



Australian Foundry Institute

ABN 53 830 764 159

Industry Data Report

October 2022

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

Compiled by –

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AFI National Vice President**

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1.0 Executive Summary

The 2022 Metal Casting Industry Report is the 4th 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 October 2021, the AFI National Council made the decision to continue with an annual survey with same the range of requests for data. 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 2021 calendar year.

The cast metal industry in Australia generates more than \$0.75 billion in sales annually, and directly employs 2000+ people, including 50+ interns / trainees / apprentices.

The global pandemic has continued to impact on the metal casting industry. Supply chain disruptions have resulted in both positive and negative outcomes for our industry. The negatives are most clearly seen with a significant increase in raw material costs. Other challenges for much of our industry remain similar to previous years – access to trained personnel, training of personnel, significantly increasing risk in the supply and costs of materials and the alarming growth in the cost of energy. This energy cost increase is not reflected greatly in this report but a significant increase is anticipated to be seen in the next report.

The positive outcomes are the generally strong and steady order books for most businesses. Our major die casting operations are seeing some recovery as the global automotive industry begins to overcome parts supply disruptions.

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 2022 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 March, 2022. Data was received over a wide time frame – from March 2022 through to September 2022. The majority of data was received by mid-year 2022. In some cases the data related to calendar year, for some financial year.

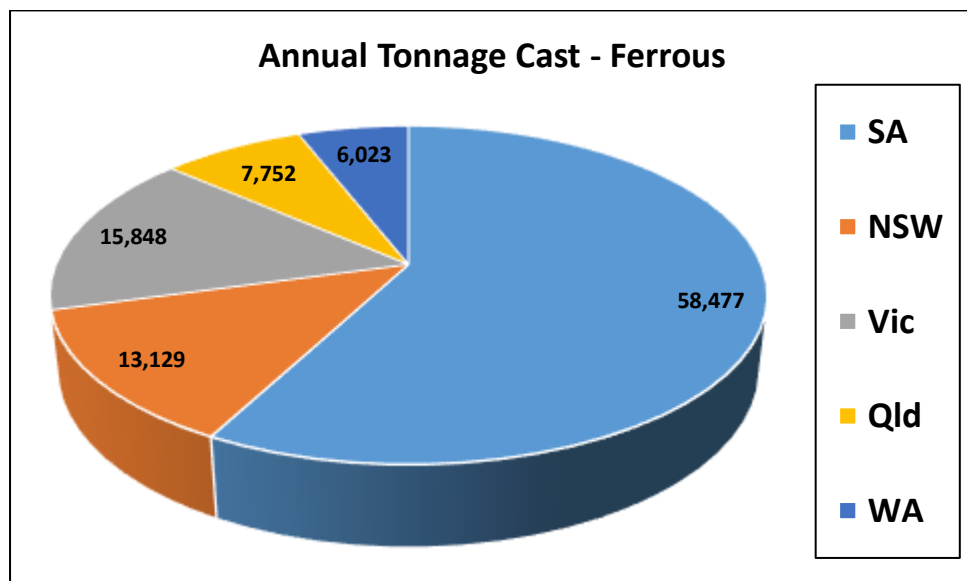
4.0 Survey Data – Statistics Summary

4.1 Annual Metal Tonnage – Ferrous and Non-Ferrous

19 respondents gave an annual Ferrous tonnage cast figure to which I added derived data for a further 10 foundries, giving a total 101,229 T of Ferrous metal cast annually.

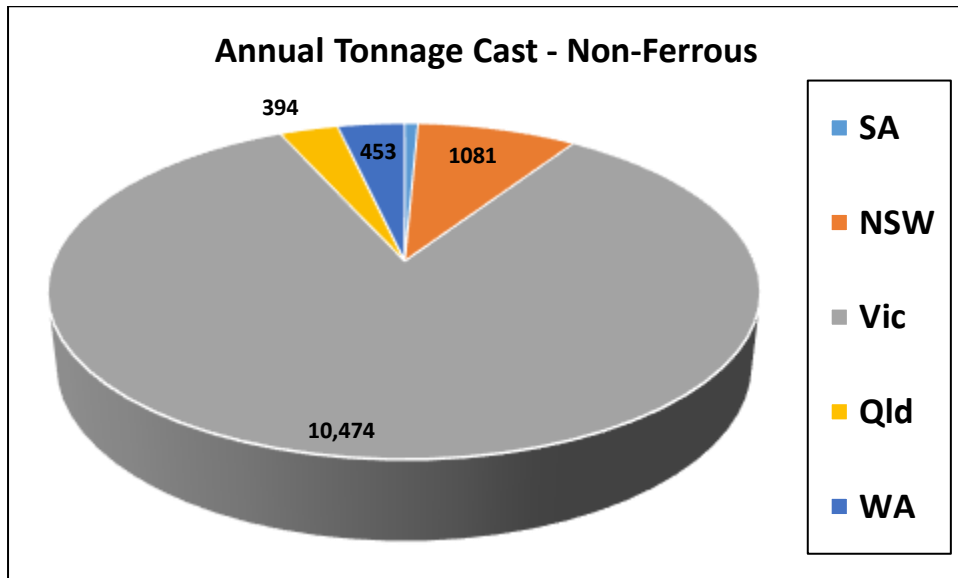
This total represents a 4.1% increase from the total indicated in the 2021 Industry Report.

