

T I F A

The Tooling Industry Forum of Australia

Submission

to

The Productivity Commission

Post 2005 assistance arrangements for

the automotive manufacturing sector

May 2002

TABLE OF CONTENTS

1	ACKNOWLEDGMENTS	3
2	SUMMARY	4
3	THE IMPACT OF FEDERAL GOVERNMENT POLICY ON THE INDUSTRY	5
3.1	THE AUTOMOTIVE COMPETITIVENESS AND INVESTMENT SCHEME (ACIS)	5
3.2	TARIFF RATE TOOLING	5
3.3	TARIFF RATE AUTOMOTIVE	5
3.4	ENHANCED PROJECT BY-LAWS SCHEME (EPBS)	5
3.5	EXPORT FINANCE AND INSURANCE CORPORATION	5
4	OTHER INDUSTRY ISSUES	5
4.1	LACK OF INDUSTRY SCALE AND LOCAL MARKET SIZE	5
4.2	COORDINATION AND COOPERATION BY THE INDUSTRY STAKEHOLDERS	5
4.3	APPLICATION OF LATEST TECHNOLOGIES AND MANAGEMENT TECHNIQUES	5
4.4	THE IMAGE OF THE INDUSTRY AS A CAREER AND TO INVESTORS	5
4.5	TECHNICAL AND PROFESSIONAL SKILL SHORTAGES	5
4.6	ACCESS TO FUNDING FOR LARGE LOCAL AND GLOBAL PROJECT WORK	5
4.7	AUSTRALIAN BUREAU OF STATISTICS (ABS) AND THE AUSTRALIAN AND NEW ZEALAND STANDARD INDUSTRY CLASSIFICATION CODES (ANZSIC)	5
5	INDUSTRY SECTOR OVERVIEW	5
6	CURRENT INDUSTRY STATUS AND OPPORTUNITIES	5
7	DETAILED PERFORMANCE	5
8	APPENDIX 1 - THE PRIME RESPONSIBILITIES OF TTSN	5
9	APPENDIX 2 - ABBREVIATIONS	5
10	APPENDIX 3 - INDUSTRY STATISTICS	5

1 Acknowledgments

The preparation of this report has involved the participation and contributions of many individuals and organizations associated with the industry.

This is the second submission made by the Tooling Industry Forum of Australia (TIFA) to the Productivity Commission, the first having being made at the time of the Post 2000 arrangements for the Automotive sector.

While the final form and content of this report remain the responsibility of the Governing Council, we would like to acknowledge the individuals and organizations that made substantial contributions throughout the process, and nominate in particular, the other sub-committee members consisting of Brian Wildman - TIFA President and Tom Hubbard - Counsellor.

We acknowledge that a great deal of the background information was extracted from the Victorian State Government Audit of the Precision Engineering Industry in which the tooling industry is the largest sector. This Audit report is available on the Victorian Government web site.

Tony John
Past President
TIFA

Denis Payton
Executive Director
TIFA

2 Summary

The tooling industry produces essential inputs for virtually all types of manufactured product used in the world today. The largest market sector for the tooling industry globally and in Australia is the automotive industry, which utilises around 65 percent of capacity. The tooling manufactured in Australia includes sheet metal body dies, injection moulds, casting dies and patterns, jigs, welding fixtures, assembly and checking fixtures, gauges and special purpose tools. By the enabling technology employed in toolmaking, the industry provides important externalities for virtually all sectors of manufacturing.

The Australian industry of some 500 small enterprises, turns over almost \$1 billion, exports approximately \$125 million and employs 10,000 people.

The significance of the industry in Australia extends right through the rest of manufacturing. The automotive industry relies strongly on the capability and depth of experience and capacity available within the industry. Tooling is a vital base to manufacturing and a key part of the supply chain leading from raw materials to the consumer sector in the form of the everyday use of vast numbers of products produced from tooling. In addition, most manufacturing companies employ people who have developed their skills in the tooling industry including many engineering technicians and tradespeople who are essential to manufacturing processes.

The industry has a number of leading firms that are now internationally competitive and recent results show a trebling of tooling exports over the last four years. Complimenting this growth is the indirect effect on the industry of increasing exports of auto components that last year exceeded \$4.5 billion. In this situation, the actual tool remained in Australia with the components being the exports.

The industry is small on the global scale representing a similar proportion of global market share as the vehicle manufacturing sector, something under one percent. Like the vehicle sector the tooling industry is capable of significant growth by exporting and could grow by several times its current output if the issues currently inhibiting it are overcome. There are several other recent examples of tooling industries in other countries expanding very rapidly with strong strategic assistance from their governments and downstream industries. Australia's industry has a more comprehensive infrastructure than most of the other examples mentioned and would stand to make faster gains.

Similar to the rest of the world the industry sector is comprised of a large number of small and medium sized firms with a few larger enterprises, several of which are internationally owned. On average 70 percent of the domestic market is supplied by local manufacturers. The future prospects for the industry in the domestic market primarily depend on the health of the automotive assembly and components sector. Major problems are lack of global scale manufacturing and supportive Government strategies to improve the processes of technology diffusion, training and export market access.

With one of the chief characteristics of the annual US\$100 billion global tooling market being the large and increasingly wide range of products utilised, there are opportunities to develop specialised product types and exploit market niches in the global marketplace. This is almost entirely due to the combined factors of the continuing search for quality, safety, faster and more productive manufacturing and improvements in design, verification and assembly processes in all fields of industry. Rising prosperity in sections of the developing world provide increased opportunities for sales growth for the industry.

The industry is most fortunate in having an active and constructive industry association TIFA, driven by its members, implementing some of the fixes it requires. The needs of the industry however go beyond what the industry can do alone. It needs effective Government policy and industry plans and the provision of assistance and encouragement to enable the industry to achieve its vision.

3 The Impact of Federal Government Policy on the industry

3.1 The Automotive Competitiveness and Investment Scheme (ACIS)

The impact of ACIS on the industry has been positive but not widespread. At this stage, it appears that new investment in the industry has been of the order of over \$20 million since the introduction of the scheme. Those companies who have claimed ACIS credits have reported that the processes were clear and simple to follow. Most have engaged a consultant to prepare the initial registration and submit the first claim. Companies have commented positively on the changes to the payment system since the introduction of online transfers.

One of the major issues related to ACIS is the threshold criteria for AMTP eligibility. Because of the \$500,000 threshold, 65% of Australian tooling enterprises do not qualify.

The tooling industry in Australia is characterised by small enterprises with unique specialised skills who predominantly service the automotive industry. Due to the vast cycles in the Australian automotive industry tooling companies have taken the initiative to seek work outside of the industry to survive. They seek export automotive work, contracts in the whitegoods, electronics and packaging industries. This has in effect exposed these SME's to world competition and highlighted some of the strengths and deficiencies within the Australian tooling industry.

However when the automotive cycle returns, the tooling industry moves into over capacity. Factors affecting capacity include a shortage of skilled labour, deficiencies in upgrading technology, project management, research, and development.

These small tool rooms give Australia its tooling capacity to service most of the needs of the Australian automotive industry. Without these small tool rooms there would be a major impact up the supply chain, ultimately to the OEM's. The overall effect would be that most tooling would be sourced overseas and component manufacture would follow. If ACIS excludes the basic building blocks of the industry, the small toolmakers, the automotive industry will move very rapidly down this path. Tooling should be viewed as fundamental to the automotive industry structure through all tiers of supply.

Example of how tooling is sourced within the automotive industry:

1. OE provides black box design to 1st tier integrators
2. 1st tier integrators seek quotes from 2nd tier component manufacturers
3. 2nd tier component manufacturers break the package up into specific components and seek quotes from an extensive database of tooling suppliers
4. Third tier (more than likely a larger tool room) does not have the capacity to make all of the tooling, so seeks quotes from small tool rooms to comply with deadlines. (If the small tool rooms have not invested in new technologies and research and development then they will be non-competitive and thus unable to meet the supply chain needs. The impact flows back up the chain)
5. large tool room cannot meet the needs of the 2nd tier component manufacturer
6. Second tier component manufacturer is forced to import the tooling (Benchmark pricing data indicates that this tooling will be more expensive and difficult to service.)
7. 2nd tier component supplier is non competitive on price, timing or quality loses the contract
8. First tier integrator imports components.

