

REGISTRATION FORM

AN INTENSIVE
SHORT COURSE
IN...

Bulk Solids Handling

*Storage, Feeding, Transfer,
Belt Conveying*

Mr/Ms/Dr:

First Name:

Surname:

Position:

Organisation:

Address:

Postcode:

Telephone:

Email:

Dietary Requirements:

PAYMENT OPTIONS: Credit Card ☐ Visa ☐ Mastercard

Please contact Danelle.Harris@newcastle.edu.au to obtain a secure link for credit card payment.

☐ EFT Please - Invoice

☐ Cheque - Made payable to TUNRA (Please post with registration form)

Please note we do not accept AMEX

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
Email: danielle.harris@newcastle.edu.au

GENERAL INFORMATION

FEES

Early Bird Delegate Registration: \$2950 + GST
(Before 24 April 2022)
Delegate Registration: \$3450 + 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.
Please note course presenters are subject to
change.

VENUE

The University of Newcastle
NIER Site, A Block
70 Vale St, Shortland NSW 2307
+61 2 4033 9039
www.bulksolids.com.au

ACCOMMODATION

Delegates are invited to arrange their own
accommodation.

CANCELLATIONS

Please note, all face to face courses are subject to
current COVID 19 regulations. 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.



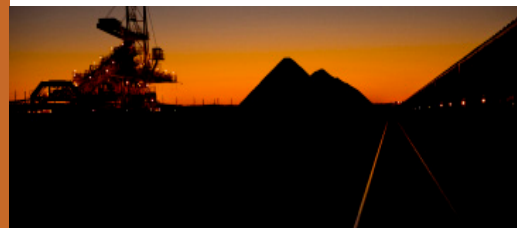
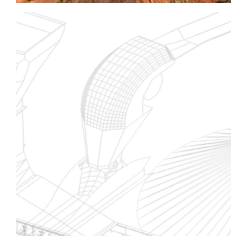
QMS Certification Services



QMS Certification Services



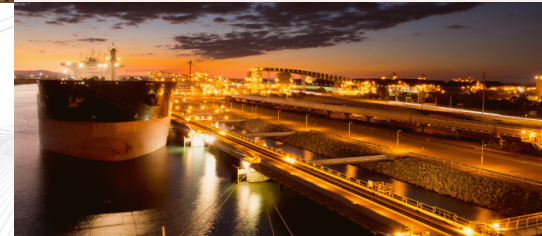
QMS Certification Services



Bulk Solids Handling

Storage, Feeding, Transfer,
Belt Conveying

3-Day Course and Laboratory Tour
24 - 26 May 2022
TUNRA Facilities
The University of Newcastle



Presented at
THE UNIVERSITY OF
NEWCASTLE, NSW

OVERVIEW

BULK MATERIALS HANDLING

The storage, handling and transportation of bulk solid materials are major activities for a vast number and variety of industries throughout the world. These range from the gentle handling of very small quantities of material in the pharmaceutical and chemical industries to the vast quantities handled and processed by the mining and mineral companies. This diversity is particularly evident in Australia where the wide-ranging nature and scale of operations is somewhat unique.

Considerable advances continue to be made in research, development, application and implementation of the technologies associated with various aspects of bulk solids handling. This course will be of particular interest to a wide range of industries including:

- Mining and mineral production and processing
- Power generation
- Energy and environment
- Chemical and petrochemical process industries
- Agriculture processing and production
- Manufacturing
- Pharmaceuticals
- Food industry

ABOUT TUNRA BULK SOLIDS

TUNRA Bulk Solids are world leaders in applied and fundamental bulk solids handling research and have been in business for more than 40 years. TUNRA has built a strong reputation in industry for its professional services and world class research in materials handling and flow properties. TUNRA have completed more than 4,000 projects for over 1,000 companies across Australia and more than 40 countries internationally.

