



# **Australian Foundry Institute**

ABN 53 830 764 159

## **Industry Data Report**

**October 2023**

**Details of a survey of the cast metal  
industry of Australia.**

**Compiled by –**

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## 1.0 Executive Summary

The 2023 Metal Casting Industry Report is the 5<sup>th</sup> publication aimed at summarising the scale of the metal casting industry in Australia and to capture some of the key metrics that impact on our metal casting operations.

The data provided is intended to be used as an aid by anyone with an interest in the Australian metal casting industry.

In May 2022, the AFI National Council made the decision to continue with an annual survey with the same range of requests for data as the previous year. The AFI National Council takes the view that this report more accurately represents our industry, than other published reports for the Australian metal casting industry.

As in previous years, Non-Disclosure Agreements were signed when requested. However there still remain a small but significant number of metal casting businesses that are unwilling / unable to share data.

The 30 casting operations that have shared data with me, ensures that the report is representative of the metal casting industry in Australia. Again, I have also derived data, using publicly available information, from a further 29 metal casting operations. The data within this report primarily covers 2022 calendar year.

The cast metal industry in Australia generates more than \$0.75 billion in sales annually, and directly employs 2000+ people, including 63+ interns / trainees / apprentices.

The current reporting period has seen the closure of a number of long standing metal casting businesses. A common theme for most of these has been the high prices offered to the retiring business owners from land developers – effectively locking out any potential buyers with an interest in continuing to operate a metal casting business. Despite these closures the total tonnage and value of metal cast across Australia has remained steady.

The positive outcomes are the generally strong and steady order books for most businesses. However the disruption to demand through the covid epidemic to our major die casting operations continues to have an effect. Though costs are a perennial concern for our businesses, the single biggest issue reported across the industry is the difficulty in accessing both skilled and unskilled personnel.

## 2.0 Background

The AFI National Council aim with this report is to more closely match the data represented in the IBIS C2121 Iron and Steel Casting in Australia June 2019 report and also the IBIS C2141 Non-Ferrous Casting report. There was a strong view that the IBIS reports did not accurately represent the reality for Australian metal casting operations.

The data requested in the 2023 industry survey continues this effort to better represent the Australian metal casting industry.

### **3.0 Survey Purpose and Overview**

The purpose of the survey is to provide collated industry data on selected aspects of the Australian Cast Metal Industry.

#### **3.1 Areas Addressed**

The request for Industry Data has been mainly focussed on AFI member casting operations but does include data from non-AFI member companies.

Information requested covers Tonnage of metal cast (Ferrous and Non-ferrous), number of employee's, number of trainees and apprentices, power cost per Kwh, new sand cost per Tonne, \$ value of annual casting sales, casting methods used, major market segments and cost structure by %.

Metal casting businesses were also asked to comment on the single biggest issue impacting on their operations.

#### **3.2 Confidentiality Management**

Confidentiality of the data supplied by individual casting operations continues to be of prime importance. As with the previous reports, all data was received and collated by myself only. As a long term, but now retired foundryman, I have no vested interest in any existing casting operations. Where requested a non-disclosure agreement has been signed. Only aggregated data is reported.

#### **3.3 Survey Format**

Appendix 1 shows a blank Data Request Form and the 2 related documents that were issued to casting operations through the various AFI State Secretaries.

#### **3.4 Participant Feedback**

A significant majority of AFI member metal casting operations were supportive of the process. A few were limited in the data that they could share. A total of 30 metal casting businesses shared data with me. Using publicly available information, I derived data for a further 29 metal casting businesses and included this data in this report.

#### **3.5 Survey Timing**

The initial communication requesting data was issued in February, 2023. Data was received over a wide time frame – from March 2023 through to September 2023. The majority of data was received by mid-year 2023. In some cases the data related to calendar year, for some financial year.

