



The Benefits of Orisol High Frequency with Cutting in Athletic Footwear

What is High Frequency?

Dielectric welding is the best way to correct or manufacture plastic products that have polar molecules, such as PVC, nylon, and others. The physical principle called dielectric losses, through which an insulating material (plastic) dissipates energy whenever submitted to the action of an alternate electric field, is used in the welding machine, which is also referred to as "high frequency" or "radio frequency".

The energy dissipated in this process heats the plastic to its melting point and, with the pressure that the machine exercises on the electrode and the plastic, welding occurs. Different types of electrodes with the most varied forms can be created, enabling, besides the welding of plastic sheets, the execution of the cutting and finishing of the final product. The electronic welding process is used in the manufacture of articles from small telephone agendas up to large coverage canvas.

The conventional process used in the footwear sector distributes the pieces, generally two or four, in a matrix (HF Mould) as the High Frequency operates in function with the mould size. The larger this mould is, the longer the process will take, as it is necessary to mould and immediately cool the piece. Nowadays, in the conventional process, no matter how fast the machine may be, more than 20 seconds are necessary to perform the frequency of the piece, which, after molded, has to be trimmed one by one or jointed (various pieces) in one single batch, depending on the quality desired or on its complexity.

"This process is longer and far less accurate as the positioning of the piece is visual or made by means of movable pins. Right afterward, the cutting is made and the piece is taken out from the cutting press," explains a representative of A.M. However, two years ago the company sourced production units in the states of Ceará, Bahia, and Paraíba, besides Argentina, and developed the system of High Frequency with accurate trimming, innovating the production process and offering a series of advantages to athletic footwear and women's footwear manufacturers unavailable in the conventional system.

Benefits

Among the most important gains highlighted in the new process is the time reduction due to the better performance in the frequency sequence. The reduction of production steps, such as the elimination of the cutting press operation needed to perform the piece trimming is now made by a knife incorporated into the High Frequency matrix itself. Besides this, there is a much better finished visual presentation of the pieces' edges.

The new technology answers the need to decrease costs and aggregate value to the products, which demands the constant search of optimization for the footwear production processes. In line with the modern concepts of compact production (Toyota Production System), the novelty combines process compactness, operational cost decrease, quality improvement resulting from the process combination, shorter lead time, and added value to the final product.

From the definition of the design of an upper, insole, or vamp model and their respective material, the development team of A.M. plans the High Frequency mould with trimming, optimizing the material consumption and the production per hour. The upper above was produced with this new technology with a much superior quality than that of the traditional process and productivity gain as shown in the table presented below.

COMPARISON BETWEEN THE TWO PROCESSES

Traditional method vs. Orisol Frequency with Cutting

4.721 min. as opposed to 1.00 min.

Gain of 3.721 min. Return on Investment: 9 months

The process consisted of:

- a High Frequency mould with trimming (Picture A)*
- a High Frequency machine with trimming (Picture B).*



Pic A



Pic B

The combination of the High Frequency machine Orisol Model HF15x20 and the tools developed by A. M. guarantees the final result of the model presented with high production and investment return within 12 months. The machine uses a high frequency source of 15 KW power and a hydro-pneumatic system with 20 tons of power. With two work tables, the production is optimized; during the operation of one piece another can be prepared simultaneously, guaranteeing the continuous flow of production.

A simple operational panel controlled by a CLP enables the programming of different models, making the setup during production fast and easy. With protection sensors, the machine provides a good safety level for the operator and low emission of radio frequencies with minimum interference in the work environment and neighboring areas.

Since it was developed, this unique process has been immediately incorporated by large companies in the athletic footwear segment, such as Vulcabras and Dass, whose lines require a large number of technical pieces. The production quantity and quality for the companies has been a benefit to them. The fashionable designs make them very attractive to the consumers, who increasingly value the visual details of athletic footwear.



In the women's segment, manufacturers in "Vale do Sinos" have also performed tests while contemplating the adoption of this new process. The results already obtained are highly positive in quality as well as in visual and productivity terms. This indicates that within the next year or even the next few months the new technology, according to the entrepreneurs A.M. and Orisol Do Brazil, will reach the most important production segments of Brazilian footwear, contributing to the reduction of costs and increasing production speed.

In both the sports segment and the women's segment, the piece trimming is done simultaneously to the laminated frequency, dispensing with the cutter's work and the cutting press used in the conventional system. The frequency and trimming matrix is designed in accordance with the model's look and as a function of the thickness of the sheet used. The development and production time considers factors such as factory flow and the characteristics of the footwear model.

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