This scenario has already happened in a number of automotive packages.

The solution to the problem would be to vary the eligibility threshold criteria for the category Automotive Machine Tool (& Tooling) Producer (AMTP). The threshold could be set at \$250,000 automotive production value with 50 percent supply to OE. This would then enable a much greater proportion of the tooling industry to meet the threshold requirements. The net benefit will be that the

smaller toolmakers will have greater incentive to undertake capital investment and R&D and enable them to be more competitive and supply needed capacity to the automotive industry.

Recommendations

- Reduce the threshold for AMTP's to \$250,000.
- That the Government implement ACIS Mark II (having a similar pool of funds and a similar structure to the current ACIS program).
- That the modulation rates, if used in ACIS Mark II, be published in advance. This is to allow companies to plan strategic investment for capital, and provide a mechanism that companies using R&D as part of their ACIS claims are not penalised in the case that these R&D costs may have been claimable as part of R&D Tax concessions and diluted by modulation. Further, that any ACIS R&D claims reduced by modulation be included as part of any Tax Concession R&D claims and not be seen as "double dipping."

3.2 Tariff Rate Tooling

The tariff rate on imported tooling stands at 5%. TIFA consider that this rate is inconsistent with countries to which TIFA members are exporting. For example, the import duty to China is approximately 40 percent, Thailand 45 percent, and the rate is 50 percent on some tooling to India.

Although the main competitors for Australian toolmakers come from countries outside of the major trading blocks, for example ASEAN, TIFA believe that in the near future trading within these blocks will severely restrict the ability of Australian toolmakers to export.

Recommendation

The Australian tariff on tooling imports be raised to a level consistent with other trading nations.

3.3 Tariff Rate Automotive

TIFA find it difficult to accept the Government policy that the Tariff rate will decrease to 10% for automotive imports. Rates of tariffs and other barriers to entry in our trading nations are much more inconsistent than in Australia. Continuing to try to "set the example" to other nations from our small industry is not seen as being very pragmatic at all, and may simply result in an accelerating continuation of the decline in local content in the Australian vehicle marketplace.

Recommendation

- That careful assessment of the tariffs and barriers of other nations be performed in the light of reality, not only as to the good intentions of our example setting but in the protectionist tendencies of some of the more significant nations. That a reality check be made as to the situation that faces the automotive industry in Australia including the links and the impacts on the rest of manufacturing industry ensuing from a declining vehicle sector.
- That consideration be given to retaining the existing level for a further five years or until the rates in other nations have become more reasonable.

3.4 Enhanced Project By-Laws Scheme (EPBS)

Recommendation

- That the EPBS effective from July 2002 have the guidelines and regulations clearly iterated and circulated to ensure effective and meaningful engagement of Australian companies in the Australian Industry Participation Plan. Of particular concern is the issue of “independent technical assessments” and the lack of information to date about this section of the scheme related to the transparency and neutrality.

3.5 Export Finance and Insurance Corporation

Recommendation

- That the EFIC scheme and its availability be expanded to incorporate tooling that is manufactured and used and operated in Australia to produce products used solely on export vehicles

4 Other Industry Issues

The tooling industry has a mature support infrastructure and much inherent strength shown by several successful firms increasing their exports in the tooling and machine tool segments. However, there is the need for more coordination and infrastructure development within the industry and particularly in the supply chain. There is also more required of the education and training sector and the image and export marketing areas for the industry to survive and develop into a significant global player and improve the capacity to reduce the need for imports.

4.1 Lack of industry scale and local market size

Companies in the tooling industry cannot rely on the domestic market to achieve sustained long-term growth. Indeed, only modest growth is expected in future domestic demand. The key operating strategies for the tooling industry is to share capacity and apply the latest technology and best practices to enter and supply export markets.

The Australian tooling industry is very small, less than 1.0 percent of the rest of the world. The industry has been strongly influenced by the demands of its largest market sector, the vehicle industry, for many years. Historically the structure of the vehicle industry and the timing and duration of major vehicle re-designs and platform changes provided for a fluctuating but tolerable variation in workload for the tooling industry. More recently, lead times of vehicle development has been reduced dramatically with the inception of powerful CAD, CAM and CAE systems cutting the time available to build moulds and dies and assembly systems but not changing to any great degree the frequency of new models. This has meant that during the last decade the tooling industry has increasingly experienced more profound demand variations, with large swings in demand associated with new vehicle model and design changes.

During the peak demand from the auto sector the industry has insufficient capacity to supply all requirements and hence loses work to imports. However when the demand recedes there is over abundant

capacity. The industry has the major problem of sustaining sufficient workload through to the next period of demand.

The Australian vehicle industry represents about one percent of the global vehicle demand for the tooling industry products and services. The key global suppliers of world class tooling industry products are USA, Japan, Germany, Spain, Italy, France, Portugal, Canada, Ireland, Taiwan and South Korea.

Those firms now exporting are proof that distance is a small barrier so exports represent the clearest way of escaping the boom and bust scenario. The alternative is an increasingly bleak future for the industry.

If the capabilities of the whole tooling industry were more actively promoted overseas, the results could be very positive. There appears to be a high respect for the quality and flexibility of export work undertaken by several of the leading Australian companies. However, there is little awareness of these capabilities on the international scene. Australia is generally not known as a toolmaking country.

TIFA believe that because of the lack of Australian industry visibility globally and because of the procurement procedures practiced by global buyers, individual firms have difficulty in extending their exports or even getting started on exporting. In addition, many firms have difficulties in meeting the large export opportunities owing to limited production scale. Despite this, the survival of the industry will be critically dependent on finding niche export markets directly or even indirectly through supplying to leading and developing exporters. A key operating strategy of the whole tooling industry is to share capacity and to apply the latest technologies and best practices to enter and supply export markets as well as more fully supplying the domestic market.

Recommendation

The Tooling Industry should develop an industry marketing strategy that:

- takes into account the differing needs of each segment
- facilitates marketing planning processes in individual SME's
- facilitates the promotion of tooling exports through publicity, government policy, B2B commerce and interactive web page capabilities information
- identifies and assists firms that can lead the export development
- provides incentives that defray export establishment costs
- ensures that all state and federal export assistance programs are extended to apply to industry associations such as TIFA
- assists relevant industry associations in gathering industry statistics

4.2 Coordination and cooperation by the industry stakeholders

The majority of companies in the tooling industry are family owned small businesses operating in an isolated environment and using lower end technology, with very small-scale output. Based on industry research, TIFA established that over 80 percent of the firms in the industry are small and employ less than 20 people.

Generally the firms in the tooling industry in Australia are market reactive and do not work to any thought-out business strategy. Most firms are restricted in the range of capital equipment they can afford and those that try to search for new work often experience difficulties in tendering for and meeting larger project requirements. The dearth of strategic thinking is reflected in the lack of financial resources that in turn prevent the extension of their range of activities.

A decade ago the industry structures in the United Kingdom, Ireland, Spain and Portugal were similar to that which currently exists in Australia. In those countries a change in strategic direction was instigated

following the development of a government industry policy. Industry and business strategies were developed and their SME's became more cooperative and collaborative. They soon began specialising and marketed pro-actively with excellent results. The results in Portugal were, to say the least, remarkable.

The Portuguese tooling industry was originally much smaller than Australia's. Direct assistance from the government providing a centre offering specific training, tool tryout and validation and R & D facilities encouraged the development of cooperative tool shops and consolidated bidding on export projects. Portugal is now one of the largest contract tooling sources in the world exporting \$2 billion of tooling per year to the USA, the EU and many other countries including Australia. TIFA understands that the majority of exports flow to the Americas. If Portugal was exporting to its nearby EU countries alone it would be difficult to make it a plausible example for Australia to follow.

