

**CRU | EVENTS**

A DIVISION OF CRU

International Conference & Exhibition

# NITROGEN +SYNGAS 2011

21-24 February 2011 > Hilton Düsseldorf, Germany



The leading annual event for the nitrogen fertilizer and other syngas-based industries

## Why attend this event?

- **Hear** about the latest technical breakthroughs
- **Discuss** and explore solutions with industry experts
- **Learn** about improvements and innovation in technology and equipment
- **Visit** exhibition stands from over 30 companies
- **Network** with over 300 international delegates

 [www.nitrogensyngas.com](http://www.nitrogensyngas.com)

English / Russian simultaneous interpretation throughout conference sessions

Sponsored by:



Official Publications:



# NITROGEN+SYNGAS 2011

The nitrogen market appears to have sailed into calmer waters after the upheavals of the crisis and the ensuing recession. Urea prices have advanced fairly steadily since the mid year, signalling the return of a certain amount of confidence. For the next few months, at least until the massive Qafco V project starts up, there is nothing to suggest any impending disturbance of the market balance.

From the point of view of technology and operations, the main concerns are much as they were at the time of the last Nitrogen+Syngas conference. Now that the bubble in capital costs has subsided, and with rising gas costs in prospect in the longer term, there is once again keen interest in improving energy efficiency, (through hardware improvements, process control or better operating practice) and in feedstock substitution. The market for revamping work reflects that. Some operators face the need to curb NO<sub>x</sub> from their furnaces and boilers. For some nitrates producers, nitrous oxide and its global warming potential is an acute concern. And in the new plants market the relentless drive towards ever bigger single-train facilities continues.

You will have the chance to hear presentations on these and a variety of other topics at Nitrogen+Syngas 2011.

## Programme coverage for businesses in:

### Nitrogen

- Ammonia
- Urea
- Nitrates
- Nitrogenous Fertilizer

### Syngas-based products

- Methanol and Derivatives
- Hydrogen
- Chemical Processing

## Who should attend?

- Plant Operation and Maintenance
- Plant Construction
- Process Design and Engineering
- Technology Licensing
- Catalyst and Auxiliary Chemicals Supply
- Planning and Strategy
- Sales and Marketing
- Purchasing
- Project Finance

## \*PROVISIONAL PROGRAMME

### Monday 21 February

15:00 – 20:00 **Registration and Exhibition open**

18:30 – 20:00 **Welcome Reception**

### Tuesday 22 February (morning)

#### THE BACKDROP TO THE TECHNOLOGY BUSINESS

- **Overview of nitrogen production feedstocks**
- **Global supply and demand dynamics for nitrogen**
- **Regional projects impacting global supply balance**
- **Update on methanol markets**
- **Looking down through the food supply chain**
- **The Ad blue market**

### Tuesday 22 February (afternoon)

#### AMMONIA OPERATIONS AND TECHNOLOGY

##### Flawless project development

**J. Camps** (*Jacobs Engineering Consultants*)

Savvy industrialists can save themselves time, grief and very significant sums of money by meticulous attention to detail in the initial development phase of a project, before any contracts are let.

##### Operator training simulators in ammonia plants: Increasing safety, decreasing cost and strengthening competitiveness

**K. Schübel** (*SKW Stickstoffwerke Piesteritz*) et al.

Plant upsets are so much rarer than they used to be that experience in dealing with them is diminishing as older operators retire. An operator training simulator has been successfully used to make good the shortfall, ensuring efficient risk management and significantly reducing the number of unscheduled shut-downs.

##### Qafco's experience in the application of DeNO<sub>x</sub> technologies on combustion gases

**U. Desai** (*Qatar Fertilizer Company*)

The presentation will describe the selection, implementation and operation of appropriate technologies in the Qafco III ammonia plant to meet new Ministry of Environment emission standards for combustion gases from the reforming furnace and boilers.

##### Low-energy consumption ammonia production - Baseline energy consumption; options for energy optimization

**K. Noelker** (*Uhde GmbH*)

Energy consumption is once again a primary concern of ammonia producers facing the prospect of increasing gas costs. This presentation will compare the theoretical and practical lower limits of energy consumption and will assess the benefit of possible measures for coping with avoidable inefficiencies.

