANSWER SESSION

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## 15:00 REFRESHMENTS

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### 15:30 SELECTION OF LINERS FOR MATERIAL HANDLING EQUIPMENT IN IRON AND STEEL INDUSTRIES – AN OVERVIEW

Amit Ranjan Dasgupta, Deputy General Manager (Mechanical), Centre for Engineering & Technology, Steel Authority of India (CET/SAIL) Ltd, India

Co-authors: U C M Gupta, General Manager, CET/SAIL Biswajit Das, Deputy General Manager, CET/SAIL

- Understanding the challenges of handling, storage and processing of various raw materials and how liners are used for protection of material handling equipment
- Correct selection of liners at the design stage is vital to avoid unnecessary replacements and consequential loss of production
- Comparative study of various types of liner and their suitability for different applications

Amit Ranjan Dasgupta is a Mechanical Engineer in machine design. He has 28 years' experience in the iron and steel industry with the Steel Authority of India.

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### 15:50 SCIENCE OF MECHANISED, AUTOMATED AND FAST SYSTEM OF RAW MATERIAL TRANSPORTATION

Ashok Chakraborty, Schenck Process Group, India

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## 16:10 QUESTION AND ANSWER SESSION

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## 16:30 CHAIR'S CLOSING REMARKS

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## 16:50 VISIT TO HOLCK LARSEN MUSEUM (ON SITE)

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## 17:20 CLOSE OF SEMINAR

This programme is subject to change.

The Institution is not responsible for the views or opinions expressed by individual speakers.

# BULK SOLIDS HANDLING: TECHNOLOGY AND DEVELOPMENT FOR THE 21ST CENTURY

## BOOKING FORM

One form per person only (forms may be photocopied)

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Family Name \_\_\_\_\_ Title (Mr, Mrs, Miss etc) \_\_\_\_\_  
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Membership No \_\_\_\_\_ Institution \_\_\_\_\_  
Name of Organisation (for name badge) \_\_\_\_\_  
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Do you have any special requirements? \_\_\_\_\_  
How did you hear about this event? Direct Mail  Website  Colleague  Other

### FEES AND CHARGES (PLEASE COMPLETE THE APPROPRIATE BOX)

Registration fees include entry to the sessions, refreshments, lunch, drinks reception, dinner and a copy of the event proceedings.

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Drinks reception & dinner. Tick box to indicate attendance	£0.00	0 INR	<input type="checkbox"/>	_____
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#### PAYMENT IN RUPEES

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The rupees registration fee is on a fixed exchange rate of 72.5 Indian Rupees to a £1 sterling. Upon receipt you will be sent joining instructions.

#### PAYMENT IN STERLING

If you are paying by sterling please use one of the methods under payment details. Send your completed registration form and payment to us at the following address: Tina Churcher, Institution of Mechanical Engineers, 1 Birdcage Walk, London, SW1H 9JJ or alternatively book online with a credit card.

Please indicate method of payment: Sterling Cheque  Rupee Cheque  Credit Card  BACS  Invoice  (see below)  
Cheques should be made payable to Institution of Mechanical Engineers and crossed. \*Sterling cheques/drafts need to be drawn from an English bank. A copy of the draft/cheque must accompany this form. It is the delegate's responsibility to pay any bank charges.

Credit Card: Visa  MasterCard  (please note we cannot accept American Express, Diners Club or Maestro)

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Delegates wishing to be invoiced must provide an order number. If your company does not use order numbers please include a formal request for invoicing on your company's letterhead. A charge of £10+VAT or 870 rupees will be made to cover additional administration costs. Invoices are payable on receipt and no alterations to these terms will be accepted.

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For registration enquiries call Tina Churcher on +44 (0)20 7973 1258 Fax +44 (0)20 7222 9881 or email [t\\_churcher@imeche.org](mailto:t_churcher@imeche.org)

Please read the information listed below as each booking is subject to IMechE's standard terms and conditions.

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Completed application forms should be returned to the address below, along with the correct payment. Attendance at the event will be confirmed on receipt of the full balance. All participants are advised to bring a copy of their confirmation with them on the day, to ensure the fastest possible entry.

#### Special Requirements

Please inform us of any special requirements ie dietary or access, on the relevant section of this form.