The other countries mentioned have all experienced very significant growth in their tooling manufacture, all have carved out niches of specialised products in various parts of the world. With regard to the infrastructure needs, three of the four countries succeeded despite the fact they do not have Australia's capability of designing and building vehicles and Portugal and Ireland are only recently assembling a small but growing number of vehicles. However, the development of the tooling industry capability has certainly attracted other downstream industries to both Portugal and Ireland.

There is a need to more effectively share capacity in the tooling industry in the good times and to even out the cyclical nature of local demand by lifting exports to become the prime source of revenue. It is the objective of TIFA to increase tooling exports as a percent of industry segment sales to at least 50 percent in the next five years compared with the present high of 12 percent. There is plenty of scope in the for smaller operators to not only cooperate but to increasingly specialise in providing basic products and services to the tooling industry Tier One firms who are better equipped to break into global markets.

The present limits of individual capacity are one of the major impediments to industry growth. The tooling industry struggles to meet larger export orders simply because it does not have the scale of production among individual firms. While limited scale economies make it difficult for most firms individually to meet export orders, there will be greater scope to satisfy exports provided companies are prepared to share their capacities rather than competing actively against one another in overseas markets.

There are other important reasons why sharing capacity and capabilities to increase operation scale is important. For example, there is an increasing trend for auto assemblers to place larger orders with toolmakers and to out source an increasing amount of their tooling requirements.

There is a need for increased cooperation between firms such as, better knowing each other's capabilities and a willingness to share capacity to meet large export orders requires close attention. To effectively cooperate, there is a need for companies in the tooling industry to better understand their respective capabilities, especially as an aid to entering export markets and replacing imports. A useful aid to this process would be a capabilities register. This should be the responsibility of the industry through its association but the government could provide assistance to develop detailed capabilities and place them on to interactive Web sites.

In conjunction with the industry marketing strategy recommendation there would be merit in establishing a Strategic Planning Group within the industry to develop an overall industry led strategy. Its role would be to assess and facilitate ways in which firms can better collaborate to improve the industry's performance in the long term.

Recommendation

Through the industry association and coordinated by government, the tooling industry needs to develop an overall industry strategy and review the levels of improvement in cooperation and collaboration on a regular basis. These reviews should assess the changes in key parameters such as:

- Exports – where, what, why
- Import replacements
- Employment, changes in demand for skills
- Total revenue performance
- Numbers of entities
- Areas of market development effected
- Effects of assistance and facilitation implemented

4.3 Application of latest technologies and management techniques

A large number of the tooling industry firms are not making the best use of the latest technologies available. The identification, application and adoption of new technologies, techniques and processes are all vital for the ongoing global competitiveness of the tooling industry. However, to be coordinated these activities must be demand driven by the industry. Many firms also want to understand the basics of technology management.

Historically most firms in the industry have learned about new technologies through trade shows, magazines and machinery vendors. More recently the use of the web for new technology information has proliferated but there are many that find obtaining the information they want can be a costly and laborious exercise. As there is no formal systematic way to acquire technology information there is general concern in the industry that the cost and time required collecting information on new technology and the perception that the payback period for the investment was too long. This has discouraged many firms from seeking additional knowledge on new technologies and so there is the risk of the industry losing its competitive edge. In addition, any data on the availability of technology through the supply chain is poor and partly reflects the inability of operating managers to have the time to research technology developments.

Until recently technology diffusion has been slow and insufficiently promoted. There has been no disciplined attempt to identify new technologies and match these technologies with industry needs. There are however, a number of larger companies using the latest technologies. These companies usually have the capacity and linkages to afford to research them independently. Some of these companies are concerned that smaller companies lack the capacity to catch up and are willing to assist in the process of diffusion in a way limited only by their own resources.

Industry should be the principal driver of activities of an effective technology diffusion program. The tooling industry needs facilitative assistance for this process and any system adopted should ensure the maximum effectiveness of government support measures for diffusion activities.

Technology diffusion has two equally important aspects; extending the use of the latest existing technology and identifying and applying innovative and largely untried technology. The tooling industry needs to extend the use of the latest existing technology is considered at least as important as identifying new technology and applying this technology to largely untried applications.

There is also the down side associated with new untried technology in Australia that it is likely to involve the use of imported equipment with a limited availability of local maintenance experts.

For instance, there is a need for a training/skill base for machine tool diagnostics and repair that is essential for the tooling industry and most other metal manufacturers. Much of the machine tool maintenance and support requires specialist skills currently unavailable from anywhere except from the vendor's overseas operations. Many small firms have a limited knowledge of advanced technology and they cannot afford the trained people needed to utilise the latest equipment.

Although Australia has the research and IP base, the diffusion of technology is less than effective. There is a concern over the availability of local skills required to operate and optimise the benefit of new technologies. Where the skills are not available locally, many companies recruit offshore. These concerns also extend to the quality of training on new technologies.

An option already taken into practice in the tooling industry is for the industry association to take on the role supported by the industry and governments. Recently TIFA formed the Tooling Technology Support Network (TTSN), a nationally operating network. TTSN's main role is facilitating technology diffusion to the Tooling and its associated industries. The leader is the technologist in Melbourne and the three other technologist members of the team are based in Adelaide, Sydney and Brisbane. TTSN receives its major support from the Federal Government and TIFA members. The State Governments of Victoria, South Australia, Queensland and New South Wales also support some payroll and facilities expenses. Government funding is for 14 months and expires June 30, 2002. TIFA is seeking further industry assistance to continue the success of TTSN.

The industry has observed the early results of the TTSN process and would recommend that the process needs to be ongoing and requires significant enhancement to be fully effective. Therefore TTSN should continue to be part funded by governments and industry. The overall direction of work undertaken by the Unit should continue to be industry led. The overall task envisaged is very large and will require more facilities and technical staff. Because of the continuing global technology development, obviously those involved will have to undertake the required tasks on a continuous basis. The TTSN format that TIFA has developed can multiply benefits throughout the tooling industry and its related manufacturing industries.

To better understand what technologies are being applied in major overseas manufacturing countries, investigative delegations should be arranged and supervised by industry associations such as TIFA and be part-funded by Government as well as Austrade and industry. Delegations of this nature should be undertaken regularly by industry representatives and involve representatives of TTSN. Information gained from these delegations would be stored in a central location and distributed to industry members on a dedicated and interactive Web system.

While research and development in the tooling industry is very active by the nature of the industry, it appears that CRC's have not been of great help to the smaller companies of the industry. Existing R&D programs favour larger companies and yet the tooling industry is mainly composed of small firms. In most instances, larger companies are understandably not prepared to share their R&D unless they see it as beneficial to themselves. However, several of the larger companies are already helping to promote the accessibility of R&D assistance from governments to the smaller companies in the tooling industry.

Recommendations

The government should increase assistance to the tooling industry in developing stronger industry infrastructure support, particularly:

- technology diffusion in all segments including management technologies and the enhancement of the existing TTSN program
- the software and hardware servicing needs of the industry
- specific centres to develop greater capabilities for exporting and for major projects – examples are in the areas of design, machine tool training (using virtual reality simulation), product testing, validation and processing R&D
- disseminating knowledge and implementation of relevant R&D assistance programs

4.4 The image of the industry as a career and to investors

The Australian manufacturing industry does not have a developed international reputation and yet it will need to develop a much higher profile and international reputation as a means of differentiating itself as a

means of minimising the impact of global competition. A detailed capabilities register for existing companies in the industry will need to be developed and promoted in Australia as well as globally.

There needs to be a detailed marketing and strategic plan to develop and promote the manufacturing industry in this country. The image problem of manufacturing is pervasive and applies to most manufacturing segments.

Integral to the promotion campaign will be the need to promote the career opportunities available in manufacturing to secondary school students. Companies in the industry will need to be receptive to school visits.

