THE UNIVERSITY OF NEWCASTLE AUSTRALIA

TUNRA BULK SOLIDS

# Services

## Transfer Chute Design

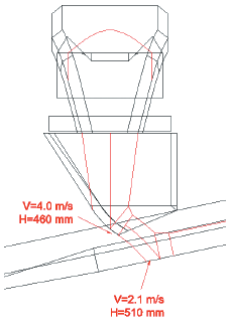
### Transfer Chute Audits, Reviews and Conceptual Design

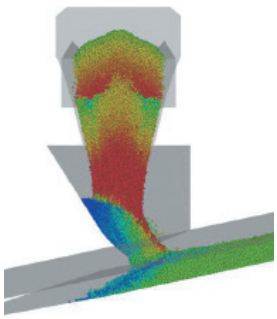
In the field of bulk solid materials handling, transfer chutes are critical components of mines, ports and power plants. The key to design an optimal transfer chute is a deep understanding of granular dynamics and material properties. TUNRA Transfer Chute Technology includes the utilisation of both continuum modelling and DEM simulation.

**Continuum Modelling**

With regard to transfer chute analysis techniques, the continuum method was developed by Em/ Prof Alan Roberts in 1965 – based on granular dynamics and uses measured material properties

- Equations of motion
- Material properties



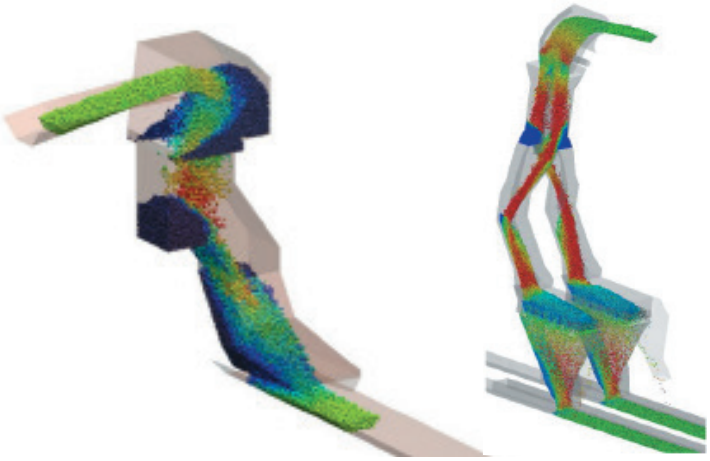



**Continuum** – granular dynamics based on bulk density and friction – predicts velocities and burden depths

**Discrete Element Modelling (DEM)**

DEM has proven itself to be an effective tool for analysing and optimizing particulate flow in a wide range of bulk material processing and handling operations. TUNRA Bulk Solids provides consulting services involving the use of DEM, including audits/reviews and conceptual design of transfer chutes.

- Material properties
- Contact model
- Calibration



**DEM** – parameters are selected based on calibration testing – excellent visualisation tool as well as allowing numerical analysis

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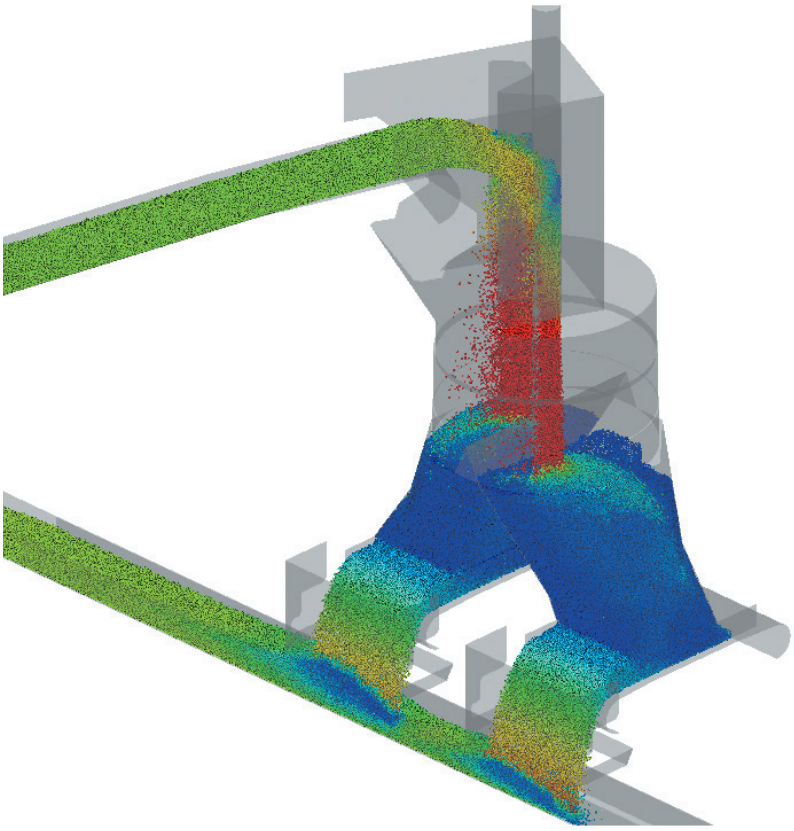


## What Transfer Chute Design Services are available?

With the track record of successful completion of transfer chute projects in various industries, TUNRA Transfer Chute Technology ensures:

- Increase of plant throughput by efficient transfer of bulk solids without spillage and blockages;
- Cost reduction of chute and belt wear;
- Minimisation of plant stoppages caused by belt mis-tracking;
- Environmental control by reducing dust emission and noise;
- Favourable chute cut-off angles (slope) to guarantee flow at specified rate under all conditions, minimising flow retardation and preventing blockage;
- Selection of the most favourable wall lining material based on flow property testing results - lowest friction, highest abrasive wear resistance;
- Minimisation of normal component of bulk solid material stream velocity at loading point - reducing impact wear on the belt.

**Our wide-range experience includes:**

- Hood & spoon type and "rock box" type - transfer chutes;
- Large/small vertical drop transfer chutes;
- Stacker and reclaimer chutes;
- Ship loaders;
- Train loaders and discharge;

And much more.

## Why TUNRA Bulk Solids?

**Experience and Expertise**

We have provided expert solutions to industry for over 45 years and are the leading organisation for materials handling research and consulting in Australia and internationally

**Research and Development**

We have a proven track record in research and development through the close association with The University of Newcastle

**Quality Service**

We have highly qualified, well-trained and specialist staff that are committed to delivering excellence

**First Class Facilities**

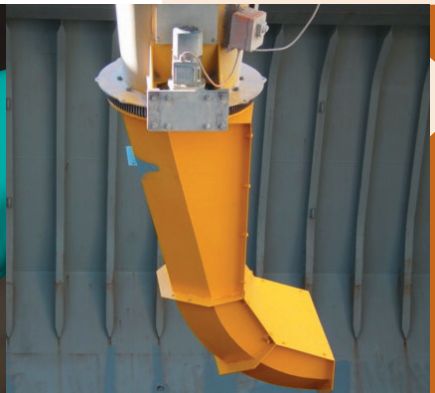
Our laboratory is a state of the art facility located within the Newcastle Institute of Energy and Resources (NIER) at The University of Newcastle

**Industry Standards**

We are accredited to ISO 9001, ISO 45001 and ISO 14001

**Independent**

We are independent and not for profit



## Further information

- To access our Case Studies **visit www.bulksolids.com.au**
- To discuss your industry and business needs **phone 02 4033 9055**