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

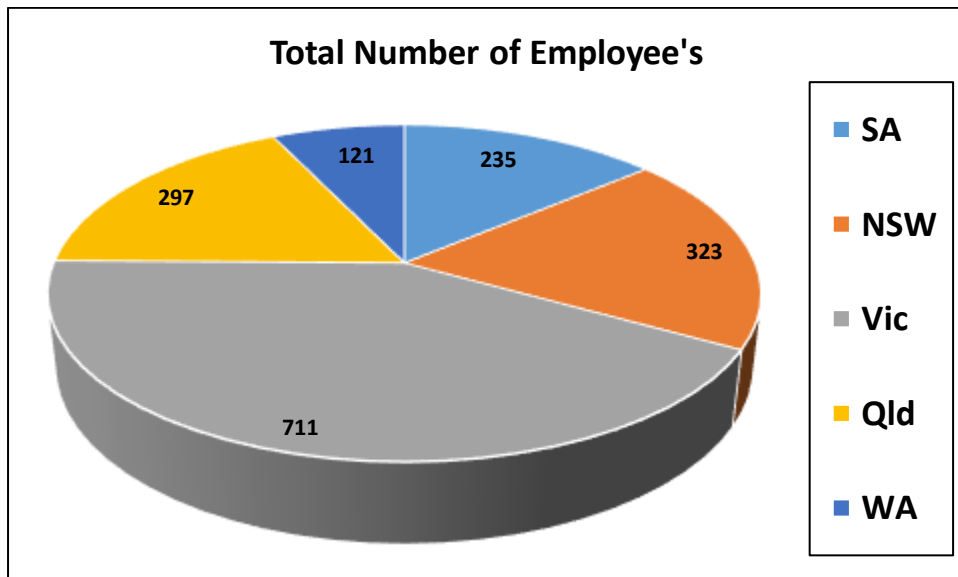


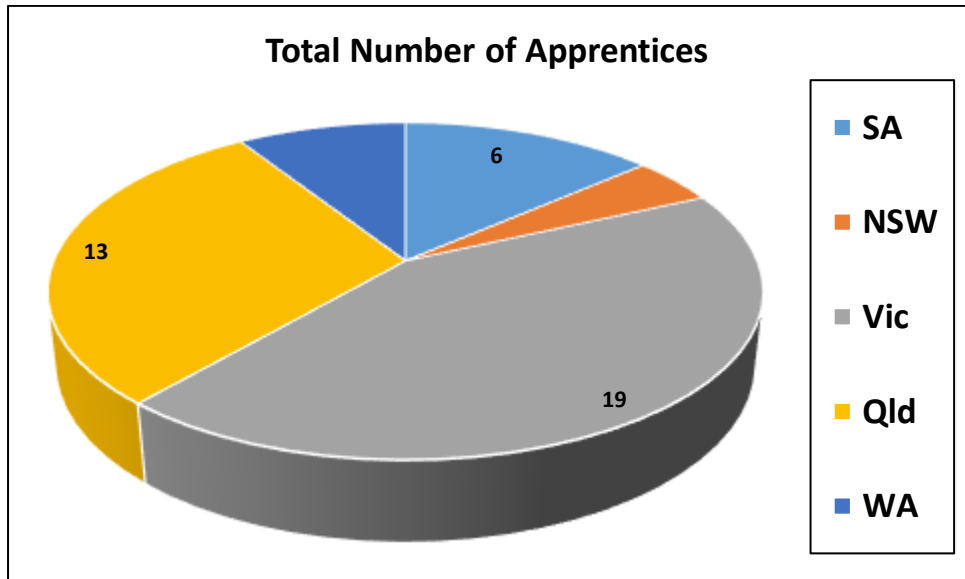
The Non-Ferrous data received from 17 respondents, along with data derived for a further 23 operations, gave a total of 12,492 T metal cast annually.