Industry associations will have an important role to play in developing the image program as it relates to the tooling industry, as will other leading industry associations for other manufacturing industries.

All stakeholders will have an important role to play in promoting manufacturing including:

- Industry associations
- Employer associations
- Employee associations
- Professional associations
- Government departments
- Semi-Government organizations
- Industry training boards
- Group training companies
- TAFE institutes
- Universities and research institutes
- Area consultative committees
- Local learning and employment networks
- School to industry groups
- Individual employers
- Individual employees

The community has very little idea of the tooling industry. There is a very limited focus on manufacturing in school curricula. Teaching professionals at all levels do not have adequate understanding and appreciation of manufacturing and the pre-requisites for a career in it. Few would understand the high levels of skill and training requirements of toolmaking employees or the remuneration or job satisfaction that such a career would bring. The tooling industry is very aware that it has not done very much to change this over the years, but the tooling industry has indicated it is very prepared to do what it can to remedy the situation.

An effective promotion campaign for manufacturing would clearly benefit investment attraction and exports. The promotion of manufacturing and the tooling industry must be multi faceted. Not only will it need to be targeted to potential importers and investors overseas, it will definitely have to be promoted to parents, teachers and schoolchildren. The issue of promoting manufacturing is particularly important to the tooling industry because, by its nature, it is a supplier of enabling technology.

Many stakeholders of the tooling industry feel that both the Federal and State governments have neglected promoting manufacturing industry in any way to the community, internationally or to investors.

The industry has been impacted severely by what the industry commonly refers to as a “decimation of manufacturing.” The too rapid dismantling of tariff protection has largely brought this about. Other countries, especially those in Asia, have not followed such rates of reduction of protection to the same extent. Deriving from this is the considerable industry scepticism about “economic rationalism” and its

advocacy of free trade and the so-called “level playing field”. Industry members who witness the non-tariff barrier methods used by many other countries are very frustrated by this advocacy.

Recommendations

As part of the more generic approach to improving Australia’s manufacturing industry image the tooling industry together with Government:

- must tackle the overall manufacturing image problems
- needs to highlight the particular problems with its image
- must develop suitable promotional material aimed at the local community and at both its domestic and global clientele
- needs to develop a detailed capabilities register available on the WEB (TIFA has this already for the tooling segment)

4.5 Technical and professional skill shortages

The tooling industry has undergone enormous change over the last decade. Improved technologies have changed the way in which much of the work is done in the industry. Much of the laborious tasks have been reduced significantly, which has seen a growth in output with comparatively lower increase in employee levels. Despite the changes, to a large extent the tooling industry experiences extreme difficulty attracting young people into its ranks particularly as apprentices. This appears to reflect a range of factors, the main issues being a decline in the traditional manufacturing base in Australia and the poor image manufacturing has as a career option for young people.

There has also been a progressive ageing in the skilled workforce over the past 10 years owing to a continuous reduction in apprentice numbers. In 1999 the age profile of employees in the tooling segment of the industry indicates that over 60 percent of employees were over 35 years of age and 15 percent were over 55 years of age¹. According to the industry, this profile has aged further during the last two years. The ageing of the skilled workforce is a concern and it will be increasingly important to retain the services of more experienced skilled labour.

The tooling industry sees there will be a stronger demand in future for young people who can understand more complex equipment and contribute to further industry development. Existing employees will need to develop different skills, for example as programmers or project planners or managers and fully understand the whole industry process and the needs of the market. The equipment in use today requires an additional new type of education in areas of computer control and programming and higher level engineers with skills that are more specific.

There is also seen to be scope to employ retired or older skilled workers in mentoring roles in workplaces, assisting in the training processes particularly oriented to the many poorly documented techniques that remain essential to the industry despite the introduction of new technologies.

A number of firms in the industry have expressed dissatisfaction regarding TAFE training on a number of grounds. This summary list is not necessarily to be taken as the industry opinion, but as comments made by various industry members who have voiced their opinions on their dissatisfaction with the training provided by the TAFE system:

- ❑ Institutes now lack the latest equipment to comprehensively train apprentices.
- ❑ Training options offered by individual institutes are often not sufficiently relevant.

¹ ESTB (Vic) Inc. Victorian Toolmaking Industry “Employment & Training Profile, Sep 1999.

- ❑ Training resources used by institutes often no longer match new competency based training programs.
- ❑ New training packages do not meet the competency needs of all workplaces and it is difficult to have changes made.
- ❑ TAFE trainers are often not up to date with the latest technology and in some cases display a lack of commitment to their tasks.
- ❑ It appears that recent staff development has been poorly targeted, and that recent TAFE amalgamations, retrenchments and declining apprenticeship numbers have led to a decline in morale among teachers.
- ❑ It is still normal for apprentices to be trained for general-purpose machining etc. and on traditional hand skills. Hand skills remain important but have diminished in need with the advent of more sophisticated equipment where new skills relate to planning, comprehension of 3D modelling, tool design and machine programming.

Latest technology is not fully available through the existing training institutions and this is part justification for a greater role being played by industry in the training process.

Also mentioned was the limited focus on manufacturing in primary and secondary school curricula, which appears to add to the industry image problem regarding careers. TIFA is in no doubt that secondary teachers do not have an adequate understanding and appreciation of manufacturing, and very little knowledge of the tooling industry.

Some employers consider that apprenticeship courses are needlessly long with the result that industry is not supporting training at certificate levels 4, 5 and 6. An important reason for the lack of interest in long training courses is that they tie up resources for protracted periods and they are very expensive to the employer. For example, on average, three tradesmen are involved supporting the on-the-job training of one apprentice. Employers would however be required to pay full trades' wages to apprentices who complete their training in a shorter period.

On site training through the provision of short courses is popular in the industry because of the shorter time taken to train young people in ways appropriate to the needs of their particular company and the use of the latest equipment during their training.

More effort needs to take place to align this training to the achievement of competency standards and hence reduce the amount of time the apprentice spends away from the workplace. However, care should be taken to ensure that workplace-based training received by an apprentice would still provide a truly portable qualification with recognition beyond the immediate workplace.

Recommendations

To determine future skilling needs and direction the tooling industry should:

- conduct a skills audit of the industry in each of its sub-segments,
- develop a database of short and long term skill requirements,
- work cooperatively with the training providers,
- be positively informed by Government about how they can employ technicians, provide training, pay a training wage, and receive a federal subsidy,

4.6 Access to funding for large local and global project work

The tooling industry has always been a capital-intensive business. However, its low material costs and high value adding processes that are based on the need for highly skilled labour have always meant that the labour costs loomed as the major performance factor. New technology equipment has meant that

many labour intensive tasks have been superseded, but the cost of new capital equipment remains a hurdle and in reality the industry is becoming rapidly more capital intensive. An offset to this is that the high technology equipment brings faster production and a lower proportion of labour costs. It remains that the initial step into the new technologies can be beyond the financial strength of many of the small firms.

Finance is also needed to fund working capital for the increasingly larger blocks of work required by the customers of the tooling industry. The procurement methods have ramped up significantly over the last five years and often the terms of contracts dictate projects must be funded through the full term of manufacture as opposed to the previous interim payment method.

The industry needs access to capital funding that could provide concessional but repayable loans to assist businesses to acquire the latest equipment and fund additional operating cost incurred in meeting larger domestic contracts and replacing imports. The collateral for these loans would be based on the value of confirmed sales contracts.

While the industry remains dominated by a large number of small firms, funding will remain an important issue. However, a greater degree of collaboration and specialisation to more efficiently supply leading firms would provide some easing in the pressure on funding associated with meeting larger orders. The provision of concessional loans could be made to coincide with structural adjustment.

Recommendations

To assist the tooling and machine tool segments of the PEI in funding major capital equipment and for supply of major project works:

- consideration should be given to providing concessional repayable loans to assist
- the Government should more effectively market its services especially in regard to assistance available and the alternative sources of funds that could be available to the manufacturing sector both from the Government and private sector. There is a need to understand what existing schemes exist and to have this information more effectively disseminated.