##### Casale coal-based ammonia and methanol synthesis loops

**P. Moreo** (*Ammonia Casale SA*)

30 out of 44 ammonia synthesis loops and 12 out of 16 methanol synloops supplied by Casale over the last ten years have been designed to run on synthesis gas generated from coal, most of them in China. The paper describes technical and administrative aspects of these projects and relates start-up and operating experience in those that have been completed so far.

# \*PROVISIONAL PROGRAMME

Wednesday 23 February (morning)

## AMMONIA REVAMPS AND CATALYSTS

### KRES-ES™ revamp makes more ammonia from less natural gas by energy substitution

**S. Singh** (*KBR, Inc.*)

Based on successful operation of KRES technology in three ammonia plants, KBR's KRES-ES™ technology provides a low-cost revamp option for reducing natural gas requirements to below 6.35 Gcal per tonne ammonia by allowing fuel substitution. Three examples of KRES-ES™-based revamps are presented to illustrate possible applications of the technology.

### Excellence achieved at NFCL

**R. Raghavan** (*Nagarjuna Fertilizers & Chemicals Ltd*)

NFCL has undertaken a revamp programme in stages over several years to allow it to change the feedstock used in the plant, to maximize capacity utilization and to optimize process parameters. Many changes were due to energy saving schemes, the outcome and value of which will be discussed.

### Rejuvenating a 27-year old ammonia plant

**R. Ahmed** (*Fauji Fertilizer Co.*)

Fauji's No 1 ammonia plant has operated a set of IN-519 reformer tubes for over 200,000 hours at around 135% of nameplate capacity. This paper provides a history of the plant and the results of changes made over the years, including a recent overhaul in September 2009, when the reformer tubes and synthesis converter basket were replaced and the HP ammonia separator was revamped.

### Revamp of JSC Cherkassy Azot's ammonia plant for energy savings and capacity increase

**P. Han** (*Haldor Topsøe A/S*), *V. Sklyarov* (*JSC Cherkassy Azot*)

Topsøe has undertaken a revamp of Cherkassy Azot's 1,360-t/d Kellogg ammonia plant, raising its capacity to 1,700 t/d and improving energy-efficiency. The paper describes the bottlenecks identified and the corrective measures proposed, the implementation of the project and the benefits achieved.

### The science of catalysis: The chemistry within your catalysts

**P. V. Broadhurst** (*Johnson Matthey Catalysts*)

Operators of synthesis gas plants know enough about the workings of the catalytic process steps in their plants to be able to obtain maximum efficiency and catalyst life. This paper looks at what happens at a molecular level and how catalyst and absorbent design must focus on the control of these chemical processes to deliver improving products for the future.

### Safe operation of HT shift catalyst - Best practices in case of WHB leaks and catastrophic failures

**T. Archer** (*Süd-Chemie, Inc.*)

Leaks in the reformed gas boiler upstream of the HT shift converter seem to be a fact of life in many ammonia plants. Measures range from guard layers of blank support material to catch solids from small leaks to procedures for recovering catalyst damaged by flooding. The GRAB design loading system for minimizing pressure drop will be described.

### Current trends in ammonia synthesis catalysts

**Y. Kamal** (*Johnson Matthey Catalysts*)

Developed almost at the dawn of the ammonia industry, magnetite-based ammonia synthesis catalysts remain unequalled for their durability. Johnson Matthey Catalysts' cobalt-promoted example has been proved in over 20 years operation in low-pressure loops and is an essential part of the Uhde dual-pressure process.

## NITROGEN FERTILIZER FINISHING PROCEDURES

### Jumbo single-line urea granulation plants - Ready for implementation

**M. Potthoff** (*Uhde Fertilizer Technology bv*)

To keep pace with the trend in urea solution plant capacity, UFT has developed a single-line urea granulation process scheme and plant layout for 5,000 t/d of urea. To accommodate the very large increase in unit capacity UFT has developed special design tools for optimizing the design with respect to process and mechanical parameters

### Rotoform pastillation in the fertilizer finishing process

**K. Swamy** (*Sandvik Process Systems*)

With two installations up and running and another imminent, the Sandvik pastillation machines have a great potential as an alternative for or a supplement to other finishing processes in medium-sized urea installations, especially in debottlenecking projects. The capacity of individual machines is 140-170 t/d urea.

