

AN INTENSIVE  
SHORT COURSE  
IN...

## TRANSFER CHUTE DESIGN

Mr/Ms/Dr: .....

First Name: .....

Surname: .....

Position: .....

Organisation: .....

Address: .....

Postcode: .....

Telephone: .....

Facsimile: .....

Email: .....

Dietary Requirements: .....

PAYMENT OPTIONS: Credit Card  Visa  Mastercard

Number: .....

Expiry Date: .....

Name on Card: .....

Signature: .....

EFT Please phone for Bank Details

Cheque - Made payable to Newcastle Innovation

(Please post with registration form)

This registration form should be forwarded together with payment to:  
TUNRA Bulk Solids,  
Newcastle Institute for Energy and Resources,  
The University of Newcastle, Callaghan NSW 2308, Australia  
Tel: +61 2 4033 9055, Fax: +61 2 4033 9044  
Email: danielle.harris@newcastle.edu.au

### FEES

Delegate Registration: **\$2000.- + GST**  
5 or more delegates receive a 10% discount  
All fees must be paid prior to the event.

Fees include program notes, laboratory sessions  
(where applicable), lunches and refreshments.

### VENUE

NOVOTEL PERTH LANGLEY  
221 Adelaide Terrace 6000 Perth, WA  
Tel: +61 8 9221 1200

<http://www.novotelperthlangley.com.au>

### ACCOMMODATION

Delegates are invited to arrange their own  
accommodation. Accommodation is available at  
the Course Venue.

### CANCELLATIONS

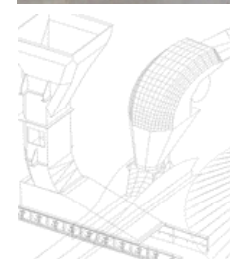
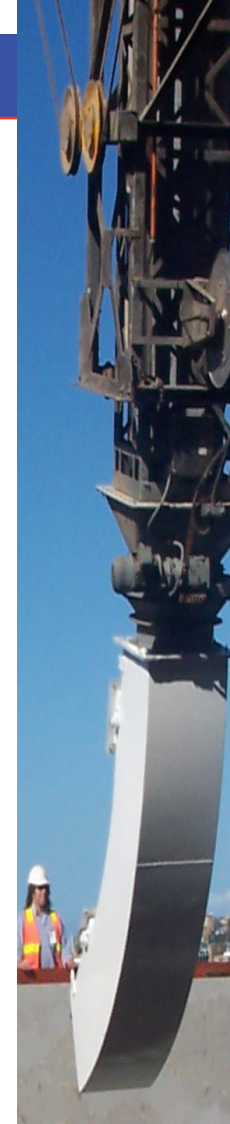
If you are unable to attend the event a substitute  
delegate is welcomed at no extra charge. If  
notification of withdrawal is received no less than  
14 days prior to the event, 80% of the fee will be  
refunded. No refunds will be made if notification  
of cancellation is received less than 13 days prior  
to the date of the event. The organisers reserve  
the right to alter or cancel the program due to  
unforeseen circumstances.

In the event of cancellation, a full refund of fees  
will be made.

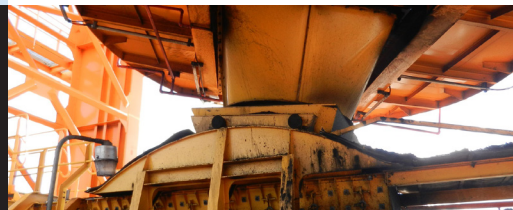


# Transfer Chute Design

2 Day Course  
8 - 9 April 2014  
Perth, WA



THE UNIVERSITY OF  
NEWCASTLE  
AUSTRALIA



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NEWCASTLE  
AUSTRALIA

Presented at  
Novotel Perth Langley

EMERITUS PROFESSOR ALAN ROBERTS AM



Emeritus Professor Alan Roberts AM is the Foundation Director of TUNRA Bulk Solids. He is an Honorary Fellow of Engineers Australia, Member of the IMechE (U.K.) and Fellow of the Australian Academy of Technological Sciences and Engineering. He has received several awards including: Institution, Sir George Julius and A.G.M. Michell Medals from Engineers Australia, Solids Handling Award, Institution of Mechanical Engineers U.K.; Lifetime Achievement Award of British Materials Handling Board, Member of the Order of Australia and Centenary Medal. His research and consulting in the field of bulk solids handling spans a period of 50 years. He has published 5 design manuals and over 350 research papers.