4.7 Australian Bureau of Statistics (ABS) and the Australian and New Zealand Standard Industry Classification Codes (ANZSIC)

Recommendation

- That the Federal Government urgently review the ANZSIC codes to include code subsets that define the industry of end use to allow better definitions and data for both imports, exports and domestic manufacturing activities related to specific industries eg Automotive.
- It is widely recognised through out industry that the codes at best only provide a reasonable indicator and therefore some difficulty exists as to the measurement of “real” activity in industry segments.

5 Industry Sector Overview

The Tooling industry has as its fundamentals the necessity to achieve precision in any application related to research, design, manufacture, performance validation, and application of high precision machinery, devices and components, including pure and applied research and development in manufacturing processes, fabrication technology, and advanced measurement science.

Today, economists are pointing to information technology and manufacturing technology as keys to a new economic era in which long-term economic growth is possible. Analysts expect that for long-term growth industrial economies will require continuous gains in productivity rather than increases in output as population trends point to a declining consumer growth rate. Over the last ten years high rates of growth in productivity were achieved through investments in knowledge, information technology and the latest manufacturing technologies.

The tooling industry involves research, design, development, manufacture, and verification of high accuracy components, high precision machines and systems. Tooling industry enterprise is practiced in a variety of technical areas - from engineering - mechanical, electrical, optical, and industrial - to materials science, physics, chemistry, mathematics, and computer science.

The tooling industry is only partially defined under the Australian and New Zealand Specialised Industry Codes (ANZSIC). The Code ANZSIC 2864 – Machine Tool and Part Manufacturing covers “*production of woodworking and metalworking machinery or equipment or metalworking hand tools or pneumatic or power operated hand tools n.e.c. The class includes units mainly engaged in manufacturing dies, die sets, machine tool accessories or attachments*”.² The scope of the tooling industry has therefore been developed and detailed in this submission to reflect the spread of product areas outlined below. All statistical data has been derived from the limited ABS reports available supplemented by information direct from industry stakeholders.

The tooling industry has developed to service all engineering fields that require highly advanced technology including research and development of production systems, system control, CAD/CAM, as well as the more visible precise mechanical elements.

The product and service areas covered by the tooling industry therefore include as follows:

Design and manufacturing: Life cycle engineering, product modelling, CAD/CAM/CAE, automation, intelligent system, design theory, CIM, prototyping.

Mechatronics: information technology equipment, precision positioning, intelligent controlling, mechanisms and machine elements.

Manufacturing tooling: injection moulds, press tools, die casting dies, extrusion dies, moulding dies, jigs, checking, welding and assembly fixtures, mandrels, forming tools and patterns.

Precision machining: milling, drilling, boring, planing, cutting and abrasive machining, micro machining, electro discharge machining, energy beam machining, laser deposition processing.

Precision metrology: Image processing, optronics, 3D measurement, roughness measurement, intelligent processing, in-process measurement.

Human/Environment: ergonomics, human support technology, medical device engineering, environmental engineering, etc.

² ABS Catalogue No. 1292.0

It is very important to note that the tooling industry contributes to the education of technicians, engineers and scientists by acting as a provider for various research and development organizations which are directed toward new technology including medical equipment, new instrumentation concepts, new machining processes and unmanned manufacturing systems.

Below is a definition of the Tooling industry. There is often a deficiency of appreciation and understanding generally in the community about the industry, particularly as to what purpose it serves, what it actually does and what skills are imperative.

Industry Definition

Enterprises in the tooling industry perform the functions of designing, building, testing and validating equipment in the form of specialised tooling that enable the direct repetitious manufacture, assembly or checking by others of products and components in plastics, cast metals, sheet metals and various other materials.

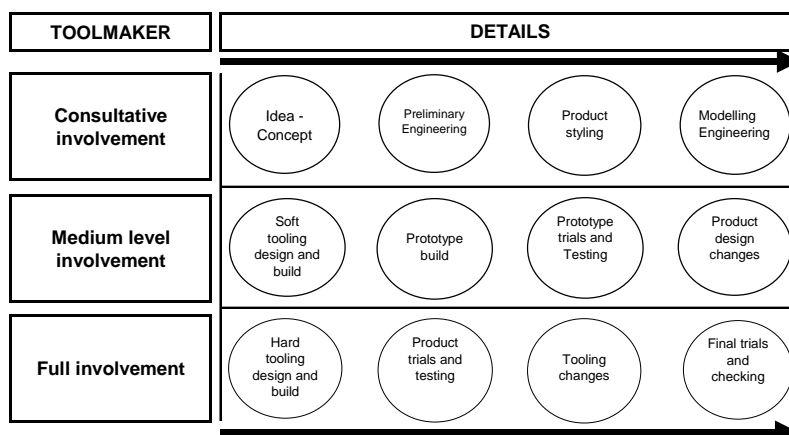
This equipment mainly consists of dies, moulds and fixtures used by a range of industries to manufacture their products.

Tooling including the following:

- Sheet metal press dies for piercing, forming, trimming, hemming, etc.
- Injection moulds for plastic and rubber product manufacture
- Compression moulds for composite material products
- Blow moulds for plastics and rubber products
- Moulds for glass forming and shaping
- Mandrels for lay-up material products such as fibreglass or carpet
- Vacuum forming dies for sheet plastic shaping
- Extrusion dies for long, uniform section product
- Casting dies and trim tooling for cast metal products
- Forging dies and hot stamping dies for ferrous and non-ferrous products
- Cutting jigs and holding fixtures for machine tool processes
- Checking fixtures and gauges for component verification
- Assembly and welding fixtures for product joining and assembly
- Prototype tooling for virtually any product

Tooling enterprises are often involved in virtually the whole product manufacturing process, which is shown in Figure 1.

Figure 1 – Product Development Process



The major users of tooling are the auto assemblers and their first and second tier suppliers. There is a strong inter-dependence between the tooling segment and the automotive industry with the latter strongly dependent on the capability and depth of experience and capacity available within the tooling industry.

Other users of tooling are manufacturers of electronic and electrical goods, telecommunications equipment, white goods, household equipment, furniture, aerospace items, defence products, building products, machinery, medical and scientific equipment, toys, safety items, office equipment, footwear and sports equipment, civil construction, waste collection, etc.

The tooling industry is therefore an extremely vital base to almost all manufacturing. However, the consumer is usually very unaware the products they buy are produced with the essential use of some form of tooling.

Tooling enterprises require a highly skilled workforce. Tools are usually single pieces of equipment custom designed for the high volume manufacture of one or more items of plastic, elastomer, metal or composite material. Tooling in its many forms can be very complex with many precise fixed and moving components with electric power, water and hydraulic control circuits incorporated. Tool shops use complex-geometry software for developing their client's product requirement of shape, for creating the tool surfaces, and for tool design and machine programming and machining controls. The hardware used in the industry consists of high capacity computer workstations and computer numerical controlled machine tools and equipment for manufacture, testing, measurement and verification. Some conventional machine tools and equipment retain usefulness to the industry and are often upgraded to greater capability by modification and using add-on higher technology equipment.

6 Current Industry Status and Opportunities

Importance to Australia

The tooling industry produces essential inputs for all manufacturing industries. The industry consists of some 500 small enterprises, most are quite small operations, the average level of employment is about 20 people and the largest has about 200. Industry turnover in Australia was \$1 billion in 2001. The proportion per major product segment is shown in Chart 1 below.

The industry has issues regarding training and education, technology diffusion, large movements in demand, scale of operations and industry coordination, shared vision and image.

The significance of the industry in Australia extends right through the rest of manufacturing. The automotive industry for one relies strongly on the capability and depth of experience and capacity available within the local tooling industry. The segment is a vital base to manufacturing and a key part of the supply chain leading from raw materials to the consumer sector in the form of the everyday use of vast numbers of products produced from tooling.

