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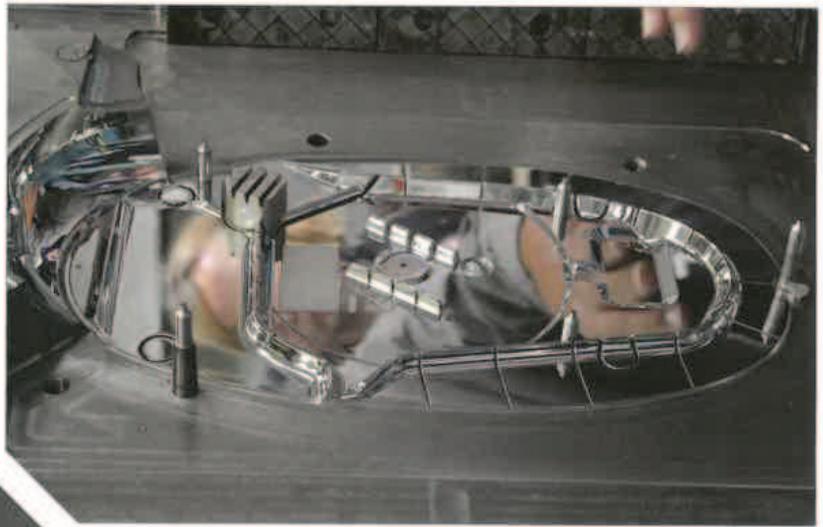
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Welcome to the Hub of Moldmaking in Portugal

Portugal today boasts some of the most advanced and innovative moldmaking businesses that have nearly doubled their export and production rate over the past ten years. Here is a look at this country's recipe for success.



Images courtesy of Barbara Schultz

With a centuries-old glass-making tradition that crossed naturally over into creating molds for plastics parts in the 1940s, Portugal today is a hotbed of moldmaking and exporting, and molds from Portugal can be found in almost every major end market for plastics.

Portugal's moldmaking hot spots, Marinha Grande and Oliveira de Azeméis, are located just 130 and 270 kilometers north of Lisbon, respectively. The regions combine more than 500 tool and moldmaking companies, many of them in walking distance from one another. The industry in these two regions employs a good 10,500 people, bringing the local unemployment rate down to less than four percent, according to Rui Feteira, commercial manager at a technical plastics company in Marinha Grande.

"Highly skilled people are difficult to find, so like many companies in the region, we invest in automation," the commercial manager says. The company produces injection-molded parts to many Tier-1 suppliers to the automotive industry, which makes up 95 percent of the business. All of the molds that the company needs annually are made by local moldmakers. Five of them are in

Many companies in Portugal are investing increasingly in five-axis machining centers and automation to produce high-end molds for customers in the automotive, packaging, home appliances and medical industries.



João Faustino, president of Celamol, says that prices for molds and tools decreased in 2018, and companies like his own in Marinha Grande, which earn 80 percent of their turnover from the automotive industry, have to adjust and develop strategies to optimize production. He has recently invested in eight new machining centers to be delivered next year, all five-axis with pallet systems and some with two tables to optimize set-ups and increase the degree of automation. "The goal is to be able to run the machines 24/7 unattended," Faustino says.

walking distance, producing high-quality molds in increasingly paperless production environments using the latest five-axis machines with pallet changers and other automation equipment.

Investments in R&D, Automation

Most companies in this region report that they have invested in or have plans to invest in new five-axis machines, software, paperless production, lean management and automation equipment. Some companies also have invested heavily in new, modern buildings and work environments that are sure to attract the best talent in town.

So, what has happened since the GFC, when competition from low-cost countries and the sharp depreciation of the U.S. dollar against the euro combined to wreak havoc on the economy of the small European nation? By 2012, for example, mold exports to North America reached a historic low of just two percent of Portugal's total mold exports. Today, exports to North America have risen to 10 percent, including Mexico, according to Celamol, the National Association for the Molds Industry.

One reason is government funding through the "Portugal 2020" strategy, which is part of "Europe 2020," a European strategy to foster productivity and employment, among other things. Portugal will receive about 25 billion euros until 2020 to reach the goals defined by the European

strategy, such as decreasing the unemployment rate and stimulating the growth of businesses.

The other reasons are new and emerging markets, a strong automotive industry (82 percent of Portugal's molds are for the automotive industry), followed by packaging (8 percent) and the mold industry's own efforts to retool itself.

About ten years ago, the sector's local leaders, in close coordination with the Portuguese Ministry of Economy and Innovation, founded the private, non-profit Pool-Net Association to manage the Portuguese engineering and tooling cluster. Formally recognized as a legal entity by the Portuguese government in 2009, the cluster's goal is to drive innovation and coordinate firms in the manufacturing supply chain that are engaged in industrial design, engineering and product development, prototyping, tooling, plastic and metal parts production.

Sharp Rise in Product Exports

All this led to Portugal's moldmaking industry being busy with work and realizing a sharp rise in product exports. "We are very proud of this industry, which experienced a growth of 8 percent last year," Portugal's Minister for Economic Affairs, Manuel Caldeira Cabral, says. "Portugal currently exports over 85 percent of production to 86 countries. In 2017, exports reached a value of 675 million euros. Exports and employment have doubled in the last 10 years. Europe is the main export zone, although exports to North America and Mexico are increasing."

He says, "Our mold exports to the United States are increasing because of a growing demand for molds from various industries. However, in contrast to many other markets such as Mexico, our companies have no local production yet. But, there are very interesting possibilities in the development of relationships with companies in the United States."