### Technical upgrading of a low-rise prilling tower. Case study of JSC Salavatnefteorgsintez

**N. Cheblakov** (*NIK - Urea Research & Development Institute*)

NIK has developed a revamp technology for "low-rise" urea prilling towers (~32 m) including providing replacement prill heads, fluidized-bed cooler, "wet" dust traps, and facilities for applying anti-caking agent. The product granulometry and strength have been improved and the temperature to store reduced from 80-100°C to 45-50°C.

### Benefits of the new Coperion Bulk-X-Change® for cooling fertilizers

**H. Nigsch** (*Coperion GmbH*)

The Bulk-X-Changer® is a compact solids cooler which does not require sweep air and therefore does not produce dust. So far utilized for cooling ammonium sulphate, NPK and CAN, it has been shown by intensive tests to be well suited to processing urea.

### The influence of screening processes in fertilizer production

**O. Pikhard** (*Rhewum GmbH*)

Different fertilizers require different screen types, and the financial implications of selecting the wrong one are significant in comparison with the investment cost. Screen types will be categorized and an outlook will be given on those that have been successfully used in fertilizer plants.

Wednesday 23 February (afternoon)

## UREA OPERATIONS AND TECHNOLOGY (1)

### Saipem's breakthrough in large-scale ammonia-urea plants

**A. Gianazza** (*Saipem*)

As the world's largest single-stream ammonia-urea plants in Pakistan and Qatar approach completion, the contractor tells the story of their successful design, procurement, construction and commissioning, and looks ahead to the 5,000-t/d jumbo urea plant.

### Sirius@Max: A new approach for urea plant optimization using advanced process control

**L. Dieltjens** (*Stamicarbon*); *C. Moons* (*IPCOS*)

A marriage of Stamicarbon's urea process know-how and IPCOS's model predictive control technology, Sirius@Max optimizes the operation of the urea plant minute by minute, 24/7, improving reliability of operation and guaranteeing the highest possible production level at all times.

### Revamping of a total recycle urea solution plant to increase capacity and energy-efficiency

**P. Orphanides** (*Orphanco*)

The forthcoming revamp of Azomures's Stamicarbon total recycle urea plant will raise its capacity from 900 t/d to 1400 t/d (a 55% increase), slash process steam consumption, reduce electricity consumption by 20%, and cut ammonia emissions. The two proposals received will be compared.

### Toyo's approach to environmental protection in urea plants

**G. Nishikawa** (*Toyo Engineering Corp.*)

The paper introduces TEC's approach to the problem of reducing urea and ammonia in effluents and, especially, ammonia emissions, both continuous and intermittent, which can no longer be brought down to officially required standards by water-washing alone.

---

## NITRIC ACID AND NITRATES

---

### Abatement of N<sub>2</sub>O from nitric acid plants in the context of emissions trading – A continuing concern for the fertilizer industry

**M. von Velsen-Zerweck** (*N-Serve Environmental Services GmbH*)

### The development and applications of tertiary alloys for ammonia oxidation

**I. Bunch** (*Johnson Matthey Noble Metals*)

Introduced for the purpose of reducing PGM inventories in nitric acid and caprolactam plants, tertiary alloys incorporate higher percentages of palladium in the catalyst pack. Advantages include increased campaign lengths, better conversion efficiency and lower rates of PGM loss.

### Heraeus experience and developments for N<sub>2</sub>O emission reduction

**T. Keller** (*W. C. Heraeus GmbH*)

Medium-pressure nitric acid plants usually have enough space beneath the gauze pack to accommodate a layer of catalyst for so-called secondary N<sub>2</sub>O abatement, a more economical alternative to tertiary tail gas treatment. Here Heraeus, one of the earliest developers of secondary N<sub>2</sub>O abatement, reports on catalyst development and application in various plant types.