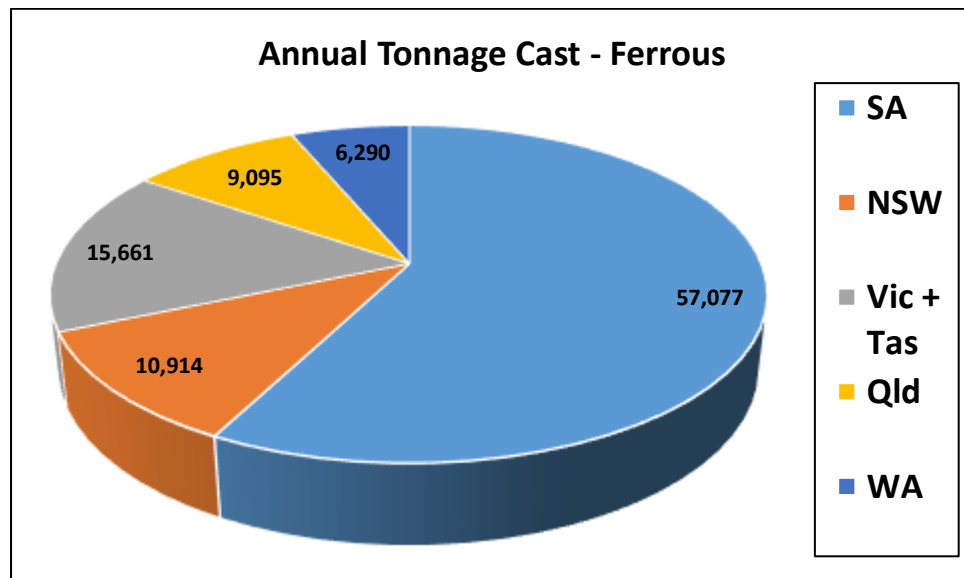
## 4.0 Survey Data – Statistics Summary

### 4.1 Annual Metal Tonnage – Ferrous and Non-Ferrous

16 respondents gave an annual Ferrous tonnage cast figure to which I added derived data from a further 13 foundries, giving a total 99,037 T of Ferrous metal cast annually.

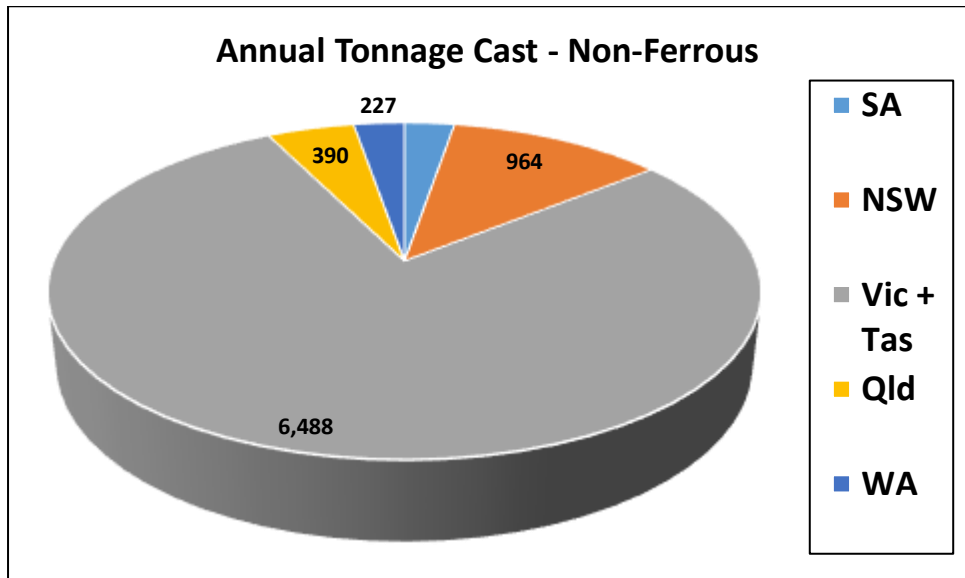
This total represents a 2.2% decrease from the total indicated in the 2022 Industry Report.

Note that this data covers what we define as a foundry, not the large continuous cast steel operations or the multiple metal refining operations.

