

# PRODUCT DEVELOPMENT AND INDUSTRIALISATION IN HIGH VALUE ADDED INDUSTRIES

The importance of companies mastering product development, while being capable of securing good connections with clients and, through these, with consumers, integrating both into their own product development and customisation, results from the fact that these enable interesting and positive synergies, providing companies with greater visibility and distinct market positioning.

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Certain companies have been able to provide a supply of integrated competences, by leveraging innovative ideas, ranging from design and engineering to product development, including: prototyping, various moulds and tools to support production, as well as the production, assembly and application of sophisticated embellishment techniques for plastic technical components.

Very few products require multiple identical moulds throughout their life cycle. In this sense, high consumption products - namely lab and medical support (hospital treatment and diagnostics) products or electronics - are good examples of high production output with millions of components, in which the use of multiple moulds stems from the need to address global demand requirements and daily use.

Over the past 75 years, both production centres for polymer injection and light alloy moulds, in Marinha Grande and Oliveira de Azeméis, were able to foster the global prestige of this industry, characterised by unit production.

Each mould lasts longer than the product that comes out of it!

Due to its very particular characteristics, of semi-industrial and skilful craftsmanship, this industry relies on a permanent competitive monitoring, update and adoption of emergent technologies. It is an industry that permanently seeks knowledge, competitiveness and productivity. It is an industry in which companies face each other with global assertion and positioning. In Portugal, mould-making companies' dependence on product exports is higher than 90%. It is a worldwide competition and there is a significant industrial complexity, even greater when considering the use of advanced technologies and processes, required by the polymer-based product innovation – referred to as plastics, taking into account the development of features from these materials over the past three decades. The importance of companies mastering product development, being capable of securing good connections with clients and, through these, with consumers, and integrating both into their own product development and customization, results from the fact that these enable interesting and positive synergies, providing companies with greater visibility and distinct market positioning. This concern, combined with possible strategic opportunities, has allowed many companies to develop new business lines, to achieve greater

sustainability and the development and recognition of competences, providing them with greater prestige and distinct market positioning. In many cases, and because companies were able to master product development and to secure good connections with clients, they are allowed to develop strategic partnerships with them, making clients an integral part of that process of multiple opportunities.

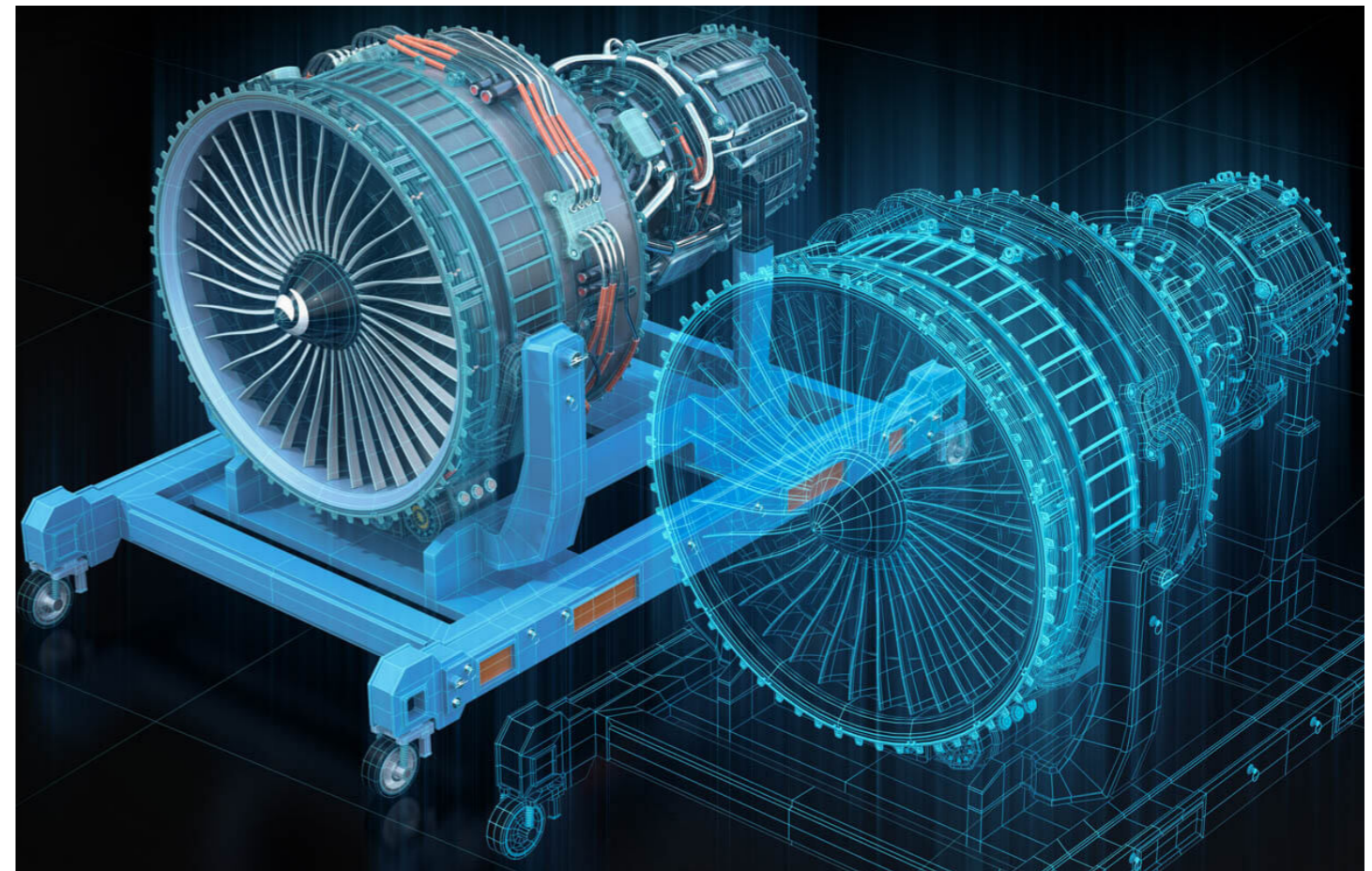
Mastery of product development also helps companies develop new and innovative products, capable of addressing current requirements of the Circular Economy; said products are developed and manufactured with minimal material consumption, integrating recycled materials or environmentally friendly alternatives, while bearing in mind their durability and recycling capability, as well as their own production processes, aligning them with the objective of reducing the respective carbon footprint.