### MKS*precise*: A singular catalyst solution and the cost drivers behind it

**K. Burchard** (*Umicore*)

On account of its extreme flexibility in respect of structure, alloy composition and wire diameter, the MKS*precise* catalyst system can be optimized to suit the special circumstances of every individual plant – provided all the cost drivers are fully understood and properly assessed.

### Development of integrated ammonium nitrate complexes

**K. Ruthardt** (*Uhde GmbH*)

The presentation covers design improvements that have been realised in large-scale integrated ammonium nitrate complexes, such as the AUM UAN plant in Trinidad and the Orica Bontang LDAN complex in Indonesia, and project-specific optimization of the various execution interfaces.

### Prozap's experience in N<sub>2</sub>O/NO<sub>x</sub> control and a re-invented nitrogen fertilizer: Liquid calcium nitrate

**M. Skorupka** (*Prozap Engineering Ltd*)

With over 40 years of experience in nitrogen industry projects, Prozap Engineering addresses all the industry's environmental concerns, including abatement of N<sub>2</sub>O/NO<sub>x</sub>, urea/AN fume and ammonia emissions and FGD. Recently the company has designed a plant producing calcium nitrate solution, a high-class fertilizer that is resurgent on the market.

### Start-up of the world's biggest UAN plant

**Speaker to be announced** (*Uhde GmbH*)

A report on the realization and early operation of MHTL's Uhde-designed nitric acid (1,500 t/d), ammonium nitrate (1,920 t/d) and UAN facilities in Trinidad.

## Thursday 24 February (morning)

---

## SYNTHESIS GAS GENERATION AND OTHER PRODUCTS

---

### Nano-technology for substantial material improvement: Centralloy® G 4582 Micro R for steam reformers

**D. Jakobi** (*Schmidt + Clemens*)

A development of Schmidt + Clemens's Centralloy® G4582 Micro HP40 Mod. material, G4582 Micro R has at least 10% better creep rupture strength, allowing 15-20% reduction in wall thickness or an increase in operating temperature of 20°C. This appears to be due to nano-scale precipitates of carbides.

### Enhanced steam reformer tube inspection and remaining life assessment methodologies

**R. Roberts** (*Quest Integrity Group*)

The accuracy of reformer tube inspection and remaining life assessment has been improved by supplementing the LOTIS® laser optic inspection with an external crawler technique known as MANTIS, which now features enhanced eddy current crack detection and feeding the data directly into Quest Integrity's proprietary LifeQuest™ Reformer software.

### Improving metal dusting resistance in the synthesis gas environment with the new Sumitomo 696 Ni-based alloy

**S. Kurihara** (*Sumitomo Metal Industry Ltd*)

The metal dusting resistance of Ni-Cr alloys used as a high-temperature component of reforming units appears to be considerably enhanced by the presence of copper in the alloy. Sumitomo Metal Industry has now conducted a long-term metal dusting test on a new copper-containing nickel-based alloy.

### The global methanol market in transition - The catalytic technology challenges

**N. Ringer** (*Süd-Chemie AG*)

Methanol production in the vast facilities that today's market demands poses new technical challenges, particularly where the feed is coal. The latest development in coal gas purification, the sour gas shift process, and the best-performing methanol synthesis catalysts will be described.

### Microchannel reactors for the small-scale production of synthesis gas

**D. Atkinson** (*Oxford Catalysts Ltd / Velosys, Inc.*)

Microchannel technology can intensify the production of syngas by steam methane reforming, resulting in smaller, less costly hardware and making syngas production for products such as FT hydrocarbons or DME from 1,000 t/d down to as little as 20 t/d economically possible.

### Improved efficiency for hydrogen plants

**T. von Trotha** (*Uhde GmbH*)

In the continuing quest for higher efficiency in steam-reforming hydrogen plants, producing well-conditioned high-pressure steam for power generation can help lower total site CO<sub>2</sub> emissions and increases the flexibility to accommodate longer periods of operation at reduced rates.