This tonnage cast does not include data from our major die casting operations. This total figure indicates a steady state over 2021, with some easing of supply chain disruptions, and improvement in the automotive industry.



4.2 Number of Employees and Trainees / Apprentices
 Combining received data (30 respondents) and derived data (27 operations) gave a directly employed number of 1687 employees and 44 interns / trainees / apprentices. The majority of these interns / trainees / apprentices are based in Queensland and Victoria. The total employed number represents a very significant rebound over the 2021 figure. I'd consider that this is due to an increase in responses, thus a more accurate reflection of direct employment in the metal casting industry. Note that the number reported does not include data from the major Victorian based die casting operations.

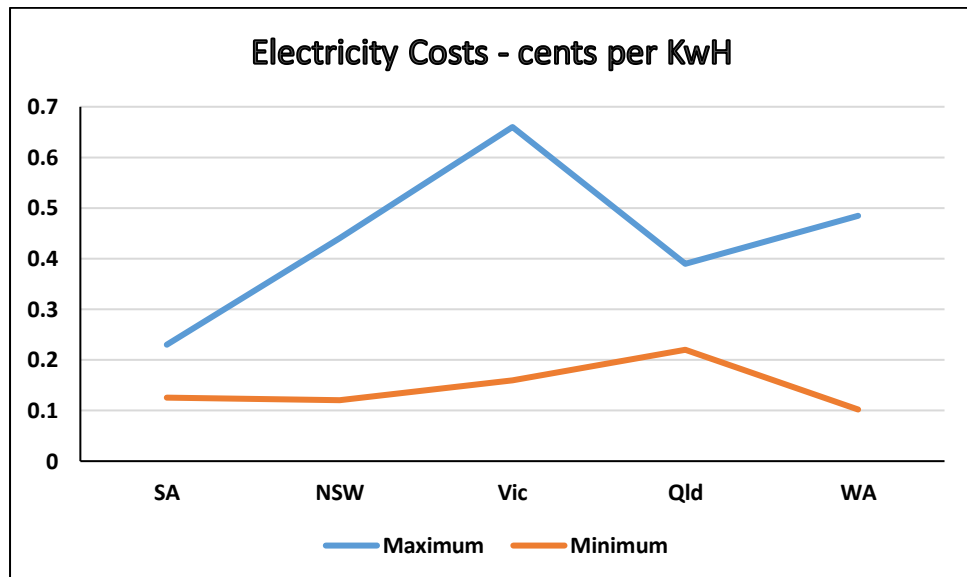




4.3 Energy Costs

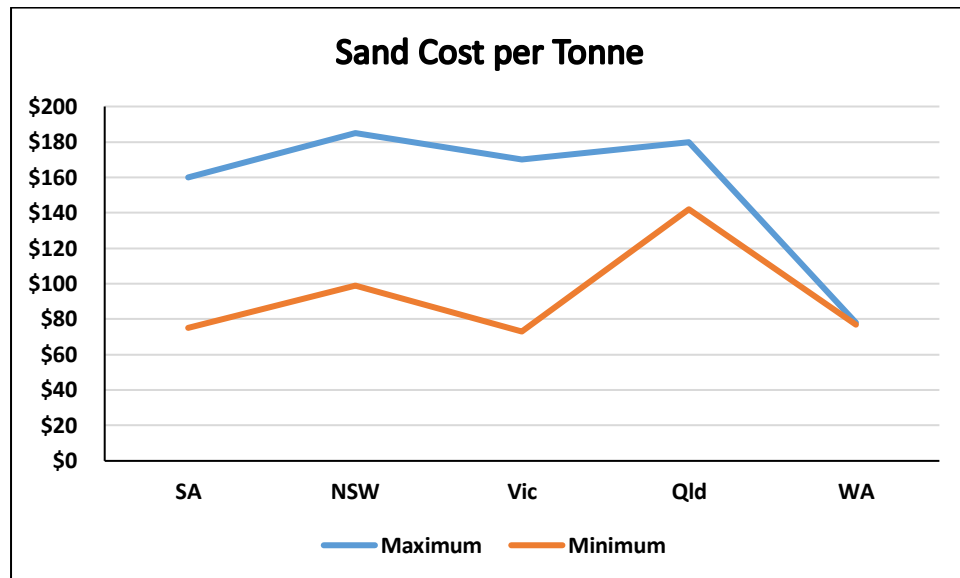
Given the complexities involved with electricity bills, survey participants are asked to provide electricity cost per kWh, ie total costs associated with electricity provision divided by total kWh's consumed. The aim is to have a directly comparable metric for all metal casting operations. For some integrated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

The 26 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 25 responses gave cost per Tonne for silica over a range of sizes. With only single data points reported for costs for chromite and synthetic sand, these figures are not shown in this report. Silica sand data is represented in the chart below.