Most other manufacturing industry sectors seek people trained and developed in the tooling industry for their skills and experience. These companies employ people involved in tooling at varying degrees of skill including skilled toolmakers and engineering technicians. There is an analogy with other forms of employment. For example, the number of accountants undertaking accounting activities would easily exceed the number employed by firms whose main activity was the provision of accounting services.

Direct employment in 2001 in enterprises classified as “ machine tools and parts manufacturing”, the classification that is meant to capture those enterprises whose prime activity is precision engineering, is stated at around 5,000 people in Australia³. Based on input from a special working group of the tooling industry, direct employment in the tooling industry in Australia is more like 10,000 people⁴. The inclusion of the dependent supplier and other support industries to the tooling industry would extend the total direct and indirect employment to at least 13,000 people.

Education and training is a very important issue for the tooling industry. The more effective and competitive the industry, the more benefit it will provide for a wide range of other manufacturing industries. This reflects the externalities provided by the enabling nature of the tooling industry and the employment of people with tool making competencies in other manufacturing industries.

The tooling industry has now become a successful exporter with Australian exports representing almost 10 percent of turnover in 2001. Further, total export growth has strengthened in recent years with an increase of more than 60 percent over the last four years.

Significance of the Automotive Industry

The Tooling industry is extremely dependent on the state of the automotive industry, with around 65 percent of output being directed to either auto assemblers or their Tier One or Tier Two suppliers.

The auto industry is the prime source of loading and sales volatility through all areas of the tooling industry. Demand for tooling for new vehicle models redesigns and face-lifts occur sporadically and

³ ABS

⁴ PEI Working Group assessment 2001

often activity in the tooling industry between automotive demands is lower with turnover falling in absolute terms.

There is little attention given to strategy planning by firms in the industry. The result has been that firms often move from high to low levels of activity with no effective industry wide attempt to even out the load volatility within the industry.

The automotive industry buyers are in a strong bargaining position within the industry. They exert this strength by increasing the scope of requirements to tool makers, insisting on reduced lead times and demanding price reductions as a pre condition for them to retain the business.

The corollary to this is that assemblers argue that their plants are now internationally competitive and that a major contributor to this situation has been the ability of local tool rooms to meet the increasing standards of the assemblers. These increasingly exacting standards have been forced on them to maintain globally competitive plants.

Industry Performance

The Market

The tooling industry market in Australia is estimated to total up to \$1.1 billion annually and has increased at an average of about two percent per year during the past eight years.

The Australian automotive manufacturing industry comprises about 65 percent of the local tooling industry marketplace with aerospace, electrical components, whitegoods, packaging furniture and domestic goods and equipment being the bulk of the remainder. With the historic gradual decline in some industries, the tooling industry has seen slow domestic growth during the last 20 years but greater threat from import competition, particularly now from Asia.

Chart 1 - Tooling industry Market - Australian 1996 to 2001

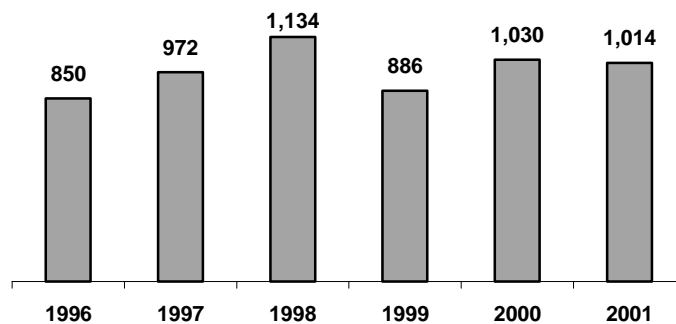
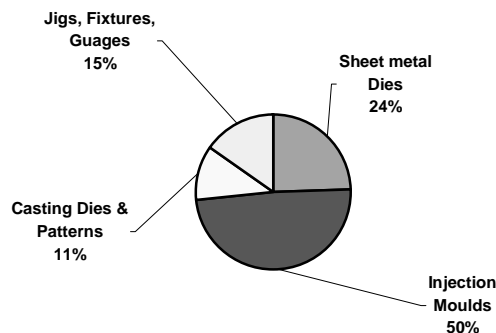


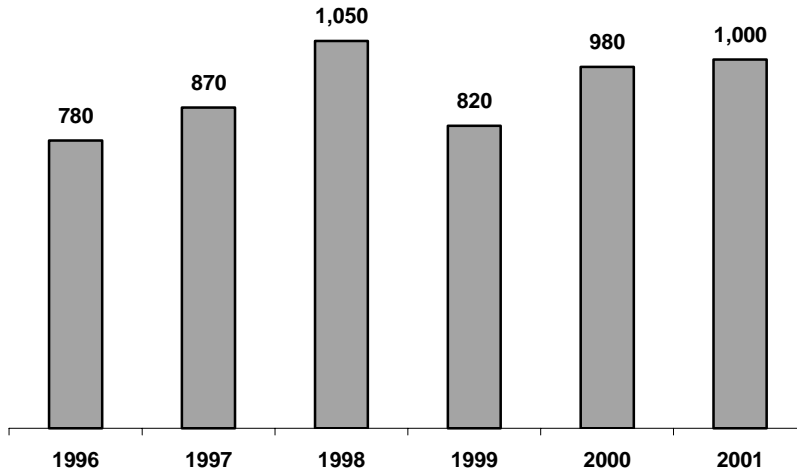
Chart 2 – Australian Tooling Market by Segments – 2001



Turnover

Industry turnover has been erratic over the past eight years but increased in nominal terms by an average of over 4.3 percent per annum between 1993 and 2001 from \$575 million to \$775 million. The average increase masks the actual annual figures that show the significant market peaks and troughs that affect the industry as shown in the chart below.

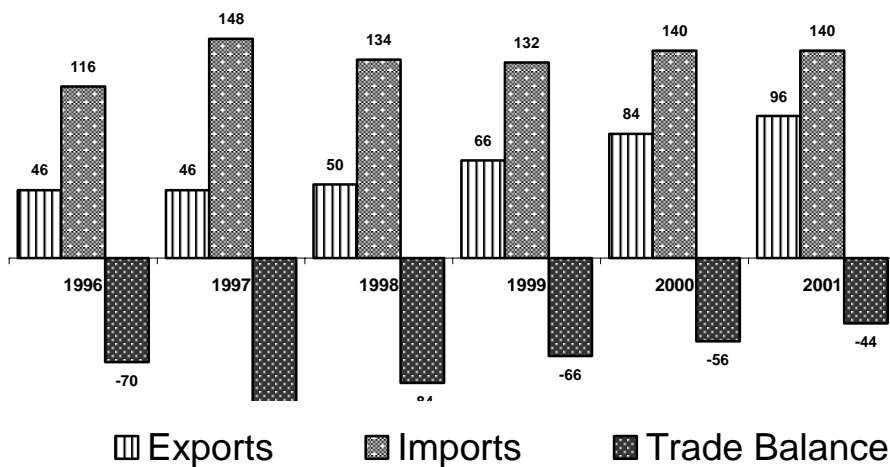
Chart 3 – Tooling industry Turnover 1996 to 2001



Exports, Imports and Trade balance

As a percentage of turnover Tooling industry exports from Australia have doubled from \$46 million (4.5 percent of turnover) in 1996 to \$96 million (almost 10 percent of turnover) in 2001. Very clearly tooling industry growth is being driven by exports. Imports are still substantial at \$140 million, 14 percent of the market in 2001, but have increased at a lower rate over the same period. Imports have been substantially of sheet metal body dies. There has therefore been an improvement in the import to export ratio from 3.6 to 1.8 during the period.

Chart 4 – Imports and Exports by Segment –Australia 1996 to 2001



Employment

Employment in the Tooling Industry in Australia has been relatively stable at about 10,000 people over the past 5 years, although employment levels rose by almost 13 percent from a low point in 1996.

