3D printing in Brazil: opportunities for patenting

Over the past few years there has been a surge in the development of devices which aim to make manufacturing processes as simple as possible and improve daily business. Many of these innovations have contributed to the concept of the '4.0 industry'. Also known as 'advanced manufacture', the 4.0 industry covers the interaction between different machines that produce a number of items without human interference in the process.

3D printers have a key place in this system as they build items from information contained in computer files. Many technologies are behind the functioning of 3D printers, such as data acquisition and processing, manufacturing processes and specific materials.

3D printers have changed the manufacturing sector, as it is no longer necessary to have machinery in the same manufacturing location. Instructions for the features of an object and how it must be constructed can be sent to a 3D printer remotely. This contributes to a reduction of logistics costs, which in turn reduces the price of the product. Further, raw materials are used more efficiently and production errors are rare. This collaboration between different devices simplifies the preparation of tailored items, which are more suited to consumer expectations.

While the 3D printing (also known as 'additive manufacture') has gained global economic and social relevance, the 4.0 industry becomes real in many developed countries, which have adapted their industrial policies in order to stimulate this innovative process. The Brazilian authorities have acknowledged this trend and efforts are ongoing to make Brazilian industry suitable for such advanced manufacture.

On 28 May 2019 the National Institute of Industrial Property (INPI) released a report titled "Technology roadmapping using patent documents on 3D printers". The report aims to provide relevant information for the parties involved in the establishment of an innovative and competitive industrial policy. Further, it contains data on the current state of this machinery. INPI focused on the years 2012 to 2016, as during this time there was a significant increase in patent filing relating to 3D printing.

According to INPI, the majority of priority applications were filed in China (4,355 documents) between 2012 and 2016. The United States was next, with 1,082 submissions. Patent applications via the Patent Cooperation Treaty (PCT) came third with 784 documents. Brazil was 16th, with six patent applications. This low number of submissions indicates that, at a global level, the majority of inventions relating to 3D printing are not protected in Brazil, which means that there is an opportunity for companies located in the country to benefit from this technology without infringing third-party rights.

INPI analysed the most-used International Patent Classifications in patent documents to find the main fields of technological innovation associated with 3D printers. The results indicate that the most-used classifications were B29C 67/00, B33Y 30/00 and B22F3/105 in published applications between 2012 and 2016.

There were 5,293 documents under classification B29C 67/00, which relates to shaping techniques identified as “moulding by agglomerating” and “screen moulding”, as well as shaping techniques for porous and cellular articles or techniques characterised by the choice of material.

There were 4,378 patent documents under B33Y 30/00, which relates to apparatus, details and accessories for additive manufacturing. This classification was introduced in 2015 and is related not only to 3D printer devices, but also manufacture processes and data acquisitions. This is because patent documents may claim both products and methods, which influences their classification.

Finally, there were 1,030 documents under classification B22F3/105, which relates to the manufacture of workpieces or articles from metallic powder and apparatus adapted for this process.

The increasing number of 3D printer-related patent applications between 2012 and 2016 was also observed in the report by INPI. The institute analysed the number of patent applications published in this period and an increase was noted on both a global and national level, the most significant being between 2014 (644 patent applications) and 2016 (4,739 applications). This demonstrates Brazil’s interest in the development of innovative devices at a national level.

Conclusion

The INPI report highlights the main aspects relating to development of innovation involving 3D printers and indicates that Brazil has potential in this field. In light of global trends and Brazil’s potential of consumption (still less explored in this technical field), companies involved in 3D printing should look at the possibility of expanding into and investing in the Brazilian market.