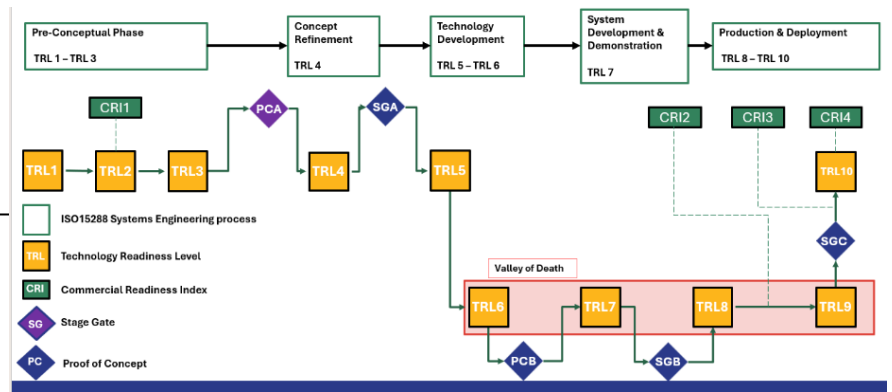
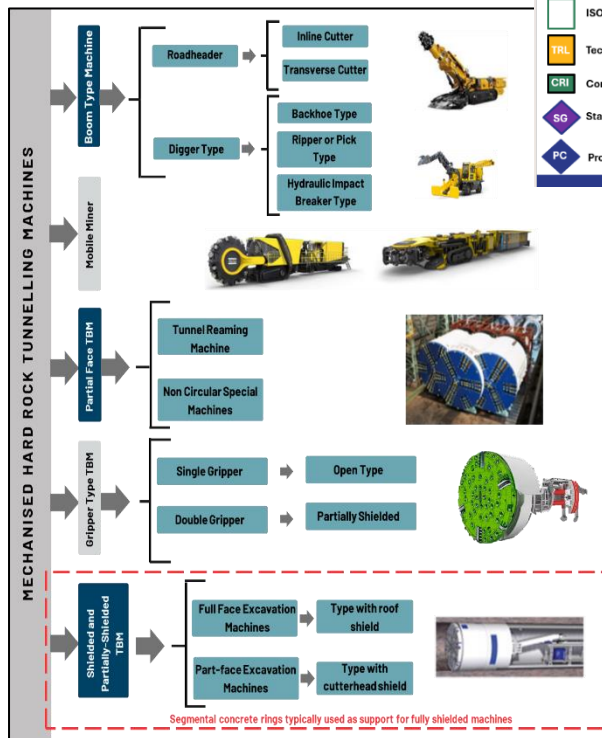




MANDELA MINING PRECINCT
MINDS FOR MINES

MECHANISED MINING SYSTEMS (MMS)

FOCUS AREA:

Technology Business Improvement

About the Mandela Mining Precinct



The Mandela Mining Precinct is a Public-Private Partnership between the Department of Science and Innovation and the Minerals Council South Africa. The Precinct is jointly hosted by the Council for Scientific and Industrial Research and the Minerals Council. The Mandela Mining Precinct is an initiative aimed at revitalising mining research, development and Innovation in South Africa to ensure the sustainability of the industry. This is achieved through the South African Mining Extraction, Research, Development and Innovation (SAMERDI) strategy.

The strategy comprises six research programmes:

1. Longevity of Current Mining;
2. Mechanised Mining Systems;
3. Advanced Orebody Knowledge;
4. Real-Time Information Management Systems;
5. Successful Application of Technologies Centred Around People; and
6. Test Mine.

This summary was developed under the **Longevity of Current Mines (LoCM)** research programme. The programme is aimed to increase the efficiency of ore reserve extraction, improvement in Occupational Health and Safety, the reduction in costs of current conventional mining operations and explore opportunities turning liabilities into assets for future sustainable mining.

MECHANISED MINING SYSTEMS PROGRAMME: MMS

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Introduction

The Technology Business Improvement focus is based on researching and identifying the latest technology products or systems to enhance products KPI measuring, control functioning, reporting to integrate with existing management system solutions. It introduces technology readiness assessment processes, where each Technology Readiness Level (TRL 1 to 10) have established criteria and requirements set, where the product are measured against the criteria to determine the maturity level.

Methodology

- Production and safety improvement are achieved by researching potential new technological business improvement solutions;
- Establish functional and performance technology readiness criteria with industry stakeholders;
- Developing or amending assessment processes to align with the TRL requirements and criteria;
- Testing and assessing products functioning and performance against TRL requirements and criteria;
- Trialing, assessing and demonstrating the products in an operational area at TRL7 stage;
- Implementation of product with roll-out and adoption best-practice processes at TRL8 to 10 stages

Expected Outcome/s

- Product solutions that are verified and certified, which are:
 - implementable,
 - meet the criteria and requirements,
 - have production improvement capability,
 - demonstrate efficiency and capability,
 - have value to reduce risk, and
 - ease of adoption and fully operational
- Mechanical Rock Cutting Technical Design Guidelines
- Non-explosive rock breaking equipment TRL 6 assessment guideline

Examples

- Mechanical Rock Breaking Technical Design Study Phase 1 & II
- Mechanised mining optimisation - Autonomous Lev 2 Phase I & II
- Testing and demonstrating battery powered mechanised equipment
- Non-explosive rock breaking equipment testing and TRL 6 assessment and validation for applications in NRHR mines
- Mechanical Rock Cutting Technical Design Study Phase I & II