

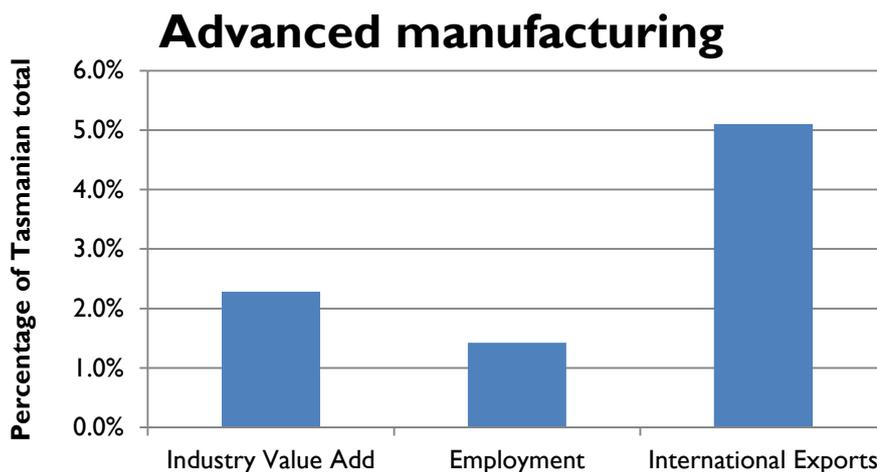


Advanced manufacturing

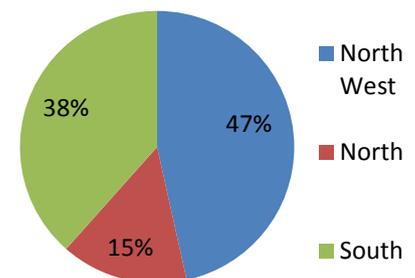
The trade and investment sectors contained in this series of sector summaries have been compiled from Australian and New Zealand Standard Industry Classification (ANZSIC) classes using a value chain approach. This means that industry classes from ANZSIC have been grouped together to provide estimates of the size of the particular trade and investment sectors.

Coverage: The modern definition of manufacturing is broad and includes the full cycle of activities from research, design and development, production, logistics and service provision, to end-of-life management. It is a value stream. Tasmanian advanced manufacturers generally develop high-value, premium-margin products, by concentrating on the development of low-to-medium-volume niche products and services. Advanced manufacturers embrace innovative technologies and the adoption of continuous improvement.

Key indicators



Regional employment



Key statistics at a glance

Indicator	Units	Period	Data	Change from five years ago	Per cent of Tasmania	Per cent of Australia
Industry value add ^(a)	\$M	2012-13	\$552	NA	2.3%	1.2%
Employment ^(b)	No.	2011	3 016	-16.1%	1.4%	1.0%
International exports ^(c)	\$M	2012-13	\$155	NA	5.1%	NA
Incomes (average weekly) ^(d)	\$	2011	\$1 192	28.5%	135.1%	137.3%
Education ^(e)	No.	2011	1 011	NA	33.5%	49.2%
Employment (proportion full/part) ^(f)	Type	2011	Full-time	NA	85.1%	87.8%

Sources: Australian Bureau of Statistics (ABS) (2012, 2013), Department of Economic Development, Tourism and the Arts (2013), Department of State Growth (2014), AEC Group

(a) Source AEC Group. Industry value add (IVA) is a component of the ABS estimate of Gross State Product and measures the total value of goods and services produced by the sector less the value of inputs. Estimated change in IVA from five years ago for a sector is heavily influenced by change at the highest 'ANZSIC Division 1' level of industry aggregation and is not reported.

(b) 2011 ABS Census. AEC Group considers this the most accurate estimate of employment at the detailed four digit ANZSIC level.

(c) Tasmanian international exports are DEDTA estimates using ABS data. Per cent Australia AEC Group estimate.

(d) 2011 ABS Census. This includes employment and non-employment related income (e.g. rents, dividends, interest, child support and government pensions and allowances). A percentage above 100 per cent of average weekly income suggests workers in this industry earn higher than the average wage.

(e) 2011 ABS Census. Education measured by the number of employees who have completed Year 12 (or equivalent studies). Percent of Tasmania/Australia shows the proportion of workers in this sector who have attained this level of education.

(f) 2011 ABS Census. Per cent of Tasmania/Australia shows the proportion of workers employed in this manner.

Summary of sector

The manufacturing sector in Australia has been in decline for several years. It is well recognised that the sector faces a number of issues regarding freight, labour costs, energy costs, skills shortages, cost of capital, the high Australian dollar and competition from overseas. Nevertheless, total manufacturing contributed \$1.72 billion in gross value added to the Tasmanian economy in 2012-13.