## Thursday 24 February (afternoon)

---

## UREA OPERATIONS AND TECHNOLOGY (2)

---

### Economics of third-generation alloy protection

**J. Visser** (*Stamicarbon*)

The impact of the development of ever-better materials on plant economics will be examined and new inspection philosophies and systems to take advantage of 3rd-generation alloy protection will be introduced.

### Improved technique for lining high-pressure urea strippers with reactive metals

**P. Mantovani** (*Officine Luigi Resta*)

Zirconium linings applied to contemporary HP urea strippers by the conventional method have been found to fail, as evidenced by leaks from the weep holes in the shell. This has been rectified by changing the design of the filler strips and reducing the thickness of the batten strap, which lessens the stress level during operation and virtually eliminates peak stresses in the area of the filler strips.

### Urea and nitric acid plants: improvement of shut-down, revamping, debottlenecking and refurbishment

**J.-M. Sluyters** (*Gemaco*)

A presentation on special corrosion-resistant steels for nitric acid and urea service and the role played by strategic equipment from experienced suppliers and technical support in saving time, stress and money.

### Using DP28™ to reduce passivation air in urea plants

**M. Takahashi** (*Toyo Engineering Corp.*)

Results will be presented of an intensive programme of tests designed to show to what extent the use of DP28W™ duplex steel allows the amount of passivation air injected into the synthesis section of a urea plant can be reduced.

**\*This programme is provisional and incomplete. Changes in the order of the papers may be necessary between now and the conference.**