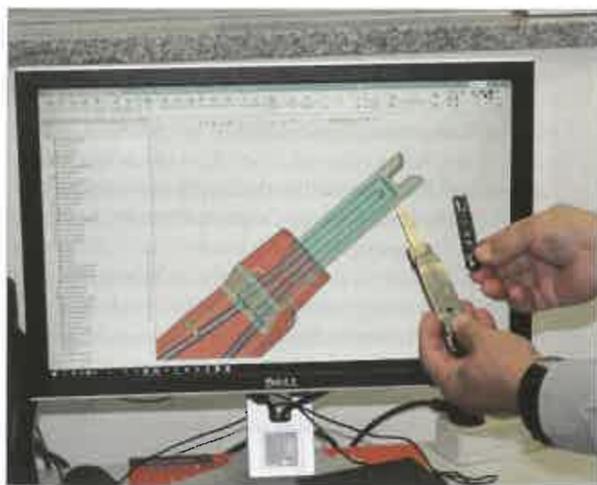
The Minister adds that while Portuguese moldmakers are much more integrated into the European supply chain, it is about finding the right way and the right opportunities in



Many moldmakers in Portugal are following the path of digitalization. This company has abandoned paper and uses a software developed in-house which has ensured a digital, paperless manufacturing environment for more than 20 years.

that value chain in other export markets (mainly automotive, which accounts for about 70 percent of production).

But tapping into new markets like Mexico is easier said than done, even though Mexico currently is the seventh largest location in the world for automotive production, and original equipment manufacturers (OEMs) will increase their capacities further to meet growing demand. Many of the Portuguese mold shops are supplying their products to



Additive manufacturing enables this company to design tools with conformal cooling channels to reduce customers' cycle times.

all major OEMs as Tier-1 or Tier-2 suppliers, but since the majority of shops are too small to build up capacities to establish local subsidiaries, some of them have decided to join forces.

Key Collaboration

In contrast to many countries' moldmaking industries, collaboration and cooperative manufacturing is common practice in Portugal—which is what five moldmakers (TJ Moldés, Ribermold, Moldit, Mold World and A. Silva Godinho) have done to service their Mexican customers.

"The companies decided to join forces to establish a factory for mold service, repair, maintenance and new molds in Mexico because Mexico is a growing market and local service for mold changes and repair is not sufficient," Cefamol President João Faustino says. Plans are in place to establish a technical center in Mexico similar to Centimfe (Technological Center for the Moldmaking, Special Tooling and Plastic Industries) in Portugal. Moreover, the companies have already been training 14 Mexicans since June 2018 for their new production facility in Mexico.

In Portugal, business is good, Faustino says, but OEM investments are moderate because people are anxious about current changes in the automotive market, like e-mobility, "Dieselgate" and growing competition from China. As a result, prices for molds and tools decreased in 2018, and companies like his own in Marinha Grande, which earn 80 percent of their turnover from the automotive industry, have to adjust and develop strategies to optimize production. Therefore, Faustino has already introduced a paperless factory—similar to many companies in Portugal—lean principles such as 5s and plans to reorganize his production, which currently is divided into several factories according to mold size. In the future, Faustino will organize his factory by type of machining. That is to say, all roughing and finishing operations will be housed under separate roofs.

Additionally, Faustino has invested in eight new machining centers, which will be delivered next year, all five-axis with pallet systems and some with two tables to optimize set-ups and increase the degree of automation. "The goal is to be able to run the machines 24/7 unattended," Faustino says. **MMT**

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FOR MORE INFORMATION

- Cefamol / cefamol.pt
- Centimfe / centimfe.com
- Pool-Net Association / toolingportugal.com

How to Create an Accurate Budget

Proper financial planning is integral to the success of every mold project.

Have you ever received a new project, walked into the shop, set a block on a machine and just started cutting to see what happens? No design, no plans, no programming—just using your experience and intuition? Of course not. What a ridiculous notion! All professional mold builders understand that accurate planning is integral to a project's success.

With this in mind, it is surprising that so many shops operate without a financial plan. As with a mold project, you can only achieve optimal business success through proper planning. A major component of this process is budgeting. Many methods of budgeting and assigning costs are available. Larger companies may require more intricate budgets. This article will focus on the *fundamentals* of basic budgeting and the steps for developing an annual financial plan.

Budget Basics

A budget is an essential tool that helps you communicate goals and spending guidelines. A budget sets the tone for the year

and provides the basis for which your shop can measure success. Therefore, it is very important that you dedicate serious effort to this process. Personnel from operations, sales, human resources, purchasing and management should provide input and play a key role in drafting the budget.

Start the process a few months before the next fiscal year. Start by collecting data, such as information on the company's performance history to establish a baseline and information from trade groups, customers and suppliers to predict potential trends. Remember to consider the impact that price increases, customer losses or gains and workforce and capacity changes will have on the operation over the budget period.

Next, set a profit goal. Establish revenue targets using sales forecasts and information from the current month's pricing column. From there, list a detailed account of all expected expenses and subtract them from revenue. Compare the bottom line to the profit goal, and make adjustments as necessary.

The only two ways to increase profit are to raise revenue or decrease costs. Shops should always focus on increasing revenue, as costs can only be reduced to zero, which is not practical. Revenue, on the other hand, can be improved as far as capacity will allow. Several iterations may be necessary, as the objective is to be as accurate as possible with predictions.

Most businesses do not have revenue and expenses that are evenly distributed throughout the year. To address that, break down the annual budget into periods, such as months. This provides for a much more accurate and useful tool. As I discussed in "Making Sense of Financial Statements," it is vital that you use percentages of income for each line item along with dollar amounts. This will help you identify issues and opportunities throughout the year.

Complete the final document at least one month before the fiscal year



Start by collecting data, such as information on the company's performance history to establish a baseline and information from trade groups, customers and suppliers to predict potential trends.