

THE SPANISH TOOLING SECTOR: **A Multiple Approach Towards Industry Competitiveness**

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ASCAMM, FEAMM AND ISTMA-EUROPE

ASCAMM was born in 1979 as the Catalan Association of Mould and Die Companies –as this is the Spanish region where the highest number of companies of the sector can be found– with the objective of gathering the companies that believe in the union of efforts to defend their interests (www.ascamm.com).

In parallel, from ASCAMM the creation of other regional mould and die maker associations was promoted, so that already in 1982 FEAMM (Spanish Tooling Federation) was established. This Federation has been managed and presided by ASCAMM from the beginning.

At present, the Spanish Tooling Federation has around 300 associated companies and since the year 2000 it has also been holding ISTMA-Europe's Secretariat (International Special Tooling and Machining Association), which gathers 13 European national associations of the sector (www.istma-europe.com). The tool-making industry in Europe comprises 7000-10000 companies, mainly SMEs, employing 150000-200000 people, with yearly sales about 15-20 billion Euro.

CURRENT SITUATION OF THE SECTOR

In few years, the mould and die maker sector has passed from a situation in which Europe, USA/Canada and Japan were almost the only producers to another scenario with many more producing countries in which China, Taiwan and South Korea are already among the first 11 countries.

Spain is in the 10th position worldwide, with an annual turnover of around 1000 Million €, and about 900 companies that employ approximately 13000 people.

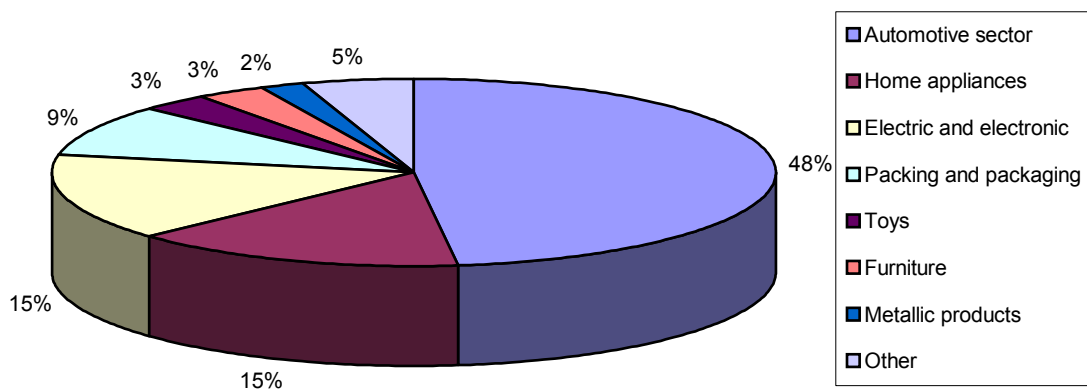
Mould and die exports amounted to 32% of production in 2003, with a total volume of 320 M €. Imports in the same period amounted to 140 M €, which means 43.6% with regard to exports.

From the statistical sources of the Spanish Foreign Trade Institute, it can be observed that stamping die exports hit a historical maximum in 2003, exceeding by 31% those of the previous year, and that Germany, France, Italy, United Kingdom and Sweden account for 86% of Spanish die exports. Plastic injection tool exports have also increased compared to 2002 (9%). France, with a significant difference, followed by Germany, Mexico, USA and Brazil, are still the main buyers, with 63% of the exports total.

As for imports, it should be pointed out that 84% of dies come from 6 European countries and 70% of plastic injection moulds come from 7 countries (6 European ones and Japan). The tools coming from low labour cost countries (China, South Korea, Hungary and Malaysia) represent almost 14% of the imports total in 2003.

The sector is very atomised and is composed mainly by SMEs with a high added value, very specialized personnel and with workshop mentality rather than company mentality. In Spain, the few big toolmaker companies invoice annually around 12 Million € and are smaller than the big companies of other European countries which invoice around 50 Million €.

The automotive sector, with its high level of requirements and its marked cyclicity represents almost half of the demand. The following chart illustrates the main final demanding sectors of the Spanish mould and die production.