Employment forecasts in the tooling industry show some growth over the next two years due to increased demand in the local automotive industry and increasing successes in exports. However, increased diffusion of new technologies and improved work practices will continue to enhance productivity and are the main reasons for increased capacities.

The employment figures referred to in Chart 9 are based on ABS data adjusted by industry estimates and is made up of all direct employment in the industry and includes in-house activities.

The Industry in the Context of World's Best Practice

The Australian tooling industry has many firms at or near world's best practice level. The development and continuation of exports of machine tools and tooling to major corporations around the world prove this. However, many more are not at that level.

There are various ways to benchmark world's best practice. However not all criteria can be met by all in the industry. Practices in countries other than Australia are often different to the ways here. For instance, the average age of machine tools in use in Australia is fourteen years. When compared with Japan, which is considered at world's best practice level, the average age of machine tools is seven years. Japan has a very strong machine tool manufacturing industry. Most major firms using those machine tools in Japan work "24/7" (24 hours a day, seven days a week). As new machines come on the market, the old ones are relegated to third world country subsidiaries and the age factor adjusts accordingly.

Many Australian tooling industry firms utilise the latest equipment on the basis of running "24/7", but also many others cannot afford to buy new equipment regularly because, due to smaller demand they are working only one shift, the usage rate is not as high as Japan. Some larger firms producing large tools or equipment do have machine tools with much wider range of capability but they are more likely to have a higher proportion of older equipment because of their size and equivalent cost. It appears that in Australia this is offset to some degree with machine re-builds and up-grades.

The major reason therefore of the higher age level of equipment in Australia appears to be the debilitating local market demand fluctuations. Even many of the larger best performing firms seem to suffer in making difficult investment decisions due to this irregular market phenomenon. This is particularly the case with the machine tool and tooling segments of the tooling industry where production is all virtually pure jobbing contracts.

A key reason for many firms attempting to market outside Australia is that the local market phenomena is predicted to worsen ironically due to improvements in technology and local productivity. It is obvious to many in the tooling industry that exports hold the key to sustaining growth and more even loading within their businesses.

Despite the age of equipment compared with the world's best practice country, the Australian tooling industry in particular is proving world competitive. There are several factors involved in the reasons for this. The tooling industry still has a comprehensive infrastructure superior to all other countries outside the OECD and over half of them within it. Within the major criteria sought by buyers of tooling industry product globally, Australian firms are competitive on price, are known to produce first class quality product and to complete contracts within required lead times. This has been adequately proved by the improving success of several exporters over the past three years. Most of the criticism derives from clients who try to obtain tooling industry product during times of peak demand and are frustrated due to inadequate capacity in the industry, and from those who underestimate the value of the product, demand ridiculously cheap prices and get what they pay for.

However, the down side to this is the ability to sustain the capability. Global procurement practices increasingly demand larger and more system-oriented packages of equipment – tooling and machine tools from the tooling industry in the main. To date with a few exceptions most exports have constituted minor proportions of tooling firms’ total sales and token use of networking and consortia. Because the fluctuations in demand are becoming more severe and more difficult to handle, there is the likelihood that without major success in exports, the industry will be further weakened and become like many industries that have already faded away. Even the strongest would suffer because as the industry shrinks the infrastructure of supporting suppliers and services, quality systems, researchers, designers, educators and trainers would also weaken. However, although this infrastructure is now becoming more delicate there is still time to rejuvenate and strengthen it to support the tooling industry in its push for an export-dominated industry. Because of the vital importance of the tooling industry to all of Australia’s manufacturing industry it must be given encouragement to increase its exports by a very large proportion as quickly as possible.

The tooling industry worldwide is a high value adding industry and the turnover per employee figure would vary considerably to other manufacturing industries. The average turnover per employee in the Australian tooling industry is \$110,500. The spread would be from a high of about \$170,000 down to under \$90,000 per employee with most under the average. Japan’s average turnover per employee is around the higher Australian figure.⁵

The areas of weakness where smaller firms require additional skills correlate to management and strategy planning, marketing, benchmarking and best practice. There are sections of the tooling industry that must improve capability, quality and understanding of “best practice” or else they will leave the industry soon.

While there is a vast range of courses available, a useful exercise would be to identify the best training programs relevant to the needs of the tooling industry. It would appear that an education promotion program is required to increase the awareness of the best-identified training courses and more importantly, to persuade smaller firms to lift their priority given to management training.

The Internet provides further scope to access global markets and a number of tooling industry firms are using it successfully. The industry has an important challenge to promote the B2B strategy and explain the benefits to the tooling industry

⁵ Industry data

7 Detailed Performance

The tooling industry has vital significance as it underpins the whole of national manufacturing industry. For example, tooling is essential in the Australian manufacture and export of automotive vehicles and components that have totalled over \$9.0 billion in 2001. The export figure for components in this period was over 4.5 billion.

Of importance also is the standard of tooling made in Australia. The standard of tooling from many Australian tooling firms is equal to the best in the world. Part of this is due to the long-term experience of the Australian industry in supporting manufacturing and part is due to the existence of competent automotive design and manufacture here for the last 100 years. The influence of American, British, German and Japanese based vehicle manufacturing practices for many years on local toolmakers should not be underestimated because it has given Australia an edge on all but the major auto producing nations. This situation, although little known to the rest of the world until recently, enables many local toolmakers to supply products to almost any user who demands high quality and reliability. The problem the segment has is that many users in the rest of the world have not heard of Australia as a place to go to obtain tooling. TIFA is attempting efforts in promoting the industry overseas, but needs more resources to raise the awareness in terms of image and competitiveness.

Based on industry estimates⁶, the turnover of the global tooling market is about \$200 billion. There are about 500 tooling businesses in Australia⁷ employing about 10,000 people and producing about \$1 billion value of tooling. A large number of small firms and in-house operations comprise the tooling segment of the tooling industry with some medium sized operations by world standards being the largest companies.

The largest toolmaking entities in Australia in terms of employment are:

- Ford Motor Company Australia Ltd, Geelong, Victoria
- Diecraft Australia, Reservoir, Victoria (part of Tupperware, USA)
- Venture Metro Tool and Die, South Oakleigh, Victoria (part of Venture Industries, USA)
- DMG Industries, Dandenong, Victoria
- Clipsal, Adelaide, South Australia
- George Lovitt, Montmorency, Victoria
- Trident Tooling, Netly, South Australia
- Columbia Die Sinking Co. Pty Ltd, Cheltenham, Victoria
- MMAL, Clovelly Park, South Australia
- Broens Toolmaking, Ingleburn, New South Wales
- Crontec Automotive Tooling, Kirrawee, New South Wales

The Australian tooling industry is subject to very large fluctuations in local demand. It therefore has inadequate capacity in periods of strong demand and excess capacity when industry demand lessens. These cycles are based on the auto industry cycles. The auto industry has four basic models and they all tend to go through new design, re-design, freshens or facelifts at much the same time.

Regarding forecasts, Ford Australia, who make tooling for several overseas companies as well as for local car makers, have stated they expect a flattening in demand for vehicle body tooling after 2002 with a demand recovery during mid 2003. Demand for cockpit and exterior trim tooling usually runs simultaneously or closely follows the demand for steel body tooling, but also is demanded every time there is a cosmetic face-lift, re-fresh, re-design or complete new platform. The total demand for plastic tooling is expected to be steadier than for sheet metal dies. The demand for under-hood tooling is different again. Demand for under-hood work tends to follow the changes to engine, drive train and suspension systems that may occur at varying times.

⁶ TIFA composite estimates

⁷ Source TIFA

The current Australian production of some \$1 billion value of tooling has been increasing slowly over the past 10 years but is now ramping up steeper with recent export successes. Current Australian exports have increased from less than \$25 million in 1993 to over \$90 million in 2001.

The local automotive industry has been the traditional driver of demand for tooling but the increasing global demand for high quality tooling is opening up immense opportunities and hence exports is the driver of future growth. While exports in aggregate are small, they are increasing and currently some 27 firms are exporting tooling. The main export markets are the United States, China, India, Thailand, EU, New Zealand and Malaysia.