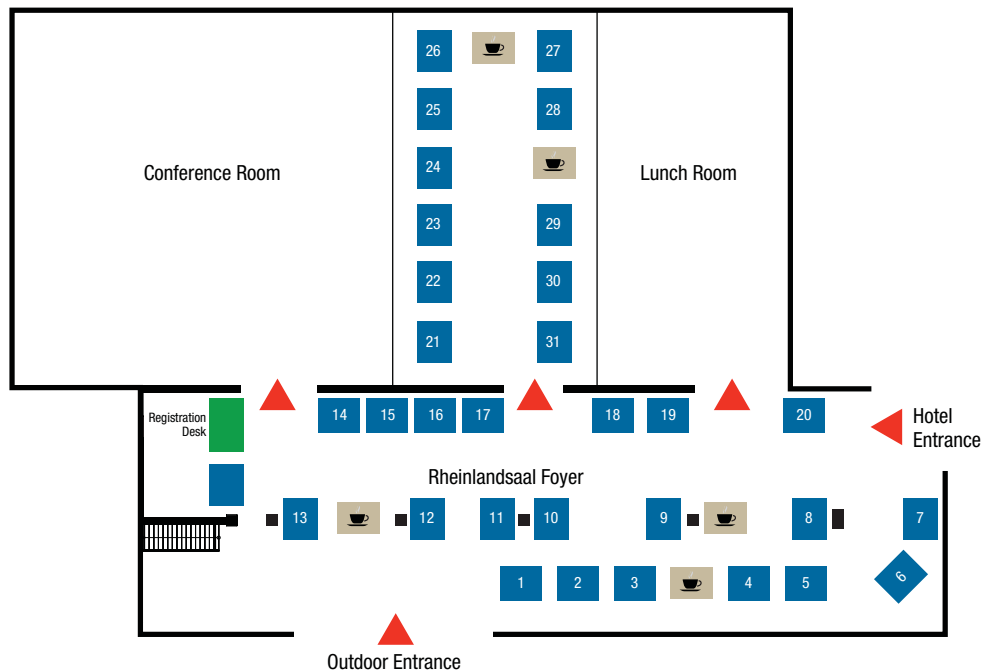
# EXHIBITION FLOORPLAN

## Stand Exhibitor

- 1 KBR, *USA*
- 2 Schoeller-Bleckmann Nitec GmbH, *Germany*
- 3 Solex Thermal Science Inc, *Canada*
- 4 ATI Wah Chang, *USA*
- 5 CFI holding Pte. Ltd. (CFIh), *France*
- 6 Christy Catalytics LLC, *USA*
- 7 GEMACO sa, *Belgium*
- 8 Magnetische Prüfanlagen GmbH, *Germany*
- 9 Heraeus GmbH, *Germany*
- 10 Kimre Inc., *USA*
- 11 Rotex Global, *Belgium*
- 12 Haldor Topsøe, *Denmark*
- 13 Toyo Engineering, *Japan*
- 14 Unidense Technology GmbH
- 15 BHDT, *Austria*
- 16 Prozap, *Poland*
- 17 Sandvik Process Systems, Div of SMT, *Germany*
- 18 Johnson Matthey Catalysts, *UK*
- 19 Uhde GmbH, *Germany*
- 20 Stamicarbon bv, *Netherlands*
- 21 R&D Institute of Urea, *Russian Federation*

## Stand Exhibitor

- 22 BCInsight Ltd, *UK*
- 23 Schmidt & Clemens GmbH & Co. KG, *Germany*
- 24 Officine Luigi Resta SpA, *Italy*
- 25 Mitsubishi Heavy Industries Ltd, *Japan*
- 26 GEA Ecoflex GmbH, *Germany*
- 27 Quest Integrity Group, LLC, *USA*
- 28 Umicore AG & Co. KG, *Germany*
- 29 Casale Group, *Switzerland*
- 30 Süd-Chemie AG, *Germany*
- 31 Rhewum GmbH, *Germany*



## SPONSORSHIP

**Don't miss out!** Take advantage of one of our remaining sponsorship packages, and benefit from extensive brand exposure before and during Nitrogen & Syngas 2011. Leave a strong and lasting impression on your audience.

### Sponsorship Packages remaining for 2011 include

- Day 1 or 2 Evening Function
- Day 2 After Session Drinks Reception
- Day 1, 2, or 3 Conference Auditorium
- Technical Pre-Prints Book

For more information on the packages please contact: **Amir Hezareh, Sales Manager**  
 Email: [amir.hezareh@crugroup.com](mailto:amir.hezareh@crugroup.com) Tel: +44 20 7903 2274

# NITROGEN+SYNGAS 2011

21-24 February 2011 > Hilton Düsseldorf, Germany

**CRU | EVENTS**

A DIVISION OF CRU



The easiest way to reserve your place is online at [www.nitrogensyngas.com](http://www.nitrogensyngas.com) quoting code:

Three other ways to reserve your place

Please register me for the Nitrogen and Syngas 2011 International Conference and Exhibition at the rate of:

- \$1,775     €1,345 – by 14 January 2011  
 \$1,985     €1,495 – from 15 January 2011

**Operator discounts**

*There is a discounted operator registration fee which is applicable for: Operating, Engineering or Maintenance Personnel from Production Companies; Academic Institutions; non-Profit Institutions. For further details please contact [sandra.haines@crugroup.com](mailto:sandra.haines@crugroup.com)*

- I require English/Russian simultaneous interpretation  
 I cannot commit just yet but please send me further information  
 I am interested in sponsorship and/or exhibition opportunities



FAX this form to:  
+44 20 7903 2432



E-MAIL your contact details quoting the above code to:  
[conferences@crugroup.com](mailto:conferences@crugroup.com)



POST this completed form to:  
**CRU Events**  
31 Mount Pleasant,  
London, WC1X 0AD, UK

**REGISTRATION DETAILS** For bookings of 3+ delegates, please photocopy this form

**COMPANY NAME** \_\_\_\_\_

Address \_\_\_\_\_

Zip/Postcode \_\_\_\_\_ Country \_\_\_\_\_

**Business Activity:** Producer  Equipment supplier  Catalyst supplier/reprocessor  Technology supplier

Engineer/contractor & Technical service provider  Trader  Industry consultant  Other