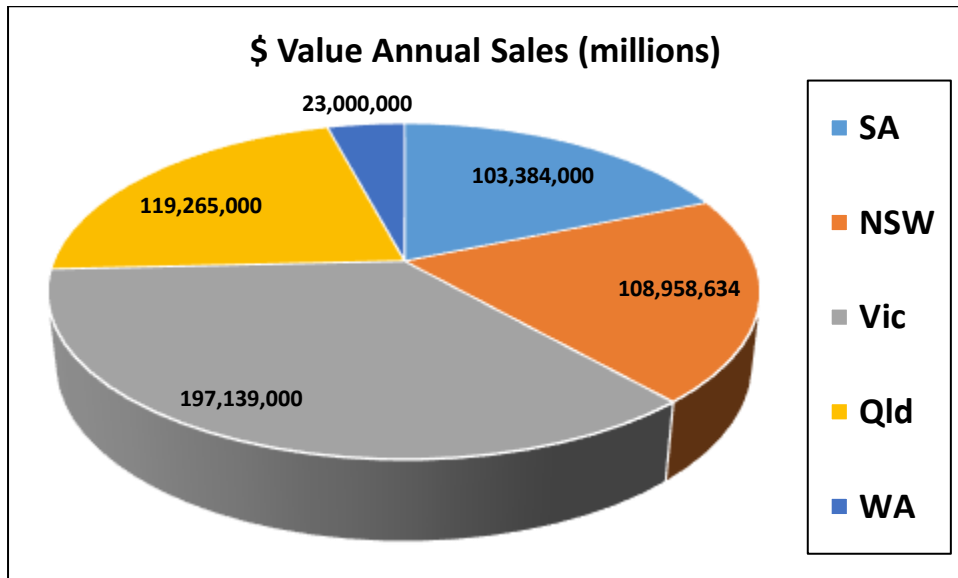


4.5 Annual Sales

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 33 respondents plus my derived estimate for a further 24 metal casting businesses.

The total of \$551.8 million represents a significant rebound on the figure reported in the 2021 Industry report. A combination of onshoring, local economic activity increasing, and an increase global automotive manufacture could explain this result.



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.

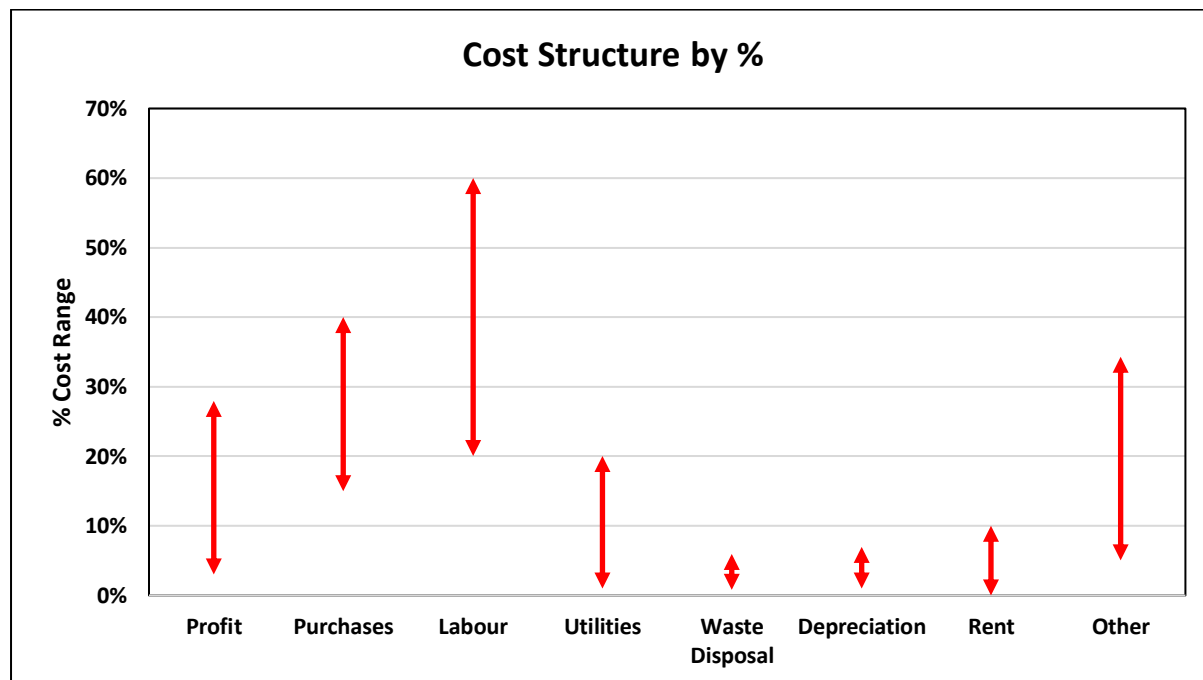
Not surprisingly, the respondents indicated a customer base covering a very diverse range of industries. I am not able to weight these in any particular order. The following lists industries supplied with Australian castings–