Provided the present thrust by tooling enterprises is sustained and encouraged by Governments and assisted by TIFA, long-term growth in the industry is projected to be 8 to 10 percent per annum, based on the continuation of the trend in export growth opportunities. That is, most of the growth in this segment is expected to come from exports and, as the scale of the industry increases, some more growth will be due to import replacement.

A number of Australia's significant tooling companies have been competing internationally for several years. These companies are not only internationally competitive but they have internationally respected capabilities. These include Diecraft, Venture Metro, Ford, Columbia, DMG, Diemold, Trident, Crontec and Centre Tooling. Now more firms are proving they are internationally competitive having invested the effort in searching out new opportunities in several regions of the world. There are some success stories in this segment and there is a need to demonstrate their capabilities on the world stage.

Several exporters of tooling have stated that they are increasing their prospects in several overseas destinations for a number of reasons. Venture Metro, for example, believes that they are up to 30 percent more competitive than tool shops in the United States. Metro has been extensively involved in producing complete tooling for major new car developments in Malaysia and Russia, and supply tooling to major vehicle companies in Germany and to US and German joint venture companies in China. Diecraft have also been able to compete for domestic plastic ware tooling requirements against strong overseas competition from several countries including the United States, Portugal, Italy and Japan.

The introduction of new technologies useful to the industry is also an important issue for the segment. The Tooling Industry Forum of Australia (TIFA), with assistance from the Department of Industry, Tourism and Resources (DITR) have taken the step to put in place regional technology managers to conduct the means of implementing the diffusion process throughout the tooling industry. In this matter the identification and adoption of world's best practice technology is an extremely important issue to the whole of the tooling industry. TIFA also devotes a considerable amount of its small resources in the effort to measure and monitor the position of local toolmakers relating to best practice.

As with all segments of the tooling industry, the availability of skilled labour has been a major issue for many years. However, the changing nature of required skills is also an increasingly important issue.

Skilled labour will be adversely affected for the next five years due to apprenticeship numbers having declined over the past 15 years. The shortage will continue until the skill requirements have been addressed and more people make their career in the industry. For example, many companies like Metro and Diecraft continue to receive poor responses to their advertisements for new apprenticeship places. Both companies consider that this can be traced partly to the poor image of manufacturing in general as a career.

The structure of customer purchasing is constantly evolving. With the exception of the tooling for the products they produce in-house including sheet metal body parts and engines, the auto assemblers have over the years gradually passed more of the responsibility for tooling purchases down the supply chain to their tiered system of component suppliers. The auto assemblers do however require financial data on the costs associated with tooling purchases. In turn, the Tier One and Tier Two suppliers are now showing preference to obtain their tooling in full system projects. Currently few tooling firms are capable of

meeting the demands for complete systems of tools from the auto assemblers and Tier 1 suppliers. The tooling industry needs to address this matter urgently.

In summary, the tooling industry is committed to:

- improve its image to attract more clients and more skilled people,
- invest in more new technology,
- develop less dependency on the demands of the local market by exporting globally
- improve its industry cooperation and networking locally and overseas
- collaborate on major projects
- consider synergistic amalgamations and rationalisations
- take control of its education and training needs
- improve its response to client needs and methods
- develop a R & D and product testing/validation centre

8 Appendix 1 - The prime responsibilities of TTSN

- ❑ To audit the capabilities of the tooling industry
- ❑ To identify new technologies being developed both in Australia and overseas that could enhance the capabilities of existing firms in the tooling industry.
- ❑ To directly assist tooling industry enterprises with technology diffusion by means of forums, seminars, workshops, demonstration and awareness projects, and individual cooperation
- ❑ To undertake detailed benchmarking exercises
- ❑ To manage the interface between appropriate research and educational institutions, the government and industry.
- ❑ To understand the major research needs of the industry and match these needs to developments overseas.
- ❑ To identify new tooling technologies and processes that are currently not undertaken in Australia, but could be undertaken by some companies on a globally competitive basis and to promote these companies and processes overseas.
- ❑ To identify leading edge R&D and targeting the application of that R&D to specific companies and or groups of companies that have the capability to commercialise and export the applications.

9 Appendix 2 - Abbreviations

ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
ACIS	Automotive Competitiveness and Investment Scheme
ACS	Australian Customs Service
ADCA	Australian Die Casting Association
ADI	Austenitic ductile iron
AECM	Advanced Engineering Centre for Manufacturing
AFG	Australian Forging Group
AFI	Australian Foundry Institute
AIG	Australian Industry Group
AISC	Australian Institute of Steel Construction
AMC	Australian Magnesium Corporation
AMTIL	Advanced Manufacturing Technology
AMTIL	Australian Machine Tool Institute Limited
AMWU	Australian Metal Workers Union
ANZSIC	Australian and New Zealand Specialised Industry Codes
APC	Australian Productivity Council
AUSTAP	Australian and NZ Tapware & Allied Fittings Manufacturers Association
Austrade	Australian Trade Commission
AWU	Australian Workers Union
CAD/CAM	Computer Aided Design/Computer Aided Manufacture
CAE	Computer Aided Engineering
CAF	Computer Aided Fabrication
CAFÉ	Corporate average fuel economy regulation
CAST	CRC for Alloy and Solidification Technologies
CIBM	Centre for Innovation Business and Manufacturing (was SACFM)
COMET	Commercialising Emerging Technologies
CRC	Cooperative Research Centre
CSIRO	Commonwealth Scientific Industrial Research Organisation
DFAT	Department of Foreign Affairs and Trade
DITR	Department of Industry, Tourism and Resources
DSRD	Department of State and Regional Development
EBA	Enterprise Bargaining Agreement
EDI	Electronic Data Interchange
EMDG	Export Marketing Development Grant
ESTB	Engineering Skills Training Board
ETMs	Elaborately Transformed Manufactures
EU	European Union
FAPM	Federation of Automotive Products Manufacturers
FCAI	Federal Chamber of Automotive Manufacturers
FDM	Fused Deposition Modelling
FIMMA	Food Industry Machinery Manufacturers Association of Australia
GDP	Gross Domestic Product
GIRD	Government Expenditure - Research & Development

Abbreviations continued

IBIS	IBIS Business Information
IMMA	Institute of Metals & Materials Australia
IMS	Intelligent Manufacturing Systems
IRG	Industry Reference Group
IRIS	Industrial Research Institute Swinburne
ISO	Industrial Supplies Office
ISO	International Standards Organisation
LTI	Lost time injury
ManSA	Manufacturers Society of Australia
MFI	Metals Fabrication Industry
MICC	Manufacturing Industry Council
MTI	Medical treated injury
NCMC	National Cast metals Council
NEITL	North Eastern
OoM	Office of Manufacturing (DSRD)
R & D	Research & Development
RMIT	Royal Melbourne Institute of Technology University
SACFM	South Australian Centre For Manufacturing (now CIBM)
SCA	Sustainable Competitive Advantage
SLG	Light Metals Action Agenda Strategic Leaders Group
SME	Small to Medium sized Enterprises
START	Strategic Assistance for Research
STM's	Simply Transformed Manufactures
TCFL	Textile, Clothing, Footwear and Leather industry
TIFA	Tooling Industry Forum of Australia
UK	United Kingdom
USA	United States of America
VECCI	Victorian Employers Chamber of Commerce and Industry
VET	Vocational Education and Training
VHS	Very High Strength
VIPP	Victorian Industry Participation Policy

10 Appendix 3 - Industry Statistics

Year	1996	1997	1998	1999	2000	2001
Employees	8,860	10,140	10,200	9,860	10,000	10,000
Turnover	780	870	1,050	820	980	1,000
Exports	46	46	50	66	84	96
Imports	116	148	134	132	140	140
Australian Market	850	972	1,134	886	1,036	1,044
Trade Balance	-70	-102	-84	-66	-56	-44