The mould and die sector in Spain

In general, the current situation of the sector is characterised by:

- General recession
- Price decrease
- Payment conditions deterioration
- Impossibility to shift prices and conditions to suppliers
- Changes in the business model: introduction of global sourcing and e-procurement
- Appearance of new competing countries (Asia and Eastern Europe)
- Internal production and demand becomes stable or decreases in traditional countries and increases in emerging ones
- Production overcapacity
- Demand of more services for a lower price
- In addition to technological capacity, more and more financial capacity is required
- Threats on the intellectual property and liability of the tool in parts patented by third parties.

As particular cases, the following can be observed:

- In Japan and USA, in addition to a general recession, there is a decrease in their internal demand due to the transfer of converting and manufacturing industries to other countries
- Japan and USA are consolidated countries and their governments are involved in improving this industry sector
- Europe, as an organized whole, is not consolidated yet
- In Europe, the knowledge and acknowledgement of the sector and its importance are scarce
- In Europe, more attention has been given to agriculture and services rather than to industry
- Asian countries and European Eastern and Central countries are emerging strongly and some have a considerable potential. The available information on them is much less than that of traditional countries and, in general, less reliable.

In a market adjustment situation like the one described, some companies are left out of the race and other invest and reorient themselves to improve their positions in a clear will of remaining in the sector.

PERSPECTIVES

The immediate future leads us to the following:

- Extension of the European Union from 15 to 25 member countries from May 1st, 2004
- Substantial changes in the map of the automotive and components industry
- Increase of new business forms (global sourcing, e-procurement)
- Preference from the buyers for companies capable of managing big projects
- Demand of more services anywhere, in less time and at a lower price
- More need of business mentality

This last point is becoming more and more important. Without a clear business mentality, it will be difficult to stay on the market. The companies have to overcome day-to-day and set up mid and long-term strategic plans. The necessary doses of enthusiasm and intuition are no longer enough. Moreover, a rigorous management professionalisation is required, which in many cases is already happening and is favoured by the generational relay that is taking place in the companies' management.

NECESSARY ACTIONS

The companies have to know how to use all the resources at their disposal (inside and outside the company) in order to be innovative and constantly improve their processes, services and organization and have the suitable size and specialization degree to offer their customers a faster and more complete service that goes from product design to tool testing, pre-series production and dimensional control, counting for this on a greater collaboration and strategic alliances among the companies of the sector and a more intensive use of the services of specialized technical centres. All this without renouncing their own know-how, which is the main added value and differentiating element that mould and die makers can offer their customers.

Along this line of thought, strategic alliances must take into consideration an adequate combination of know-how, capacity, cost, location, market position and financial position. On this account, specific partnerships between Spanish and low cost countries tool-makers could be particularly fruitful and as a matter of fact, some initial moves are being made in this respect.

The R&D Framework Programs of the European Union are also contributing to increase the technological level and the competitive position of the sector, favouring the relation between project partners (companies, technology and research centres, etc.), as well as a better knowledge of the sector by the European Commission administration.

In this sense, from ISTMA-Europe we have determinedly fostered collaborative research projects of European scope oriented to specific needs of our sector, quite successfully so far as in 2003 and up to now it has been possible to start 5 R&D transnational projects, with a global budget of around 24M €, approved and funded by the EU.

INNOVATION STRATEGY AND TECHNICAL SUPPORT AT ASCAMM

In 1985 a study was carried out on the technological needs of the tool manufacturing companies in Spain and two main conclusions were drawn: companies need a well equipped infrastructure that allows them to test the functionality of their moulds and dies before starting production and they also need better qualified personnel and more people willing to be incorporated into this sector.

Such conclusions are stated in the initial project of our Technology Centre, supported by most companies in the sector and by the regional and national administrations.

In 1987, the first training actions started as well as the first mould tests in provisional facilities. As a continuation of this process, in 1990 the mould try-out facilities are built at the Vallès Technology Park near Barcelona and two years later, the corporate building including the remaining activities of the centre is built.

Year 1992 was also important because the already mentioned training and testing activities were complemented with the engineering consulting services to assist the companies in their own design and development processes.

R&D activities are started in 1995 as an answer to the growing needs of the sector.

