

5. Mining and Metals

All statistical data are courtesy of: Department of Industry and Science, Australian Government, and Business Council of Australia



Overview

Mining provides the building blocks for human development. The supply of metal and mineral products has underpinned human endeavour through millennia and will continue to play its role in meeting society's needs. The need will remain strong, so satisfying demand requires finding and developing new mines, even as resource use becomes more efficient and recycling systems ramp up. Fortunately the geological supply of metals within the Earth remains robust and new technologies will help bring new deposits on stream.

Sector information

Australia has the world's largest reserves of lead, nickel, uranium and zinc (Australian Trade Commission 2013). The minerals industry contributed at least 10 per cent of the GDP in Australia in 2012-2013 and employs over a quarter of a million Australians (Minerals Council of Australia 2014). The recent mining boom in Australia has created a high level of demand for the development of specialised technologies and systems, many of which have become lucrative enterprises in their own right, both nationally and internationally. Despite this, the narrative around mining is generally not focused on the technology, innovation or intellectual property that drives the industry today.

Mining and Metals subsectors:

1. Coal extraction
2. Minerals and metals extraction
3. Tools, equipment and services*
4. Exploration and Production (E&P)*
5. Ores – Mining and metals

*Indicates that potential employment opportunities exist in the sub sector for automotive engineers transitioning

sec 0	Automotive
sec 1	Health
sec 2	Construction
sec 3	Manufacturing and Agriculture
sec 4	Oil, Gas, Energy
sec 5	Mining and Metals
sec 6	Defence and Space
sec 7	Electricity, Gas, Water and Waste Services
sec 8	Education and Training
sec 9	PowerGen

High level skill mapping

Mining and Metals Subsectors	Extraction	Equipment and Services	Exploration & Production (E&P)	Ores
	Roles and Skills			
Mechanical Engineer	X	X	X	X
Electrical Engineer	X	X	X	
Software Engineer	X	X	X	
Control Systems Engineer	X	X	X	X
Data Analysis	X		X	
Problem Solving	X	X	X	X
Research & Development	X	X		X
Design and Development	X	X		X
CAD and 3D modeling	X	X		X
CAE (Simulation and Analysis)	X	X		X
Product Development	X	X		
Product Engineering	X	X		
Production Engineering	X	X		
Testing	X	X		
Validation Engineering	X	X		
Vendor Management	X	X		X
Quality Engineering	X	X		X
Project Management	X	X		X
Technical Sales Engineering	X	X		
Maintenance	X	X	X	X
Business Development	X	X	X	X
Business Management	X	X	X	X
Strategic Planning	X	X	X	X
Leading Teams	X	X	X	X

Potential Opportunities and Synergy

Subsector	Potential Opportunity Areas	Job Synergy
Extraction	mechanical and control systems engineers, project managers, data analysts, software engineers	Increasing demand in extraction of minerals, metals and coals
Equipment and Services	mechanical and control systems engineers, project managers	boosted rate in maintenance management, operations engineering, project management, and asset management is expected
Exploration & Production (E&P)	mechanical and control systems engineers, project managers, data analysts,	rise in production especially in coals and metals capacity, despite the fall in exploration and decline in production of refined products, has tended to boost the job market with vacancies in operations engineering, asset management, project management, and maintenance engineering
Ores	mechanical engineers, project managers	mechanical tools and maintenance engineers in demand in this sub sector