#### Cancellation

For a refund (minus £10/725 INR admin charge), cancellations must be received at least 28 days prior to the event. Replacement delegates are welcome at any time. The IMechE reserves the right to cancel any event. In this case, the full fee will be refunded unless a mutually convenient transfer can be arranged. In the event that IMechE postpones an event for any reason and the delegate is unable or unwilling to attend on the rescheduled date, you will receive a full refund of the fee paid.

IMechE is not responsible for any loss or damage as a result of a substitution, alteration or cancellation/postponement of an event. IMechE shall assume no liability whatsoever in the event this conference is cancelled, rescheduled or postponed due to a fortuitous event, Act of God, unforeseen occurrence or any other event that renders performance of this conference impracticable, illegal or impossible. For purposes of this clause, a fortuitous event shall include, but not be limited to: war, fire, labour strike, extreme weather or other emergency.

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#### Supporting Organisations

Members of the supporting organisations listed on page 3 can register at our members' rates.

#### Venue

This event will be held at Larsen & Toubro, Mount Poonamallee Road, Chennai, Manapakkam, PB No. 979, 600089, India. Details will be sent upon registration.

#### Liability

The organisers do not accept liability for any injuries or losses of any nature incurred by delegates and/or accompanying persons, nor for loss or damage to their luggage and/or personal belongings.

#### Accommodation

The headquarters hotel is The Raintree Hotel, Anna Salai, 636, Teynampet, Anna Salai, Chennai 600035.

T: 91 44 2830 9999, E: [reservations.annasalai@raintreehotels.com](mailto:reservations.annasalai@raintreehotels.com), W: [www.raintreehotels.com](http://www.raintreehotels.com).

On email reservations quote BSHGRRT.

NOTE the evening drinks reception and networking banquet will take place at the Raintree Hotel.

We have arranged alternative discounted local hotels via the Corporate Team at: [www.corporateteam.com/events/8488BSH](http://www.corporateteam.com/events/8488BSH).

#### Enquiries

For event enquiries please call Ms Taz Khatun on 020 7973 1306 or email [t\\_khatun@imeche.org](mailto:t_khatun@imeche.org)

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**11 OCTOBER 2011**

## **THE APPLICATION OF NANOTECHNOLOGY IN THE FOOD AND FOOD PACKAGING INDUSTRIES**

This one-day seminar will help you understand nanotechnology and the impact it has within the food sector. Industry experts will discuss in depth a spectrum of issues, ranging from the application of nanotechnology in food, to its uses in packaging, as well as the current and future legislation and controls connected to nanotechnology in food.

[www.imeche.org/events/S1569](http://www.imeche.org/events/S1569)

**19-20 OCTOBER 2011  
LONDON**

## **WHAT'S THE FUTURE FOR CARBON CAPTURE AND STORAGE**

Evaluating the latest regulatory, financial and project developments

Understand the latest developments in current CCS projects, the CCS industry and CCS technologies.

Key industry leaders will explain: recent changes in legal, policy and regulatory frameworks influencing CCS; latest thinking on the economics of CCS projects and some of the most important technical advancements affecting CCS developments.

[www.imeche.org/events/S1606](http://www.imeche.org/events/S1606)

**25 OCTOBER 2011**

**LONDON**

## **PROCESS SAFETY: ARE YOU DOING ENOUGH TO AVOID MAJOR DISASTERS**

- Developing strong process safety systems to minimise and manage risk effectively in your organisation

Process safety is evolving. Recent developments in effective hazard management have moved thinking on significantly; stakeholders are less tolerant of risk, and expect to see organisations minimise their exposure to such events. This seminar will demonstrate how to develop a 'safety' culture within your organisation to manage major accident risk more effectively. It will provide you with engineering solutions to the challenges of achieving a safe plant.

[www.imeche.org/events/S1616](http://www.imeche.org/events/S1616)

**8-9 NOVEMBER 2011**

**LE MERIDIEN, PUNE, INDIA**

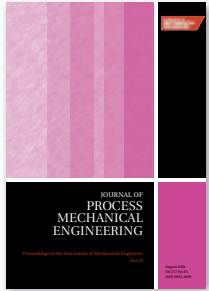
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