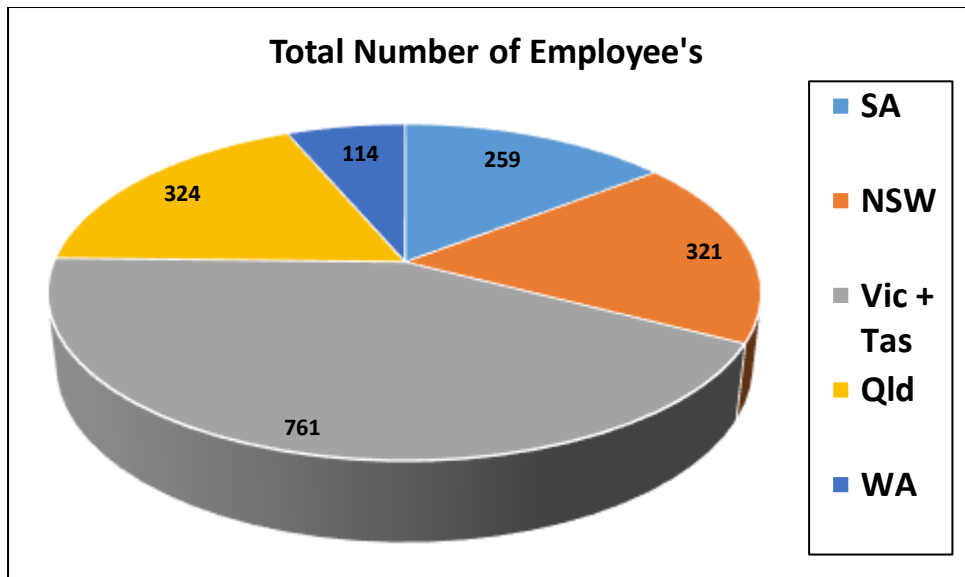


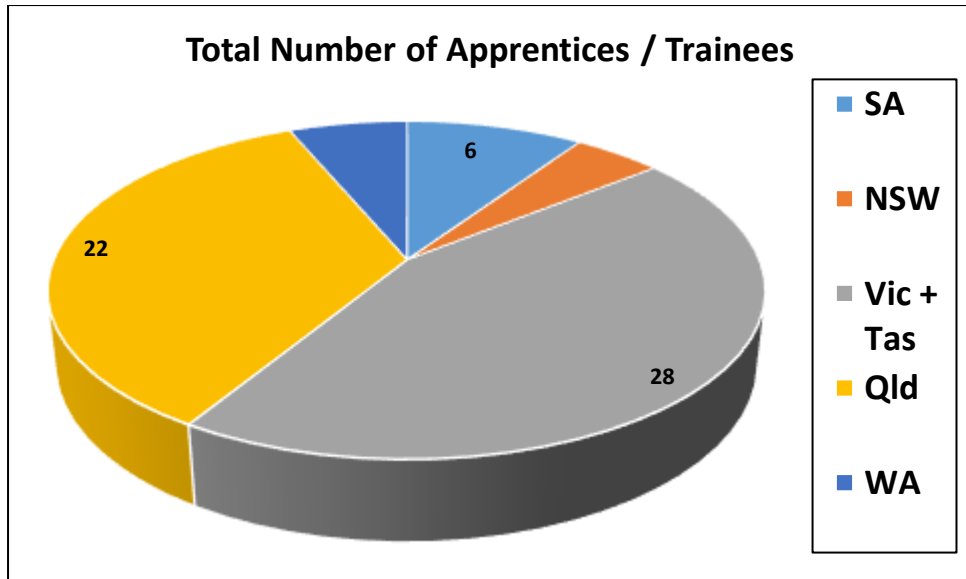
The Non-Ferrous data received from 16 respondents, along with data derived for a further 28 operations, gave a total of 8,272 T metal cast annually.

This tonnage cast does not include data from our major die casting operations. This total figure reported indicates a significant drop over 2023, which can be largely related to the decrease in construction industry activity in the US and Australia.



4.2 Number of Employees and Trainees / Apprentices  
 Combining received data (30 respondents) and derived data (27 operations) gave a directly employed number of 1761 employees and 63 interns / trainees / apprentices. The majority of these interns / trainees / apprentices are based in Queensland and Victoria. The total employed number represents an increase over the 2022 figure. This growth is largely attributable to an increase in the number of interns / trainees / apprentices. Note that the number reported does not include data from the major Victorian based die casting operations.

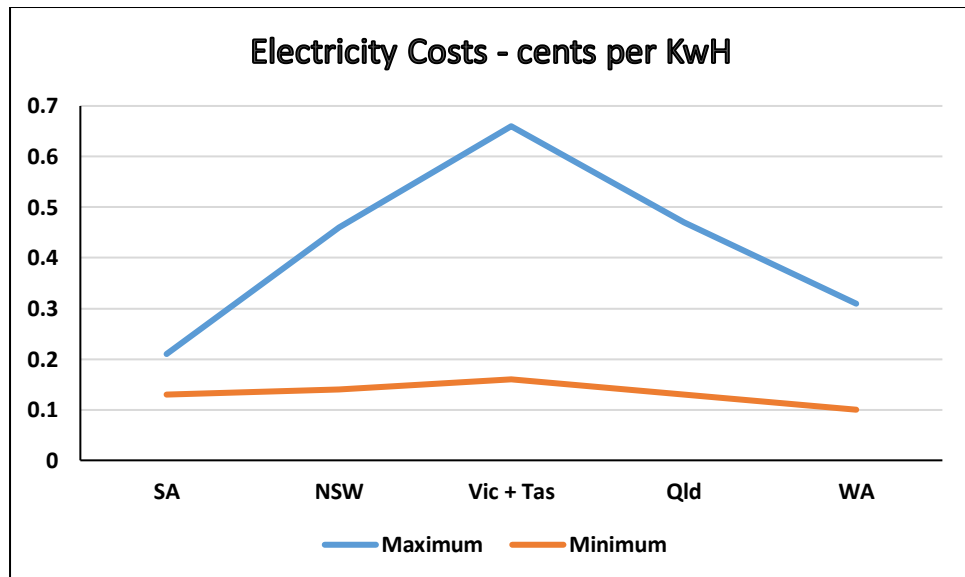




#### 4.3 Energy Costs

Given the complexities involved with electricity bills, survey participants are asked to provide electricity cost per kWh, ie total costs associated with electricity provision divided by total kWh's consumed. The aim is to have a directly comparable metric for all metal casting operations. For some integrated businesses it is difficult to split out this cost specific to their casting related activity.

