TUNRA BULK SOLIDS

Capability Statement: Belt and Idler Tender Process

Belt and Idler Tender Process

The idler and belt manufacturing markets are becoming increasingly **competitive**. There is a growing number of suppliers, several of which have production plants in Australia and others who operate overseas to sell belts and idlers for the Australian market. The large number of suppliers means there is invariably a **diverse range** of products available for the end-user.

The use of **quality components** in conveyor systems is of paramount importance. Less frequent replacement of damaged/faulty conveyor components can result in **savings** due to reduced plant operating costs and **reduced downtime**.

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Belt and Idler Tender Process

TUNRA Bulk Solids can design a comprehensive testing program to compare the performance of products by different suppliers to assist end-users in the selection of the most suitable components for their systems.

Testing for tender processes may include:

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Testing for Idlers

- Balance Grade Determination
- Rim Drag
- Total Indicated Run-Out (TIR) and Maximum Indicated Slope (MIS)
- Water Ingress
- Dust Ingress
- High Load Testing

Other tests may also be included following discussions with the client and their specific requirements.

TUNRA Bulk Solids offers several tests as per international standards, predominantly South African (SANS) and German (DIN).

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Testing for Belts

TUNRA Bulk Solids' specialists typically recommend tests defined in AS 1332, AS 1333 and AS 1334.

These tests are conducted on sections of conveyor belt and results should be compliant with the requirements set in these standards.

Clients may also want to investigate specific properties of the belts, which can be included in the scope as appropriate.

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Ply (textile) Belts

Test	Reference
Belt width	AS 1334.2
Belt Thickness	AS 1334.2
Top and bottom cover thickness	AS 1334.2
Edge Rubber Width	AS 1334.2A
Tensile strength and elongation of full thickness belt	AS 1334.3
Troughability	AS 1334.4
Tensile strength and elongation of covers (unaged)	AS 1683.11
Resistance of covers to aging	AS 1683.26
Ply adhesion	AS 1334.7
Tear resistance	AS 1334.8
Top and Bottom Cover Hardness	AS 1683.15.2
Top and Bottom Cover Abrasion Resistance	AS 1683.21
Elastic Modulus	ISO 9856
Top and Bottom Cover Surface Roughness	N/A

Steel-cord Belts

Test	Reference
Belt Width	AS 1333 Appendix E
Belt Thickness	AS 1333 Appendix E
Top and Bottom Cover Thickness	AS 1333 Appendix F
Vertical Cord Location	AS 1333 Appendix F
Cord Pitch	AS 1333 Appendix G
Troughability	AS 1334.4
Cord Diameter	AS 1333 Appendix C
Tensile Strength and Elongation of Covers	AS 1683.11
Resistance of Covers to Ageing	AS 1683.26
Cord Breaking Force	ISO 7022-2
Static Pull-out Strength	AS 1333 Appendix H
Determination of Dynamic cord Pull out Fatigue Resistance	AS 1333 Appendix J
Laminate Adhesion	AS 1333 Appendix I
Top and Bottom Cover Abrasion Resistance	AS 1683.21
Top and Bottom Cover Surface Roughness	N/A

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Indentation Rolling Resistance

As conveying distances and belt speeds continue to increase, greater emphasis is being placed on energy efficiency in belt conveyor design.

Research by Hager and Hintz [1] has concluded that up to approximately 60% of energy consumption in long distance conveying systems is due to the indentation of the belt cover passing over the idlers.

[1] Hager, M. and A. Hintz, The Energy-Saving Design of Belts for Long Conveyor Systems. Bulk Solids Handling, 1993. 13(4): p. 749-758.

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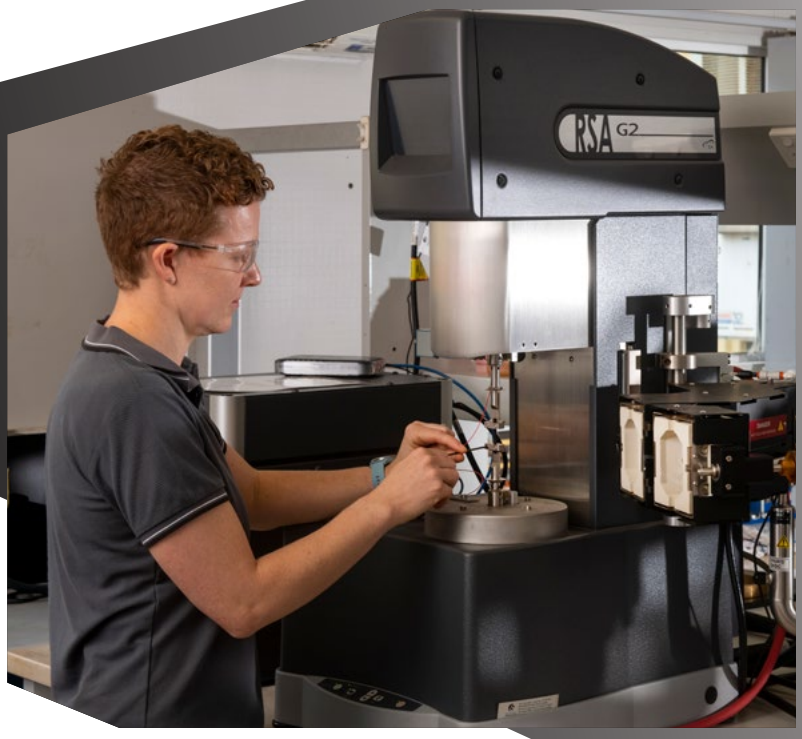

TUNRA Bulk Solids can carry out large scale indentation rolling resistance testing according to AS 1334.13, which is referenced in CEMA 7th Edition.