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

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 17 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 for 2019, 2020 and 2021.

	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	
2019	102,883	8,113	1691	33	10.5	54.5	\$490.2
2020	100,484	12,518	1792	44	13.0	42.5	\$591.4
2021	97,221	12,796	1483	36	11.2	32.5	\$487.4
2022	101,229	12,492	1687	44	10.0	66.0	\$551.8

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

Competing with cheaper overseas imports

Energy costs

High material costs. x 3

High wage cost.

Increased costs.

Increasing cost to manufacture in Australia

Rising cost to service customers.

Rising supplier costs (due to Covid, war in Europe, shortages etc)

Materials

Availability of Low Mn scrap

Material availability and cost.

Lack of local raw material producers.

Government Policy

Poorly formulated regulation

Lockdowns

The size, volume & timing of rail fastener projects

Labour

Ability to train locally x 2

Availability of quality skilled and non-skilled workers

Labour x 5

Lack of unskilled labour

Personnel

Recruitment

Recruitment of skilled staff

Recruitment of skilled staff

Skilled and semi-skilled labour.

Skilled labour x 5

Staff retention.

STAFF!!!! x 2

Uncertainty in market caused by HR capacity, capability and cost.

5 Discussion

I consider a conservative estimate of metal cast in Australia is 110,000 T of Ferrous (Iron and Steel) and 25,000 T of Non-Ferrous (Al alloys, Cu base alloys, Pb).

Though little changed from 2021, I consider that these figures represent a strength in the Australian metal casting industry that is generally not reported in any media. Many of our metal casting businesses have very strong order books. 6 month wait times are not unusual. This situation is of course also a risk to the industry as customers willingness to wait for parts for extended time frames will be tested. Adding complexity to this risk is the continuing uncertainty presented by supply chain constraints, soaring energy and raw material costs (the effects of which are largely yet to be seen and will be most keenly felt as energy contracts come up for renewal), and the ongoing difficulty in attracting personnel of all skill levels to the industry.

As mentioned in 4.1, the total tonnage reported for Non-Ferrous metal in 2022 is showing a recovery from 2021. As the global automotive industry further resolves it's supply chain issues, our 2 large Al alloy diecasting operations that export automotive components would be expected to see a return to near capacity.

The total number of employees in the industry indicates a 14% increase over the 2021 reported figures. This result may be partially due to the improved engagement in the survey (thus greater accuracy in the reported numbers) but will also be reflective of the growth in the orders that has been seen through the pandemic.

44 interns, trainees and apprentices are directly employed in our metal casting industry. As in previous years, the distribution of these people is highly skewed towards Queensland and Victoria. I consider that this largely due to the availability of training opportunities within each of these States. There has been an ongoing effort to develop opportunities for foundry trade training in other States.

Progress on these activities is frustratingly slow. There is considerable complexity involved in the process to gain approvals and funding to deliver the courses that our industry is wanting. However with patience and persistence results are being delivered. The AFI continues to have a direct role to play in advocating for funding in each of these States, on what courses are offered and the course content.

I consider a bigger issue is the securing and retention of new apprentices, shopfloor employees, and skilled personnel. Certainly in the short term we will not be able to "import" skilled personnel. These problems exist for all manufacturing industries throughout Australia and for the global metal casting industry. The AFI is working with representatives of other manufacturing industries to explore and determine ways that we can increase the pool of people interested in working in Australian manufacturing.

Close observers will note that the previous 2 paragraphs have changed very little from the 2021 report. The same needs to be said for the next paragraph.