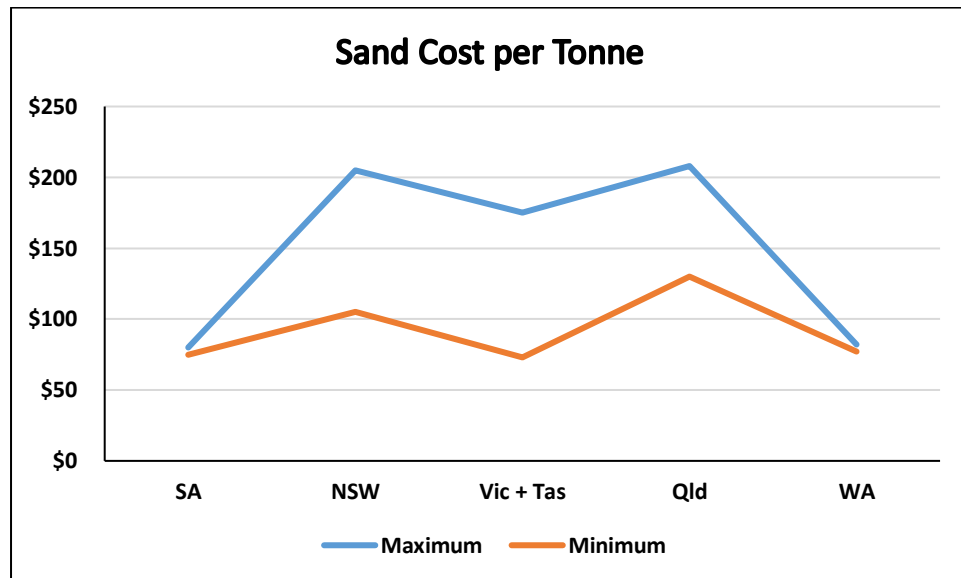
The 23 responses indicate a range of \$0.10 to \$0.66 / kWh.



#### 4.4 Sand Costs

Survey participants were asked to provide sand costs and identify type of sand purchased. The 21 responses gave cost per Tonne for silica over a range of sizes. With only single data points reported for costs for chromite, ceramic sand, glass, zircon, entoucas and synthetic sand these figures are not shown in this report.

Silica sand data is represented in the chart below.



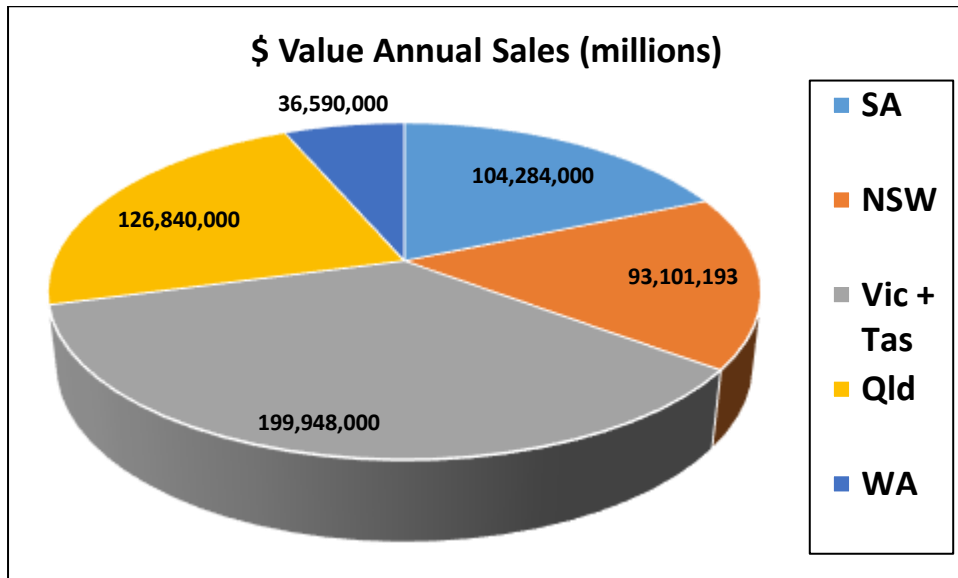
#### 4.5 Annual Sales

Survey participants were asked to provide the \$ value of annual sales of castings. This calculation is made more complex by the fact that many casting operations also have considerable value-add processing post-casting (eg: machining, assembly, painting).

