



Zipor's Samplejet. CREDIT: ZIPOR S.A.

WATERJET CUTTING COULD OPEN DOORS IN CHINA

CAD cutting systems are now a mature and accepted technology within the footwear industry. Most feature an oscillating knife or laser. A third system that is still growing is where a high pressure jet of water is used to cut the materials. The concept has become popular with smaller manufacturers in Europe who have found that it can significantly improve both yields and output.

Water jet cutting works on a wide range of materials including leather, fabrics and most synthetics regardless of hardness, enabling it to be used for cutting components such as soles, insoles, counters and foam socks as well as upper sections. This flexibility is particularly useful for sports shoe producers where complex pattern shapes and a wide variety of materials are the norm. By using a very thin high pressure water jet, it is claimed that cutting yields of up to 90% for everyday shoes and up to 80% for more complex sports shoes can be obtained.

Water jet is also said to be up to two times faster than other systems both in terms of acceleration and top speed. This total flexibility allows pre-series or sales samples to be cut at the same time as bulk production. Another advantage is the ability to mix different kinds of materials at once. As the water jet is applied vertically and there is no direct contact of the cutting head, there is no significant force to deflect the material, so that a vacuum is not needed to hold it down. A

further point in its favour is that consumables such as tables and knives do not need changing as frequently.

A LEADING PLAYER

Portuguese company Zipor S.A. has played a major role in advancing water jet technology for the footwear industry and offers fully-integrated industrial CAD cutting based on the concept. It has developed machines that are fast, accurate and clean which it says are cheap to run and only use about 30 litres of filtered water per hour. The normal layout consists of a double work station operated simultaneously by two operators using four work tables. Besides the usual CAD/CAM features, its equipment also includes a management intranet. The design department can now connect with the cutting department even if in remote locations so that a designer can make real time tests and modify a pattern if found necessary. When finalised, it can then be uploaded directly to the machine with the factory bulk order for cutting and producing management data on yield, cost and inventory levels of materials.

Zipor's most popular model is the Samplejet which can be used by two operators simultaneously with two hydraulically operated tables of 1400mm x 1000mm in size; one for loading and the other for unloading. It can cut up to 200 pairs per day depending on how it is utilised. The Easyjet operates



The operating head on a water jet cutter has no direct contact with the material CREDIT: ZIPOR S.A.

with either one or two manual tables and is aimed at smaller sized companies. For large bulk production, the Cutterjet has a 1500mm x 3000mm cutting area and includes an offline digitalisation and bar code labeling station for natural leather which enables it to cut up to 1500 pairs per day.

The nesting algorithm on these machines is also fast and can be used in offline mode for large capacity processing. For sampling and development work, all machines can function without automatic nesting. They can also be operated using an overhead screen over a high definition table to make scanning easier and more efficient. Nesting can then be done either by projecting a video image directly on to the table or using a digital picture of the material. Partial automatic nesting can also be used to speed up operations if required.

IT has enabled technical support to advance by leaps and bounds since the days not so long ago when, if a problem was encountered, it was a case of having to wait for the supplier's mechanic to arrive. Now, with so many machines controlled by CAD software, support can be provided immediately online. Zipor though, takes no chances and has a global network of agents as well as direct online support from its headquarters in Portugal.

ASIA SLOW TO ADAPT

Despite the apparent advantages, water jet cutting has been slow to take off in Asia as a whole and China in particular, where there is a noticeable gap between progressive and less progressive companies. Taiwanese, Korean, US and European-owned factories are mostly exporters with high quality and efficiency requirements as well as high volume throughputs. These have seen the possibilities of water jet cutting and Zipor has sold machines

to companies working for major international brands mainly for R&D departments which need to cut small quantities quickly. While CAD cutting does save time, water jet is even faster due to its capacity to cut all types of materials that footwear factories are likely to encounter during the development phase. Working closely with Orisol Asia, which has a good understanding of Asian needs, has helped Zipor to develop the right solutions for this market. In addition, the good level of service provided by Orisol has also been of great benefit.

Many Chinese-owned companies, on the other hand, have not adopted CAD for sample development and continue to rely on labour intensive traditional methods. They are now finding it increasingly difficult to find people with the necessary level of training without paying substantially higher salaries. Quality control is also more complex to manage using traditional methods and CAD/CAM would do much for these companies in terms of both efficiency and profitability.

A major part of this problem lies in fact that these owners have traditionally been loath to invest in training and technology. Labour was cheap so they could solve production problems by simply employing more people. This attitude also applied to machinery suppliers who concentrated on cheap machines requiring a minimum of operator skill. In spite of the advances taking place in Chinese industry as a whole, there unfortunately remains a strong cultural and political barrier in the domestic footwear industry that protects the machinery manufacturers so that they continue to profit from low wages, simple machines and poor R&D, which usually involves copying foreign technology.

Even though China is still a low wage and labour intensive economy, hard competition is making more and more companies seek ways to free up labour for other activities, improve their organisations and reduce management costs. Chinese factories will have to up-date their technologies to survive in the long term. Water jet cutting is a good example of the sort of technology they should be considering—this is what companies such as Zipor are seeking to sell to the world's largest producer of footwear. 🌐



Zipor's Cutterjet.

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