TUNRA is also able to perform viscoelastic testing on small samples using Dynamic Mechanical Analysis (DMA).

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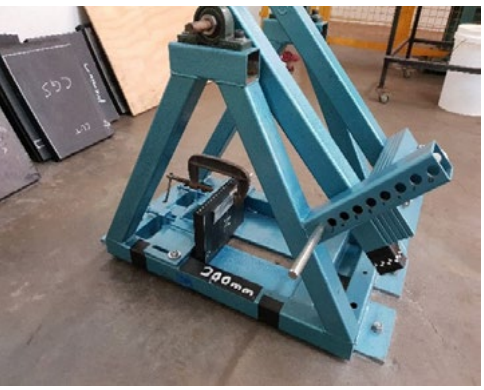
Customised Testing

In addition to the AS standard tests, TUNRA has also developed and built other tests in-house, which include:

- Cut and gouge resistance testing
- Abrasive and impact wear testing



TUNRA also has comprehensive workshop facilities where we are able to manufacture customised testing rigs and adjust existing rigs to cater for specific needs of our clients and research partners.

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Why TUNRA Bulk Solids

With 50 years of experience as a **leader** in the bulk solids handling industry, TUNRA's testing facilities are **ISO certified** to ensure delivery of the highest quality services.

We are an **independent** testing provider not affiliated with any manufacturer and we work closely with the top brands in the belt conveying market **worldwide**.

We have also worked with some of the world's leading mining companies to assist in their tender processes by developing comprehensive testing programs for **belts**, **idlers** and **scrapers**.

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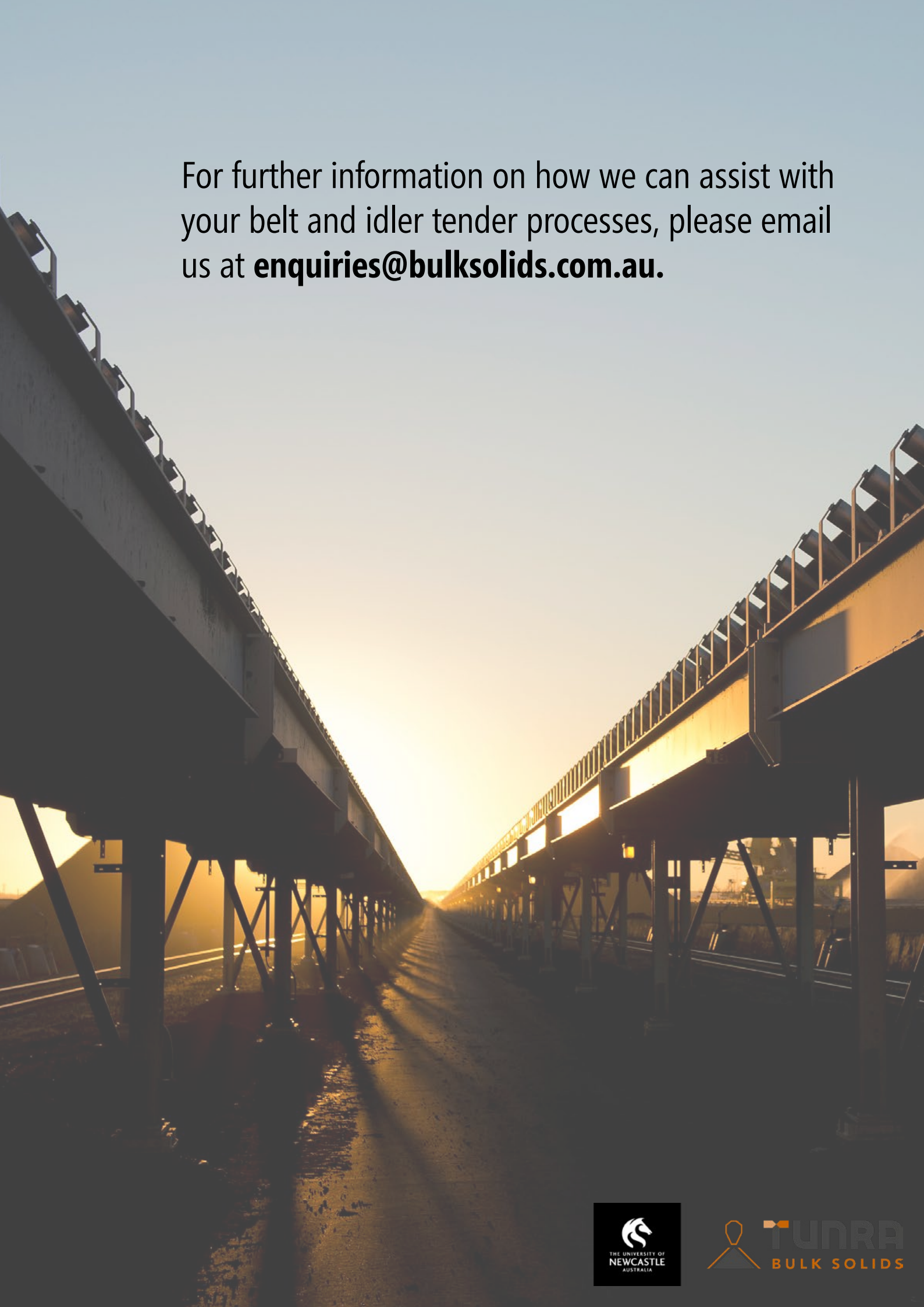

For further information on how we can assist with your belt and idler tender processes, please email us at **enquiries@bulksolids.com.au.**

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