The chart below represents data received from 30 respondents plus my derived estimate for a further 29 metal casting businesses. The reported figure does not include annual sales of our major die casting operations.

The total of \$560.8 million represents a small (1.6%) increase over the figure reported in the 2022 Industry Report.





#### 4.6 Casting Method

Survey participants were asked to identify the casting method used. Hard sand, Greensand and Die casting were reported as the dominant cast methods with Investment Casting, Shell Mould, and Continuous Casting also reported.

We did not ask for a breakdown of tonnage cast for each casting method used.

#### 4.7 Market Segments

Survey participants were asked to identify the major market segments that they supply.

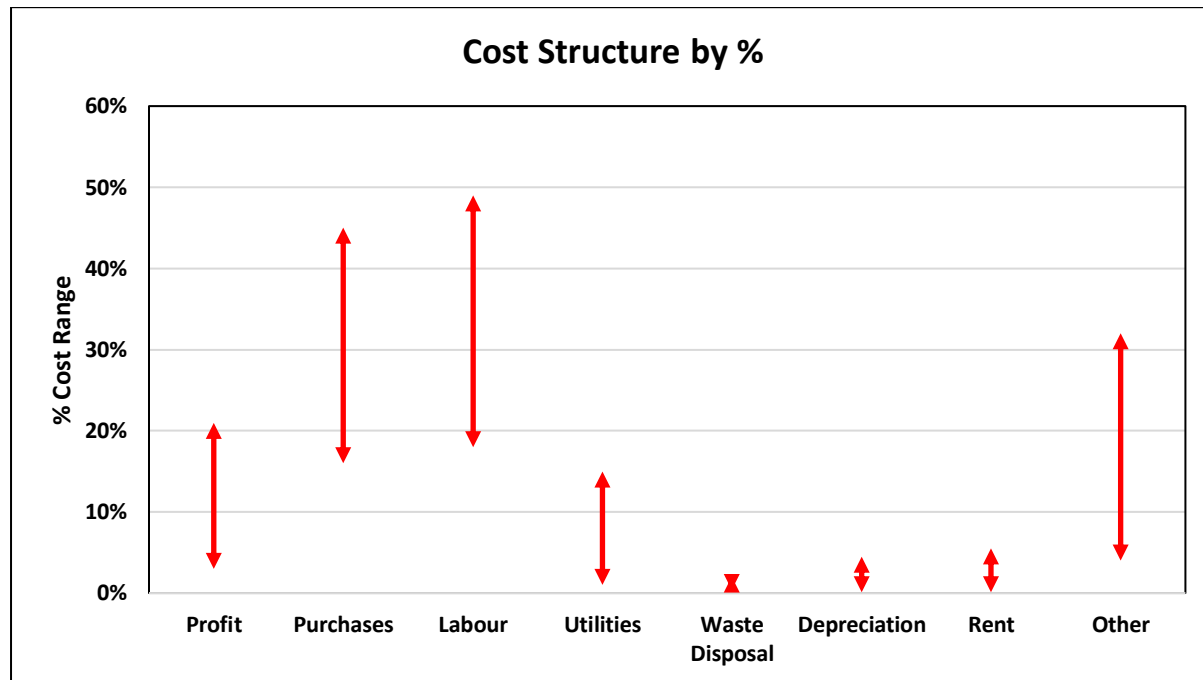
Not surprisingly, the respondents indicated a customer base covering a very diverse range of industries. I am not able to weight these in any particular order. The following is a list of industries supplied with Australian castings—

Aerospace	Food	Power Generation
Agriculture	General Industry	Pumps and Valves
Architecture	Heavy Transport	Quarries
Automotive	Marine	Rail Infrastructure
Biomedical	Medical	Retail
Brickmaking	Memorialisation	Sculpture
Civil Engineering	Mineral Processing	Smelting
Construction	Mining	Sugar Mills
Defence	Petrochemical	Water
Energy	Plumbing	
Fluid Transfer		

#### 4.8 Cost Structure

Survey participants were asked to provide business metrics in % terms for the categories of Profit, Rent, Utilities, Depreciation, Waste Disposal, Wages, Purchases and Other.

This was the most commercially sensitive information requested, so not surprisingly fewer businesses were willing to share this data. The charts below show the aggregated data for those 18 businesses that were able to share their data with me.



#### 4.9 Industry Trends

As we build data year over year, it becomes possible to monitor trends in our industry.