**1st Delegate** Title \_\_\_\_\_ First name \_\_\_\_\_

Family name \_\_\_\_\_ Job title \_\_\_\_\_

Unique email \_\_\_\_\_

Tel \_\_\_\_\_ Fax \_\_\_\_\_

Dietary requirements \_\_\_\_\_

**2nd Delegate** Title \_\_\_\_\_ First name \_\_\_\_\_

Family name \_\_\_\_\_ Job title \_\_\_\_\_

Unique email \_\_\_\_\_

Tel \_\_\_\_\_ Fax \_\_\_\_\_

Dietary requirements \_\_\_\_\_

**PAYMENT DETAILS** Please send payment with your registration

I am from an EU country and my sales tax number is:

I wish to pay by bank transfer to:

The Royal Bank of Scotland, Drummonds Branch 49 Charing Cross, Admiralty Arch, London, SW1A 2DX, UK

Account name: CRU Publishing Ltd; Sort Code: 16-00-38; BIC/SWIFT Code: RBOSGB2L

Please note when entering details by bank transfer, the 0 in RBOS is the letter O as opposed to a zero.

**Sterling Account** – 00208822 – IBAN GB62 RBOS 1600 3800 2088 22

**Dollar Account** – CRUPUB-USD1 – IBAN GB44 RBOS 1663 0000 0513 18

**Euro Account** – CRUPUB-EURA – IBAN GB19 RBOS 1610 7010 0511 41

Mark the remittance "Nitrogen and Syngas 2011 Conference registration for (delegate/s name/s)."

I enclose a cheque payable to CRU Publishing Ltd

I wish to pay by credit card\* – please debit my:  Mastercard  Amex  Visa

Credit card number:

Valid from:   /   to:   /

\*NB We require the cardholder's registered address if different from the details given.

Name on card \_\_\_\_\_ Signed \_\_\_\_\_ Date \_\_\_\_\_

**CONFERENCE INFORMATION**

**Enquiries**

**Sponsorship and Exhibition opportunities**  
contact: Amir Hezareh on tel: +44 20 7903 2274  
or email: [amir.hezareh@crugroup.com](mailto:amir.hezareh@crugroup.com)

**Speaking opportunities** contact:  
Alexander More on tel +44 20 7903 2438  
or email: [conferences@crugroup.com](mailto:conferences@crugroup.com)  
**General enquiries** call: +44 20 7903 2410  
or email: [conferences@crugroup.com](mailto:conferences@crugroup.com)

**Group Booking Discounts – Save up to 25%**  
Make a group booking and get the following discounts:  
3–4 delegates – 15% discount  
5 or more delegates – 25% discount  
To qualify, all registrations must be booked at the same time and payment made in one transaction.

**Hotel Details**

On receipt of your booking we will send you details on the CRU preferential rates available at The Hilton Hotel.

**Terms of Booking**

**Payment Policy**

Registrations can only be confirmed upon receipt of payment or proof of payment and discounted fees will only apply when payment is received within the offer period. If payment is not received before the conference, delegates will be asked to guarantee payment at the registration desk with a personal credit card. Late payments made after the conference will be subject to an additional administration fee of £80 / \$150 / €115.

**Cancellation Policy**

Cancellations must be received in writing prior to 28 January 2011 to qualify for a full refund less £100/ \$185 / €140 administration fee. It may be necessary for reasons beyond the control of the organisers to alter content, timing and venue. In the unlikely event of the conference being cancelled or curtailed for any reason beyond the control of CRU Events, or it is necessary or advisable to relocate or change the date and/or location of the event, neither CRU Events, nor its employees will be held liable for refunds, damages and/or additional expenses which may be incurred by delegates. We therefore recommend prospective delegates to arrange appropriate insurance cover.

This conference is an open forum and the content of papers and presentations given by guest authors and speakers from companies other than CRU and its subsidiaries and any opinions expressed therein are the responsibility of the authors and speakers concerned and are not endorsed by CRU Events. CRU Events disclaims all liability for any tort or damage arising out of any statement or opinion made in any paper or presentation by any guest author or speaker. **Data protection** CRU International Group companies would like to keep you informed about relevant products and services so please let us know how you would like to hear from us. Please tick if you prefer not to be contacted by email , post , telephone  or fax . From time to time we may let other reputable companies contact you with details that may be of interest to you. If you prefer not to hear from these companies, please tick here .