In the following years a reflection process develops on the most efficient ways to help the companies increase their competitiveness, coming to the following conclusions:

- The Technology Centre has to be capable of innovating throughout the processes of the the plastic and metal part value chains.
- The Technology Centre cannot have a local approach as the nature of its activities and environment require to act on a global level.
- It is also stressed that the competitiveness of companies cannot be based exclusively on actions that reinforce their technological component; other actions and strategies of non-technological nature are necessary.

As a result of these reflections, at the end of the year 1996 the Association and the Technological Centre are separated into two independent –but closely linked-- legal entities.

In this way, the Technology Centre, which takes the legal form of private foundation (ASCAMM Foundation), opens its action field to plastic and metal processing in general and also stretches its geographic scope worldwide. On the other hand, the Association undertakes some very important non-technological actions, such as the international promotion and representation of the sector, the promotion of intercompany cooperation and profession promotion.

As the last development of this evolutionary process, at the end of 2003 ASCAMM Foundation established, together with the Applus+ corporation, the new company “AscammPlus Technological Services”, which operates under the brand name “Applus+ Materials and Industrial Processes” and follows the activities of mould test and certification, product and process engineering, technical consulting and high level training that the Technology Centre of ASCAMM Foundation has been carrying out for more than 15 years.

Applus+ is a Spanish multinational corporation devoted to technology and certification services. Applus+ is active in 25 different sectors and operates in 16 countries, including China. The corporation employs a total of 3274 people and has an aggregated turnover of 219 M€.

The creation of the new company AscammPlus answers the need of facing the new present challenges from a comprehensive approach, encompassing the whole value chain of various key end sectors with the capability of acting globally. This is now possible in the context of this alliance with the Applus+ corporation, which provides financial solidity for growth, wide sectorial coverage and ample presence and networking worldwide.

MAIN RESEARCH LINES

The research lines of the ASCAMM Technology Centre fall within the framework of product-process engineering, considering all phases involved in the development of the part/component and the tool, as well as the corresponding transformation, validation and reuse processes.

In the field of metallic materials, research is taking place regarding the new high-strength steels, analysing the mechanical advantages for sheet metal components and establishing criteria to be followed in the design and processing phases as a preventive / corrective measure to the drawbacks presented by their use.

As regards thermoplastic injection moulding, projects are being carried out with novel processes such as multimaterial injection or gas/water-assisted injection applied to parts with specific geometries, requirements, operating conditions, etc.

In relation to environmental protection, studies are being carried out in the Centre to reduce waste generation in tool manufacturing and plastic/metal part processing at the point of origin. Complementarily, it is aimed to give the generated waste an added value with by-uses in the same or other sectors.

Another action line that is being carried out in our Centre in recent years is the introduction and application of *Rapid Manufacturing* technologies to give an answer to the real needs of the market, reducing the time-to-market of new products and the trend towards personalised production. In this respect, we are working on tool manufacturing through Direct Metal Laser Sintering technology and the improvement of thermal efficiency by optimising the cooling circuits with free geometry channels (“conformal cooling”).

In rapid prototyping, a technology that allows the manufacturing of single sheet metal parts without the need of stamping dies is being developed and implemented in the Centre.

We are also working on a drastic reduction of the tool manufacturing time by means of incorporating advanced production systems (laser, 5 axis high-speed milling and automatic generation of numerical control programs with artificial intelligence tools), which allow a reduction of machining time by more than 50%.

In product development, the Centre has advanced CAE tools for thermoplastic injection moulding, pressure die casting and sheet metal forming, which allow an early detection of potential part design errors in a quick and reliable way, prior to actual tool manufacturing.

MOULD TEST & CERTIFICACION

Due to the growing pressure on cost and lead times, while maintaining and even increasing the quality and reliability requirements, the need for “first-time-right” tool set-up is higher than ever.

It is for this reason that Ascamm –and AscammPlus in particular- is strongly enhancing its activities in mould test and certification, capitalising on our vast accumulated experience of over 25.000 mould try-outs covering a great variety of parts for all types of end sectors and our specific test and validation methodology developed and refined over all these years.

A mould certification according to our procedures must be regarded as a final step totally integrated within the new product development chain, with full traceability with the rest of the project and taking into account part and tool design, part and tool materials, and process requirements, among other things.

In this context, AscammPlus is expanding its mould certification services to other countries with an important tool-making activity and is currently considering the feasibility of implementing such certification services in China as well.