

WORLDFOOTWEAR



*PU sole produced
with incorporation
of 30% scrap PU*

Diamond Desma

Thirty years ago in early 1976, as a new technical service manager for Avalon Chemical, I vividly remember arriving at the Tchavdar factory in Bulgaria to sort out a technical problem and the sense of relief I felt when I heard the high pitched noise that experience told me was a Desma polyurethane moulding machine in operation—and working well. “At least the machine is alright whatever the other problems might be,” I thought.

It is salutary to think that way back then Desma had been building moulding machines for thirty years and had already established a dominant position in the supply of polyurethane and rubber moulding systems to the footwear industry. So this year, 2006, Klöckner Desma Schuhmaschinen GmbH has been able to celebrate sixty years of continuous operation and show off its skill and determination to maintain a major position in the global market against ever stiffer competition.

In order to celebrate this milestone, the company held an open house in September at its factory in Achim, Germany. The event was organised in conjunction with 23 partner companies which, between them, mounted a wide range of demonstrations to complement the displays and presentations put on by Desma itself. It was in fact a small but highly focused exhibition covering every aspect of sole moulding for the footwear industry.

The event worked extremely well and gathered more than 200 guests from over 70 companies from around the world. They were well rewarded in that they were able to see at first hand the broad range of machinery Desma now has to offer to the global footwear moulding industry.

Multi-coloured TPU/PU soles with fast colour change for the TPU

One of the strongest growth areas for Desma is TPU/PU machines. This trend started several years ago in the safety footwear industry in Europe but has now become global with many sales to Asian factories. The latest machines have developed in a completely new direction, with the ability to mould TPU soles of varied densities and/or colours followed by a PU midsole within a single rotation to produce direct

moulded footwear.

The demand for fast colour change has also grown. There has been conflict, however, as standard colour change systems have always involved high material waste and loss of production time. Desma has overcome this with a patented TPU colour dosing system that permits the addition of liquid colour directly into the molten TPU just before the injection nozzle to give a much faster colour change with a drastically reduced loss of material.

Rubber sole production

The company has been associated with the production of rubber soled footwear from its earliest days. It was producing machines for direct soling by means of vulcanisation presses and moulds in 1953, when the company name and brand was first changed to Desma, and has an unrivalled experience in rubber sole production technology.

The latest development is the DESflow method. This is a particularly attractive process whereby an injection head moves over an open mould to distribute the rubber evenly along the mould so that only a low clamping force is required. It allows the production of especially thin, high performance, compact outer soles, with exceptional reproduction of mould design. A whole range of rubber machines now uses this process. The Desma S911, for instance, can produce single-layer rubber soles with short cycle times and using cost-effective aluminium moulds.

As with TPU/PU, Desma is also seeing increased demand for rubber/PU machines and this is the background to a machine in