All of our businesses need to find ways to develop the people that we do have and to attract more people into the industry. Some of our metal casting businesses have formed relationships with their local schools to help develop pathways to a career in the metal casting industry. In Victoria, Foundry In a Box is now being actively used at school workshops and demonstrations and Trade Fairs. Most State branches of the AFI 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.

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. Indications are that energy costs will stabilise through 2023 then reduce in 2024 and beyond. However this leaves our high energy use industry at risk in the short term. Our AFI National President, Brett Lawrence, has been very active in this area, achieving broad media coverage of the concerns of high energy costs on the metal casting industry. Following this Brett was able to get access to multiple Federal politicians. Our industry is now being heard more so than for many years. It remains to be seen if actions to mitigate our concerns are implemented.

As has been repeated for several years now, a collaborative negotiation by groups of businesses is a proven successful means to drive a better outcome with energy suppliers. There are support businesses that can help specifically with this issue. Metal casting businesses should consider this approach.

All sand (silica, chromite, synthetic) costs vary greatly within States. I'd suspect that this is largely due to freight costs as much as availability. This does cover a wide range of AFS Grain Fineness Number sands.

The total reported \$ value of castings produced is a strong rebound over the 2021 report. With very strong order books now the norm, much of our industry is now working close to capacity. This will be exacerbated by recent announcements of several metal casting businesses closing down. These decisions were not because of the lack of orders. The common theme is that owners are at retirement age and Property Developers are offering much higher amounts than anyone that may be genuinely interested in purchasing the business as an ongoing concern, can match.

This issue can also be seen as an opportunity. There are many casting purchasers that want to buy locally and thus avoid much of the supply chain and geopolitical instability issues. Investing either through expansion or by starting from a greenfield site, is worth consideration. Existing metal casting businesses (eg: AW Bell, Beckwith Group, Veem, White Industries), have already identified this opportunity and have acted on it.

The wide range of market segments and wide range of cost structures reported reflects the significant diversity of the metal casting industry. As diverse as we are, we still have much to gain from working together on common goals.

I summarise the common goals identified in the responses to the “single biggest issue impacting on the business” are as follows -

1. Personnel – skills, availability, training.
2. Rising costs – consumables, raw materials, energy.
3. Projects – timing, local content, volume.

With these risks to business identified, the next step is to plan actions to mitigate these risks.

Note that this previous paragraph is also a repeat from 2021. In planning actions to mitigate these risks don't limit your thoughts to what your business can do. Also consider what your industry body (AFI) can either lead or assist with, then most importantly voice your views with your State branch.

6 Conclusion

This 4th 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.

Electricity pricing is a looming threat to business viability across all States. Access to skilled personnel, unskilled personnel and training continues to be an issue for many. This issue is common for all industries in Australia, so we do need to become creative to attract personnel to our industry. 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. We all have a role in addressing this issue.

Every individual employed in the metal casting industry needs to be active in talking up the industry, encourage family and friends to explore the opportunities that a career in the metal casting industry offers.

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, and is poised 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

Data Requested	Response	Comments
1. Annual turnover over the next year - Forecast / Approximate		
2. Total number of employees to produce (Note savings)		
3. Number of Trainees / Apprentices (Identify apprentice level)		
4. Total Power costs / kWh (Divide your total power bill by kWh's used)		
5. New plant costs / Tonne (Identify asset type)		
6. Scale of annual sales		
7. Casting method used (Green Sand, Hot, Cold, Investment casting, Shell mould, Die casting)		
8. Major market segments (Automotive and Transport, Construction, Mining, Agriculture, Other)		
9. Cost Structure by % (Fuel, Elec, abrasives, Depreciation, Waste, Outsource, Storage, 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 53 830 704 159

7 October 2022

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 2021. 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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7.3 Document supporting Survey issued with Data Response Table



Australian Foundry Industry Data 2022/2023

AIM

To produce an update of the 2022 Australian Foundry Industry Report that can be used to advance metal casting industry causes.

Data to be Requested

1. Annual Turnover cost by metal type.
2. Total employees to produce these castings.
3. Number of trainees / 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 finding personnel issues, there is an increasing need for the AFI to lobby political decision makers. A regular blocker in 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 compensated in the appropriate decision maker of each of our member companies.

The request will be for the data to be secured 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.

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.

Collection 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 maintains its relevance, enables trends to be identified and maintains a rounded amongst the decision makers of our member companies that as 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 3rd party to discuss and start 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 Clarke (National Vice President)

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