The following table represents comparable data from 2019 through to 2023. Note that data from our major die casting operations are not included in this table. I do incorporate data from our major die casting operations in my comments in the Executive Summary.

	Total Tonnage Cast		Number of Employee's	No. of Interns / Trainee's / Apprentices	Electricity Cost (cents / kWh)		Annual Sales (million)
	Ferrous	Non-ferrous			Min	Max	
<b>2019</b>	102,883	8,113	1691	33	10.5	54.5	\$490.2
<b>2020</b>	100,484	12,518	1792	44	13.0	42.5	\$591.4

<b>2021</b>	97,221	12,796	1483	36	11.2	32.5	\$487.4
<b>2022</b>	101,229	12,492	1687	44	10.0	66.0	\$551.8
<b>2023</b>	99,037	8,272	1761	63	10.0	66.0	\$560.8

#### 4.10 Major Issues

Survey participants were asked to identify the single biggest issue impacting on their business. Unsurprisingly, there were common themes in the 27 responses. The following gives a largely verbatim summary of these responses.

##### **Costs**

Waste Disposal costs.  
Electricity and gas costs x 2  
Electricity, Workcover & Employment costs.  
Utility costs x 2  
Global alloy and scrap costs  
High wage cost. High material costs.  
Raw material cost control.

##### **Materials**

Material supply  
Lack of local raw material producers.

##### **Other**

Lead time blowouts  
The size, volume & timing of rail fastener projects  
Market variability

##### **Labour**

Labour Supply.  
Lack of suitable personnel  
Not being able to get staff.  
Ongoing staff issues and lack of expertise within the industry – very difficult to recruit skilled staff.  
Managing staff  
Labour x 3  
Finding employees  
Workforce  
Finding skilled tradesmen, factory workers  
Recruitment  
Skilled labour x 7  
Unable to recruit trade qualified moulders through overseas sponsorship as it is not on the skill shortage list  
Staffing/apprenticeships shortage is the single largest issue  
Getting people skilled and unskilled

## 5 Discussion

I consider a conservative estimate of metal cast in Australia is 110,000 T of Ferrous (Iron and Steel) and 20,000 T of Non-Ferrous (Al alloys, Cu base alloys, Pb).

These figures represent steady state for Ferrous and a significant drop for Non-Ferrous. The latter can be largely explained by a drop off in the US and Australian construction industry and a slow recovery for the global automotive industry. However most of our small to medium volume producers continue to have very strong order books, indicating that the predicted downturn in the Australian economy is yet to have an impact on metal casting. An interesting emerging trend is that while tonnage poured remains steady (apart from our large die casting operations), the \$ value of metal castings produced has increased slightly. Could this be a reflection of the industry focussing on higher value product or are casting buyers beginning to accept a higher premium to avoid the supply chain issues that sourcing overseas can bring ? The raw data isn't able to clarify the cause behind this movement.

As mentioned, the total tonnage reported for Non-Ferrous metal in this report has declined significantly from the 2022 Industry Report. There are 2 major factors contributing to this outcome. Demand for plumbing fittings into the US has declined sharply with the contraction of US construction activity. Also the global automotive industry recovery has been gradual rather than the expected fast turnaround. Combined, these factors have had a direct impact on our high volume, non-ferrous metal casting operations

The total number of employees in the industry indicates a 4% increase over the 2022 reported figures. Interestingly, much of this increase could be attributed to an increase in the number of interns, trainees and apprentices employed in the industry. I'd consider this a reflection of the difficulty that metal casting businesses have in attracting skilled personnel, and so employers are now beginning to invest more into formal training of unskilled personnel.

The reported 63 interns, trainees and apprentices that are directly employed in our industry continues to be largely based in Queensland and Victoria. I consider that this is largely due to the availability of training opportunities within each of these States. It is pleasing to report that progress has been made on offering trade training in other States, with the SA and NSW Government funding now approved for the private RTO AIE to deliver the Casting and Moulding course our industry needs.

Progress on training opportunities is not linear. In Victoria GOTafe are in the process of exiting foundry trade training, with apprentices being transferred to the private RTO, AIE. With Skills Tech continuing to offer excellent facilities and opportunities, the training horizon is looking increasingly positive. The AFI will continue to have a direct role to play in advocating for State funding in each of WA and Tasmania, to ensure that the updated Patternmaker

qualification is offered in all States, and to advocate for the new Diploma level metallurgy course to be offered by a RTO in the near future.

In the meantime, significant shortages of both skilled and unskilled personnel continue to be a major concern for many businesses. There are no quick fixes. For some, employing from overseas is an answer. Upskilling of existing employees, pays dividends for both employee and employer. There are several examples around the country of metal casting businesses forming very strong relationships with local schools, resulting in ongoing interest from students in apprenticeships and traineeships.