I frequently refer to the mould-making industry as a future industry, with future. It is an industry of constant learning, from the project design and engineering to the assembly and usage, going through precision component machining processes, in which the use of advanced manufacturing technologies, namely metal additive manufacturing, is currently common, particularly in high volume series and high cadence production moulds and other complementary tools.

Portugal has become a reference for clients and peers, currently occupying the third position among the major European manufacturers, presenting itself as a pivotal industrial cluster, in line with the desired increase in Foreign Direct Investment (FDI) - mainly due to its uniqueness, tech requirement levels, modernity and differentiated skills.

The path taken by the Portuguese product development and manufacturing cluster (Engineering & Tooling Cluster) in the digitalisation area dates back to the 1980s. In Europe, Portuguese mould-making companies were the first to understand the importance of digitalisation at shop-floor level (CAD/CAM/CAE), and of the co-development (concurrent engineering) of new projects, with its multinational and market leading customer base. This led to varied and distinguished products, targeting prominent sectors such as the automotive sector, household appliances, packaging, medical and hospital devices, etc.

Resulting from this pioneering vision, the mould-making cluster reinforced its involvement in the product co-development area, together with clients, where the constant investment from companies in the various value chains has caused significant impact. Considering the need to explore new opportunities and markets for the full use of the competences resulting from the strong investment in advanced manufacturing technologies, the cluster has dedicated great attention to the possibilities of entering in other excellence sectors, such as aeronautics, space and defence. There are well-known and relevant projects in these areas, many of them winners of awards of international relevance. Regarding these domains, the unit production, a specific element of this industry, becomes even more evident and hinders the interaction of companies with these restricted markets, of highly specialised groups, and normally organised in established supplier clubs. We may say that there are competences, talents and knowledge in this cluster – considering the Portuguese general context – that can and should be taken into account for the new paths of the country's development in the near future. We suffer from a chronic issue: we do not know ourselves well enough, and we do not



acknowledge our own potential...the market is small, it does not leverage the competences and capabilities of national companies and of the multiple knowledge centres operating today. Much has been done; yet, it is not enough. Above all else, Portugal is internationally acknowledged for its competences and capabilities at the manufacturing level and the respective processes. In order to keep this competitive advantage and excellence at the manufacturing processes level, it is necessary to develop the product knowledge area and respective supporting services, aiming at a broader control of the value chains, and the creation of greater economic value

and social impact. The existence of a mould-making industry in Portugal, strong and dynamic, is a decisive factor on this transformational agenda of our economy, allowing the establishment of strategic partnerships with multiple and wide-ranging sectors of the national industry. The new opportunities that may be created and developed under the Portuguese Program for Economic Recovery 2020-2030 represent a sign of hope, in a sense that Portuguese companies, competences and know-how will have an effective opportunity, and play a key role in the most needed economic revival.