Comprehensive laboratory test facilities are available at TUNRA to aid research and consulting activities at the University of Newcastle. TUNRA is committed to forming long term partnerships with business to help them overcome existing handling problems and assist with planning projects to ensure trouble-free plant operation

WHY ATTEND THIS COURSE

- Diversify your expertise and further knowledge of materials handling concepts
- Professional Development (CPD hours)
- Increase awareness of material phenomena occurring on site
- Learn methods for troubleshooting, optimisation and best practice design
- Develop skills in fundamental and numerical analysis approaches
- Learn how to apply flow properties test results to benefit your operation or designs
- Stay up to date with the latest developments in industry and bulk solids research



3 DAY COURSE OUTLINE

FLOW PROPERTIES TESTING

- Description of test equipment and procedures
- Influence of storage time and environmental factors such as temperature and moisture
- Evaluation of hopper and chute lining materials for friction and wear
- Application specific testing (inc. Dust and TML)
- Analysis and application

MASS FLOW & FUNNEL FLOW

- Mass-flow and funnel-flow design procedures
- Basic and hopper geometry
- Interpretation of flow property reports in relation to bin design
- Case studies
- Dynamic modelling of bulk solids systems

STOCKPILE DESIGN

- Influence of flow properties and geometry on draw-down and live capacity
- Selection and positioning of hoppers and feeders for optimising gravity reclaim
- Stockpile base pressures and loads on reclaim tunnels, hoppers and feeders

D.E.M ANALYSIS

- Introduction to the Discrete Element Method
- Modelling approaches and limitations
- Overview of critical model parameters including particle size and shape
- Considerations and best practices for industrial application

WALL LOADS

- Application of AS3774 for static and flow load cases
- Gate Loads
- Symmetric versus Eccentric Discharge
- Silo Quaking and Shock Loads
- Loads on Buried Structural Elements

FEEDERS

- Importance of hopper and feeder interfacing
- Review of basic feeder types
- Determination of optimum hopper and feeder interfacing for uniform draw-down
- Determination of feeder loads, torque and power initial and running conditions
- Controlling feeder loads and start-up torque

TRANSFER CHUTES

- Basic principles of chute design
- Application of flow properties in the design process
- Chute flow problems due to adhesion and wear
- Dynamic modelling of hood and spoon for optimum accelerated flow
- Optimising chute profiles for feeding and transfer
- Optimising chute geometry for controlled wear in the flow zone and at the belt feed point
- Dust control in transfer chutes
- Application of DEM and CFD in chute design and performance evaluation

BELT CONVEYING

- Overview of open and closed systems. Special belt conveyors and conveyor selection recommendations
- Review of basic design procedures
- Economic and technical considerations in optimising conveyor design
- Analysis of main resistances – idler indentation, idler spacing, bearings and seals, stress states in bulk solids and contribution to drag.
- Specialised testing

3 DAY COURSE INFORMATION

COURSE LEARNING OUTCOMES

- Basic principles of handling plant design
- Bulk solid flow properties and application to design
- Loads on bin walls – symmetric, eccentric discharge – shock loads and silo quaking
- Stockpile design incorporating draw-down, live capacity, base loads and locations of reclaim hoppers, feeders and tunnels
- Loads on buried structures in bins and stockpiles
- Discrete Element Modelling (DEM) fundamentals and application
- Chute design for feeding and transfer
- Belt conveying – overview of various types of conveyors – bulk solids and conveyor belt interactions – review of basic design procedures and future developments

COURSE PRESENTERS

Emeritus Professor Alan Roberts founded TUNRA Bulk Solids in 1975 to facilitate research and consulting services in bulk materials handling. Following Alan's long standing commitment to the bulk handling industry, he developed, guided and led a team of experts at TUNRA Bulk Solid who continue to be at the forefront of the materials handling industry. Following in Alan's footsteps, TUNRA continues to offer professional training courses to industry as a part of our commitment to continuous improvement of the materials handling field. These training courses are run by a minimum of 3 experts from our engineering group who are specialists in their fields.

FURTHER INFORMATION

Should you require any further information regarding the course, please contact:

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The University of Newcastle

Callaghan NSW 2308, Australia

Tel: +61 2 4033 9055

Email: danielle.harris@newcastle.edu.au

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