While the job market remains as is, the onus will continue to be on the individual businesses to invest time and resource into attracting more people into the industry. Foundry In a Box is a tool that can help raise the profile of our industry with the general public and students. Most State branches of the AFI either have or are now in the process of preparing their own Foundry In a Box kit. Be active in looking for ways to use these tools to inform people of the opportunities within the metal casting industry.

As in previous years, the data for electricity cost per kWh indicate that there remain significant opportunities for some metal casting businesses (NSW, Vic, WA) to reduce their energy costs. This is seen in the min/max energy costs being paid for each of these States. Federal Government intervention into the energy market, dampened some of the impact of rising electricity costs. Our AFI National President, Brett Lawrence, has had a strong voice in the media on energy costs to industry. This has helped open the doors to access to our political decision makers. With the door ajar, I consider this an opportunity for our industry to express to our politicians other major concerns impacting on the strength and viability of Australian metal casting. Government procurement policy is one such area. Reducing barriers to skilled migration. Greater industry input into course content and the types of courses on offer.

A large variance in silica sand costs within and between States continues to be reported. I'd suspect that this is largely due to freight costs as much as availability.

For our businesses that are using silica sand, the highly publicised issue of silicosis resulting from high exposure to respirable crystalline silica (RCS) dust raises many factors. The focus has been on the manufactured stone industry, but all industries using silica need to consider what levels of RCS exposure their employees are subjected to through their various processes. At a Federal level, a review is being conducted that will deliver new rules and regulations on how RCS is managed in a business.

A presentation at May 2022 AFI National Conference from Olds Engineering, gave a clear picture of the issues that can arise with RCS, the steps that are required to quantify RCS exposure within their operations, and the actions hierarchy to eliminate or minimise risk. The key is to have verifiable data.

The total reported \$ value of castings produced is a small 1.6% increase over the 2022 report. With very strong order books now the norm, much of our

industry is now working close to capacity, the exception being the high volume producers. Indications are of strong demand for castings into the Defence industry. For those that can successfully navigate the difficulties involved in dealing with Defence, the rewards can be high.

The wide range of market segments and wide range of cost structures reported reflects the significant diversity of the metal casting industry. The Australian metal casting industry continues to be an important supplier to very many other industries. There are some strong examples of collaboration and job sharing between businesses in our industry, where one may be better facilitated to produce a particular product than another. Though informal, this type of collaboration is very important in an industry of our size.

The question of the “single biggest issue impacting on the business” is highly focussed on access to skilled and unskilled personnel. Several of our businesses have been operating for much of 2023 with unfilled vacancies. With this situation expected to continue in the near term, businesses will need to consider allocating more time and resource into training, strengthening relationships with local schools, and generally raising awareness of career opportunities within the metal casting industry.

## 6 Conclusion

This 5th annual survey of the Australian Metal Casting Industry has built on the base level data which was reported in 2019 with a slight expansion in 2020. Support for this survey remains stable though consideration needs to be given to how this can be improved on.

Access to skilled personnel, unskilled personnel and training has grown to be the single biggest issue impacting our industry. There is no single action that will give short term relief from this situation. The solutions continue to be as reported in 2022. Form relationships with local secondary schools, bring interns (university students) into your business and actively work on getting them excited about working in metal casting. Find ways to accommodate those that can't work a full week. Use the AFI to help you with exploring skilled migration.

The data and feedback paints a picture of a resilient industry that is at the initial steps of addressing the task of training a new generation of tradespeople and leaders, are technically more advanced and global leaders for many cast products, with opportunities for growth and expansion in these specialised areas.

This report is only useful if it used. Plan to meet with your local member / council. Table this report with them, but also highlight the value of the metal casting business to the local area in terms of direct and indirect employment, taxes paid, economic value and capability to expand and help other businesses grow. Be active in driving this message !!

## 7 Appendices

### 7.1 Blank Data Response Table

Australian Metal Casting Industry Data – AFI National		2023 Survey
Data Requested	Response	Comments
1. Annual tonnage cast by metal type - Ferrous / Non-ferrous		
2. Total number of employees to produce these castings		
3. Number of Trainees / Apprentices (Identify apprentice type)		
4. Total Power costs / Kwh (Divide your total power bill by Kwh's used)		
5. New sand costs / Tonne (Identify sand type)		
6. \$ value of annual sales		
7. Casting methods used (Green Sand, Hard sand, Investment casting, Shell mould, Die casting)		
8. Major market segments (Automotive and Transport, Construction, Mining, Agriculture, Other)		
9. Cost Structure by % (Profit, Rent, utilities, Depreciation, Waste Disposal, Wages, Purchases, Other)		
10. What is the single biggest issue impacting on your business?		