DR TIM DONOHUE

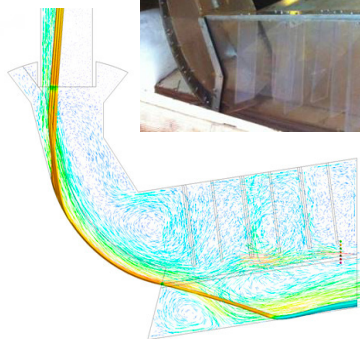


Dr Tim Donohue has the role of Engineering Manager with TUNRA Bulk Solids and has been employed for 7 years. Current research includes the use of computational fluid dynamics (CFD) software to investigate methods to reduce dust emission as well as research into calibration methods for the purposes of Discrete Element Modelling (DEM). The majority of his consultancy involvement has been in the application of DEM to conveyor transfer station reviews and re-designs.

DR DUSAN ILIC



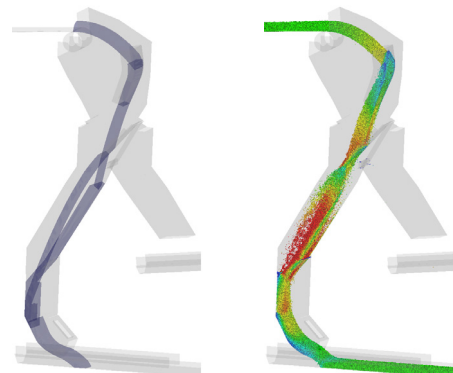
Dr Dusan Ilic has operated as a consultant to the materials handling industry with TUNRA Bulk Solids for over 10 years. In this period he has completed projects spanning across a range of applications and bulk solid materials. His main areas of expertise involve conceptual design, optimisation and flow analysis of transfer systems. Current interests include characterisation and handling of wet processed ore and design of ship loading facilities focusing on dust minimisation.



CONTENT

In the field of bulk solid materials handling, transfer chutes are integral components of mines, ports and processing plants. They are typically employed in belt conveying systems when transferring bulk solid material from one belt conveyor to another, or alternatively discharging into storage vessels including silos, bins or ship holds. In other applications, transfer chutes are employed to accelerate bulk solid materials up to belt speed, as in the case of re-directing slow moving material stream from a hopper/feeder onto a fast travelling receiving belt.

The design of transfer chutes is commonly developed to fit within predefined structure where the principles for efficient and reliable flow, based on physical material characteristics, are often overlooked. Such an oversight can result in unfavourable designs associated with blockage, spillage, belt mis-tracking, increased dust emissions and wear. In addition to leading to increased plant down times and productivity losses, any scope for upgrading existing facilities to higher throughputs is also severely hampered.



Transfer Chute analysis using Continuum- (left) and DEM method (right)

This course presents current practices in the conceptual design and flow analysis of transfer chute systems. An overview of the crucial bulk solid material properties including tests and procedures for their determination is presented. A number of calibration tests that may be implemented for the selection of characterising modelling parameters are applied and presented with results compared to laboratory and full scale tests.

The importance of understanding the characteristics of the material handled as the platform for the selection of favourable design criteria and accurate modelling parameters will be demonstrated. Application of the continuum analysis technique, Discrete Element Modelling (DEM) and Computational Fluid Dynamics (CFD) is explained through a combination of theoretical approaches, three dimensional simulations and real-life case studies.

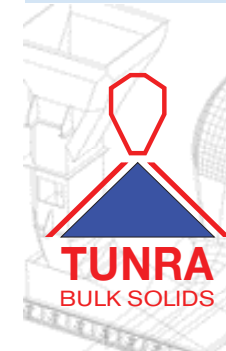
KEY LEARNING OUTCOMES

- Design principles for favourable transfer chute design
- Bulk solid material properties and testing procedures required for design and flow analysis
- Application of material properties in the design process including liner selection
- Influence of bulk solid material and conveyor belt interaction prior to and post transfer
- Transition zone and discharge trajectory considerations
- Chute flow problems due to adhesion and wear
- Dynamic modelling of transfer chute components for optimum accelerated flow
- Optimising transfer chute design for feeding and transfer
- Practical implementation of continuum mechanics analysis
- Dust control during the transfer and re-direction process
- Optimising chute geometry for controlled wear in the flow zone and at the belt feed point
- Overview of the principles of DEM and CFD analysis
- Application of DEM and CFD in transfer chute design

TUNRA BULK SOLIDS HANDLING RESEARCH ASSOCIATES (TBS)

TUNRA Bulk Solids Handling Research Associates (TBS) is built upon the strong foundations of education, research and consultancy in Bulk Solids Technology, which have been in place at Newcastle, Australia for over 38 years.

TBS provides contract research, professional consultancy and education to the resource and process industries, having completed over 4500 research and consultancy projects for more than 1000 companies in Australia and 40 other countries worldwide. The group is averaging over 250 industrial projects per year.



FURTHER INFORMATION

Should you require any further information regarding the course, please contact:  
 TUNRA Bulk Solids,  
 Newcastle Institution for Energy and Resources (NIER), University of Newcastle, Callaghan NSW 2308, Australia  
 Tel: +61 2 4033 9055, Fax: +61 2 4033 9044  
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