Multi colour/density TPU sole

Rubber/PU
direct moulded
work boot

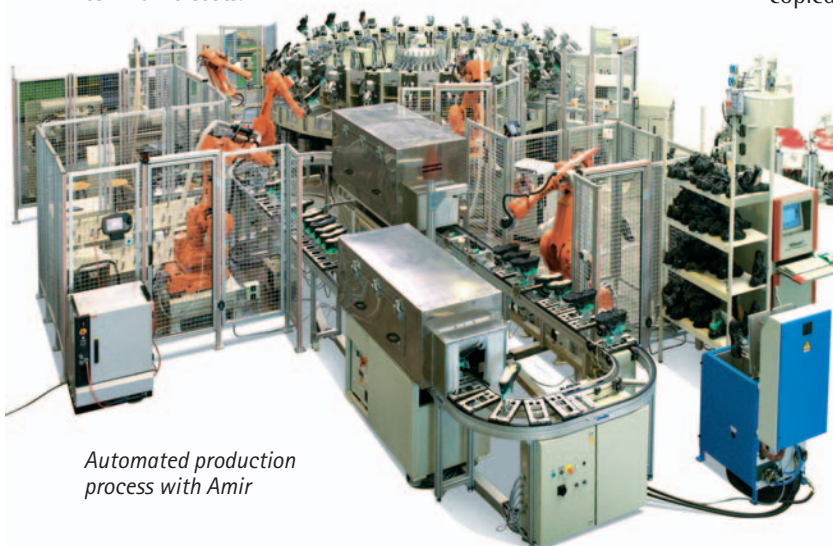


which a rubber sole is produced by the DESflow pouring principle followed by a PU midsole on a rotary table within the same rotation. A new robot-applied primer ensures excellent bonding between the two materials.

Finally, using a Desma D922/24 machine a rubber sole can be directly applied to the upper using two distinct DESflow pouring processes. This results in a compact, robust outer sole and a light, comfortable rubber midsole. The method is chiefly used for military, sports and safety footwear.

Direct soling with AMIR

Whilst footwear production has dramatically shifted to Asia over the last 10-15 years, there are still possibilities for companies in developed markets to maintain production, especially if rapid delivery to the market is needed. To do this, labour must be replaced by automation, so Desma has developed the AMIR system. This involves surrounding a moulding machine (TPU/PU at the exhibition) with a series of integrated and automated handling operations so that the upper on its plastic last can be processed by robots through all the roughing, moulding, trimming, setting and de-lasting operations required to produce the finished product. The process has a high initial investment price but much lower long-term unit costs.



Automated production
process with Amir

PU soles from recycled material

One of the problems with processing PU is that it is a thermoset material and therefore difficult to recycle. Desma has found the solution through a casting mixing head able to

accept up to 30% of added granulate and powder materials. These can be either ground up scrap PU units, cork or other suitable waste material. With the right ancillary equipment this can be a cost effective way of recovering the cost of the scrap PU units. These machines are selling well in the automotive industry.

Retro systems

These highlights of the displays at the anniversary celebration do not of course cover all Desma's activities. As well as the demand for high performance systems, such as AMIR, TPU/PU or rubber/PU systems, the company has also looked at the other end of the market.

There are many potential customers with rotary or conveyor type machines from other manufacturers, who would like to improve the processing of PU. To meet this market, Desma has developed a unit that comprises tanks, metering system and a casting head that can be retro-fitted to virtually any other table or conveyor configuration. Thus customers can gain the benefits of a high quality mixing system whilst still using an existing low-cost mould handling operation.

The future

Desma, like many other western companies, has followed the shift of global footwear production to Asia and invested in China, where it has the joint venture company Desma (Guangzhou) Machinery & Engineering Co., Ltd. The original plan was to start with a sales and service office plus fully equipped laboratory and training centre. It would then assemble machines from components, mainly made in Germany, and finally move on to using an increased level of locally made components.

The sales and service centre is fully operational and there are now 25 people working for the company in China, compared with 175 in Germany. However, the assembly of machines has been put on hold. Marketing director Marco Schaefer says, "The reason for this change of mind was primarily our fear of being copied. The minute you expose local Chinese personnel to the sources of your know-how, you expose yourself in general. Other companies have had bitter experiences that we would like to avoid by all means. Furthermore, Chinese components for machine building still fluctuate in quality and we could not use any output from China at present. Who knows what will happen 10 years from now, but for the moment we are keeping 100% of production in Achim."

So, where will Desma be in years to come? 60 years is too far in the future, but what about 20? Will production in Germany still dominate or will China have become, if not the leader, at least an equal partner in the equation? Marco Schaefer's statement suggests not in the next ten years. That might change in 20 and would the company then be able to maintain its reputation of 'Strong, long lasting and excellent German technology' if there was an eventual shift to China? Having survived 60 turbulent years, Desma is well placed to manage whatever change is coming and I fully expect them to be as strong as ever 20 years from now. 

Images courtesy of Klöckner Desma Schuhmaschinen GmbH