### 7.2 Letter issued with Data Response Table requesting participation.



## Australian Foundry Institute

ABN 53 830 764 159

23 September 2023

Re: AFI Industry Data

To: AFI Member Metal Casting Operation

I am writing to you requesting your co-operation and support in providing business data to enable an update to our Metal Casting Industry Report. Can you please complete the table on the following page and return directly to me.

I understand and respect that privacy and competitive advantage concerns are a significant and legitimate concern in relation to company data. To alleviate this concern, all data will be received and collated by me only. As a foundryman of long standing, now retired, with no vested interest in data from individual companies, I give my personal commitment to confidentiality. Should you require it, I am prepared to sign a legally binding Non-Disclosure Agreement.

The survey questions remain as they were for 2022. Our aim is to give directly comparable data to that which is reported in the IBIS C2121 Iron and Steel Casting in Australia report, which many of you have expressed does not accurately represent our industry.

The data received will be collated by me to produce an update to our Industry Report, which will be tabled at the October 2022 National Council meeting then distributed to all AFI members.

AFI State and National bodies, along with individual members, will use this report to advance AFI causes where issues arise with all manner of authorities that interact with the metal casting industry.

Thank you in advance for your support. If you do have any concerns or suggestions relating to this process, can you please contact me directly. In particular, please communicate any blockers that you may have to providing this data.

Yours Sincerely,  
Alan Cooke  
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Email: [aqcooke52@gmail.com](mailto:aqcooke52@gmail.com)

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Incorporating the Divisions of New South Wales, Queensland, Victoria, South Australia & Western  
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National Secretary – Joe Vecchio  
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## 7.3 Document supporting Survey issued with Data Response Table



Australian Foundry Industry Data 4/2/2023

### AIM:

To produce an update of the 2023 Australian Foundry Industry Report that can be used to advance metal casting industry causes.

### Data to be Requested

1. Annual Tonnage cast by metal type.
2. Total employee's to produce these castings.
3. Number of trainee's / apprentices
4. \$ value of annual sales
5. Power costs / kWh
6. New sand cost / Tonne
7. Casting Methods Used
8. Major Market Segments
9. Cost Structure by %
10. What is the single biggest issue impacting on your business

### Why Do We Need Data ??

Traditionally the AFI has been a technical body. In recent years with high power costs, training and training personnel issues, there is an increasing need for the AFI to lobby political decision makers. A regular blocker to progressing AFI causes with politicians has been the lack of industry wide data.

### What Are the Blockers to Getting Data ??

A major blocker for individual companies to provide data has been around privacy and competitive advantage concerns. Clearly legitimate concerns that must be protected. I stand by my credibility as a foundryman of long standing, now retired, with no vested interest in data from individual companies. A Non-Disclosure Agreement will be signed if required.

### How Will Data Be Requested ??

The data will be requested by a letter from me to all AFI members companies active in metal casting. It is very important that this letter requesting data is communicated to the appropriate decision maker of each of our member companies.

The request will be for the data to be returned directly to me.

It is envisaged that some members will readily provide the requested data, others will require follow up phone calls, and a few will require a face to face visit.

It is envisaged that some members will readily provide the requested data, others will require follow up phone calls, and a few will require a face to face visit.

This stage of the data gathering process is critical to achieving a successful outcome. Identifying what actions are appropriate for each member company will be dependent on the strength of personal relationships in some cases.

### Collation of Data

I will be the only person to receive and collate data.

### How Will the Data Be Used ??

The fully collated data will form the basis for the Industry Report. Data within the report will be provided down to State level. Regional data and individual company data will not be included in the Industry Report.

The Industry report will be made available to all members following the October 2022 National Council meeting.

AFI National and each State branch, along with all members are encouraged to use the industry report to progress relevant benefits to the industry.

### How Frequently Will Data Be Updated ??

The intention is to continue an annual update to requested data so that it remains relevant, enables trends to be identified and maintains a mindset amongst the decision makers of our member companies that an up to date Industry Report adds value to their business.

I envisage a need to develop a sustainable process of data collection and collation. As yet I haven't not been able to find a suitable 3<sup>rd</sup> party to discuss and cost this ongoing role. Any suggestions that you have would be welcome and will be followed up.

The role would be to develop the tools needed to manage the data, review Industry Reports from other countries (eg UK, USA, China, Turkey), research what data is needed, and put forward recommendations to enhance the value of the AFI Industry Report.

### Regards,

Alan Cooke | National Vice President

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