The advanced manufacturing sectors addressed here do not include food, mineral or wood processing, or manufacturing such as textiles, clothing and footwear.

Individual enterprises demonstrating good management development have expressed the view that despite existing constraints there is opportunity for them to be globally competitive, if they are able to increase their competitiveness through a range of initiatives surrounding people, products and process.

The marine manufacturing sector has been dominated by one aluminium fast ferry constructor and its highly-skilled innovative supply chain. The dominant constructor has been at the leading edge of industry innovation for many years, producing a highly successful style of vessel. The companies in its supply chain produce a broad range of products including marine evacuation systems, rapid access passive fire protection barriers, ride control foils and hydraulics, wide-frequency antenna systems and anchoring winches. Companies in the supply chain have matured significantly in the past 10 years and many are now successful international exporters in their own right.

The metal manufacturing, casting, specialised machinery manufacturing and engineering sector produces a diverse range of niche products, while also supporting repair and maintenance activity within mining, mineral processing and other heavy industries. Tasmania has an established, global-scale, specialised mining machinery manufacturer located at Burnie. A number of other specialised manufacturing companies also share much of the same supply chain, which is made up of many jobbing shops producing a wide variety of products and services.

A number of small-to-medium enterprises operate across marine and other forms of manufacturing.

Conditions

Aluminium fast ferry construction has shown susceptibility to cyclical market trends. It is an export-focused sector that has recently been in the trough of a market cycle and under considerable stress, as evidenced by the closure of one factory at Margate and a general slowdown in construction activity.

However, the industry has shown resilience over a period of decades. There are now signs of recovery and the outlook is positive, with the delivery of a 99-metre liquid natural gas powered vessel and several new orders in the production process.

As well as the dominant aluminium fast ferry constructor, there is also a number of other ship builders in the state of varying size. Because of the cyclical nature of ship construction, the industry would benefit from increasing diversity.

Businesses in the aluminium ferry supply chain have diversified their markets. Many have been successful in defence, oil and gas, polar support and other niche subsectors. Five leading suppliers to the major ship builder now employ more people collectively than the shipbuilder itself. These companies will continue to operate in the highly-competitive international markets of defence, offshore exploration and maritime services, where major opportunities exist.

Constraints and opportunities

For example, the offshore oil and gas sector in Australasia alone involves investment projects worth several billion dollars at any one time, with consequent opportunities available for the Tasmanian marine manufacturing sector. Specific opportunities include construction of work boats and ferries to service offshore structures, modular accommodation units and refits of rigs, non-destructive weld testing of components, ocean port simulators for expansion feasibility, and bio-fouling remediation for semi submersibles.

If the fast ferry market declines rather than grows, supply chain enterprises may need to identify and review market opportunities overseas.

Ship repair activity is another counter-cyclical opportunity for the marine manufacturing sector, which can be conducted either in Tasmania or elsewhere. However, the scope for conducting such activity in Tasmania is limited by infrastructure and demand, and requires close cooperation between government and industry.

Tasmania offers a highly skilled, well-experienced marine and maritime industry base that has proven to be capable of applying itself across a number of technical areas. It is important to continue the training of future employees and the up-skilling of existing staff. Part of the industry's future may also lie in extending its technical capability globally, with highly-mobile workforces fully trained and ready, rather than relying on a locally-domiciled single-product model.

The impact of the Global Financial Crisis (GFC) on non-marine manufacturing was also severe. For the key manufacturer of mining equipment, low mineral commodity prices reflected in its sales and its investment. However, the post-GFC recovery has been strong and has increased the importance of a highly-skilled labour force and internationally-competent business systems.

As with marine manufacturing, it is important for general manufacturing businesses to diversify through pursuit of off-island opportunities, such as mining and mineral processing, defence, oil and gas and renewable energy. Many Tasmanian businesses are already competitively-delivering goods and services into such projects.

Many modern large manufacturers are actually 'integrators'. That is, they do not make, nor design, every component, but source components from equipment manufacturers and other suppliers, and assemble them to produce finished goods.

Integrators will vary the in-house content of their work depending on demand, industrial issues and cost structures. A common process absorbed by integrators is metal fabrication and machining. This creates a cyclic demand which puts stress on the Tasmanian jobbing shops that are traditionally part of the supply chain. Unless Tasmania has strong alternative sources of demand on such occasions, such as capital investment projects, these external jobbing contractors find it very difficult to maintain sustainable operations.

Other processes that do not always easily fit with integrators are engineered castings. Rarely do integrators operate their own foundries, which are inherently energy-intensive and require specialist skills. Large castings are costly to transport and these plants are ideally located close to the integrator. However, casting patterns and moulds are easily reproduced by modern computer-assisted design and manufacturing processes, thus allowing some cast products to be sourced from many alternative locations.

Overall, it is important for government and industry to monitor industry capability, to ensure that the balance of locally-domiciled component production does not fall short of the integrator's 'local content' value, which could lead to a decision to move the entire supply chain offshore.

Consultation with industry stakeholders has identified the following key constraints and opportunities:

Constraints/risks

- Markets demand an ongoing reduction in price.
- Traditional brand loyalty is being challenged by similar-quality, low-cost imports.
- Rising input costs, including freight, labour, energy and packaging.
- The high Australian dollar has promoted increasing competition from overseas.
- Emerging global competitors from low-cost countries such as those in Asia and Africa.
- The rapid pace of technological development in high-speed digital production.
- Global trade barriers.
- Difficulty accessing capital for Tasmanian manufacturing companies.
- Difficulty meeting labour needs, with a lack of soft skills from younger recruits and a poor image of manufacturing in the market.
- Skills gaps and shortages, with traditional training mechanisms not suiting modern advanced manufacturing.
- The small size of skills base in Tasmania.
- Cost to businesses of skills development.
- Increased ease and acceptability of global sourcing.
- Weak domestic demand for a number of manufactured products.
- 'Dumping' (delivery at prices lower than production) of foreign manufactures into Australia.
- Lack of resources to explore opportunities in new international markets and to respond to global competition.
- Limited access to new technologies, including broadband.
- Reluctance to restructure or adapt business models in response to changing cost structures and market demands.
- Poor production processes and management systems that do not meet global supply chain expectations.
- Reduction in port access and/or sea freight services to the mainland.
- Financial weakness of some enterprises, including low margins and low financial reserves, which limits opportunities even where the enterprises have the right product or intellectual property.
- The United States' Merchant Marine Act (1920) prohibits large-scale purchases into the USA of vessels constructed overseas.

Opportunities

- Development of new products, designs and capabilities in design and innovation.
- Expanding markets for Tasmania's producers of energy efficient, light and fast vessels.
- Servicing demand from repairs, upgrades and capital projects in the mining and mineral processing sector.
- Developing defence and border security sales, and contracting with defence prime contractors and the Defence Materiel Organisation.
- Improving associations with universities and institutes.
- Supplying services and products to the offshore oil and gas sector.
- Supplying renewable-energy industry construction, assembly and servicing.
- Strategic positioning of businesses in specialist markets to take advantage of opportunities as they arise.
- Small steel manufactures that can be competitive in mainland Australia.
- Establishing clusters and joint ventures in order to partner with national and international companies.
- Demand from replacement of existing fast ferries reaching end of life.
- Ship repair and refurbishment services, due to demand related to Southern Ocean activities and high charges in other ports.
- Small-to-medium luxury tourism ferries and super yachts.
- Leveraging first-mover advantage in ships powered by alternative fuels such as liquid natural gas.
- Future innovation, based on a strong skills base and capabilities in aluminium manufacturing generally.
- Securing a greater Tasmanian presence of component suppliers in key international supply chains.
- Enhanced build capacity by land-based prefabrication and sub-assembly, and/or clustering with other builders.
- Attraction of new manufacturing investment to the state based on cheap renewable energy and available skills.

Strategy summary

Tasmanian advanced manufacturers have the opportunity to develop high-value, premium-margin products by concentrating on the development of niche products and/or mass customisation. Indicative products and services may be low-to-medium volume, complex and client-focused in nature, utilising the proven problem-solving skills that exist across the state.

Tasmanian manufacturers believe that the stable people-based environment that Tasmania offers contributes to a positive and trusting business environment, which allows their business to be sustainable.

Tasmanian manufacturers recognise that the transition from jobbing shop to production plant has tested the management capability, quality delivery and skills development of the sector as a whole, and that there is a shared responsibility to improve, alongside assistance provided by relevant government agencies.

Similarly, Tasmanian manufacturers would be keen to seek affiliation in a recognisable industry group which can assist in a wide range of professional development, technology and marketing processes.

Government strategy

The Department of State Growth will continue to work with AusIndustry, Austrade, and the University of Tasmania across a range of issues in the Tasmanian manufacturing industry at both enterprise and sector level to build capacity, capability and competitiveness.

The high-level principles to underpin these actions are:

- improve engagement between suppliers, processors and customers (such as quality and point of difference)
- implement cost reduction programs across the whole value chain (such as joint purchase of raw materials or consolidation of freight)
- establish better manufacturing processes, improved business systems and logistics (such as the adoption of lean practices)
- achieve improvements which could not be achieved by an individual enterprise (such as co-ops and clusters).