



A high-tech footwear factory run by The Farida Group in Chennai. The growth of the Indian footwear industry should mean greater investment in technology.

CAD systems can help Indian manufacturers progress

If it's true that many companies in the Indian footwear sector—including small, family firms in the production clusters that have grown up in Agra, Chennai and other industrialised areas—now have a chance to step up their output and grow, they are going to have to invest a proportion of their increased revenues in technology.

This, certainly, is the view of Magda Nagy, a United Nations International Development Organisation representative from Hungary with a reputation as an expert in computer-aided design (CAD) software. She is working at present in the Footwear Design and Development Institute of India where she is trying hard to convince a new generation of shoe designers that CAD can help them make a real impact on the global market.

This is the case for CAD (the case against comes later). The technology can help designers and manufacturers improve their business performance. Ms Nagy is aware that companies have, in the past, tried to justify the expense of implementing CAD applications by insisting that they made the task of grading—scaling the same

shoe design up and down by just the right amount to fit different-sized feet—much easier, but this, she insists, is not the best way to win the support of backers, bankers, boardroom colleagues or overseas partners for investing in the software.

"These systems are not for grading, for giving help with sizing specifically," she says, "but they can help companies use materials well, cut leather with the utmost accuracy and, as a result, get their costings right."

She is convinced that companies in India should begin by investing in a two-dimensional (2D) CAD system and, gradually, build up to investing in a three-dimensional (3D) one. With a 2D system in place, manufacturers and their design partners will find that tasks such as generating patterns, cutting-plans or costings will become more straightforward. They will also be able to use the software to copy a component that has worked well in one style of shoe and re-use it in a new design.

"It's crucial to be able to work with accurate data," Ms Nagy continues. "With globalisation you could be in a situation in which a shoe is designed in the US,

“...technically speaking...”

CAD has had a real impact on footwear manufacture with 2D systems in particular, revolutionising the way patterns are cut. For example, creating the inside and outside forms that reproduce the dimensions of a last directly from a digitised last model is far quicker and easier than by traditional hand methods. Using a wizard-based process in which a specific pre-defined procedure in the software is followed, makes it far easier for a novice to produce basic patterns that can be used in production. In addition, elements in the production process itself such as underlays, can be pre-defined so a pattern cutter need only select the seam required and all allowances will be automatically factored in to sectional patterns. Using a computer-controlled cutter/plotter to cut out the initial paper sectional patterns also eliminates the manual skill required to cut them by hand.

On the other hand, a pattern cutter must still understand the entire shoe making process and how it affects the materials to be used before he can hope to produce patterns that will result in trouble free manufacture and finished products. A lack of such knowledge has been levelled at modern-day pattern cutters who have perhaps not had as much practical

training as they might. CAD designers are trying hard to create ‘expert systems’ where artificial intelligence (AI) and knowledge engineering (KE) will be able to indicate when a particular upper design would be difficult to stitch or where impractical stresses would be required to shape the upper to the last. This will take time so meanwhile there is still no substitute for experience.

Tables of underlays

1. Lifted by feature

Margins / Offsets - Mens	
Feature	mm.
Bagged seam	3
Close-seam: medium	1.5
Close-seam: heavy	2
Folded edge	5
Gimping	2
Lap-seam U-lay	10
ditto: with spaced rows	12.5
ditto: with 2-and-1 punch	15
U-edge trim	3
Trim-off – lining U-lay	8

2. Lifted by measurement

Margins / Offsets - Mens	
Feature	mm.
Close-seam: medium	1.5
Close-seam: heavy	2
Gimping	2
Bagged seam	3
U-edge trim	3
Folded edge	5
Trim-off – lining U-lay	8
Lap-seam U-lay	10
ditto: with spaced rows	12.5
ditto: with 2-and-1 punch	15

manufactured component by component in India and assembled somewhere else.”

Indian companies that carve out for themselves a niche like this are the most likely to scale up in time to a 3D CAD system. Their work on more complex components, including soles and heels, may well require them to digitise lasts and modify them. They have to be able to react fast to buyers and generate without delay what their customers need.

“With 3D systems you can do this,” Ms Nagy continues. “You can scan in all the colours and textures you want and make modifications without having to generate a single prototype.”

Traditional skills

Magda Nagy is not someone who believes that buying the right software is all a business needs to do in order to be successful. To make the most of your investment, you also have to learn what she calls “the traditional ways”, have knowledge of the footwear industry, be able to draw and sketch properly and be intimately familiar with the materials you will use.

She offers this example: “A CAD system can let you see everything, even decorative stitching or embroidery, but you still have to understand how each component is assembled and stitched together. If you don’t, even an

automatic stitching machine with two heads and cameras inside will not be able to do the job properly for you.”

She accepts that the software is expensive and that it can be hard for small family firms in India to find the budget to pay for it. Nevertheless, Ms Nagy insists that the country represents a good market for vendors.

“I had the opportunity to be in India 15 years ago when the first CAD system was installed in Chennai,” she says. “People are using the software; they started with 2D and now they’re taking steps towards working with 3D. There is huge potential here, especially in the southern part of India, which is why you can see CAD applications, cutting machines, automated stitching machines and so on at events such as the India International Leather Fair.”

She also believes India will be able to produce a new generation of footwear manufacturers and designers who will be able to use CAD systems very well.

Scale up the volume

But Prem Pal, a former director of the Central Footwear Technology Institute in Chennai, is not so sure. He accepts that India now has a reputation as a world-class centre of IT excellence and—because it also has its footwear manufacturing tradition—believes that some

sort of "marriage" between the two sectors ought to take place. "We are known in India for making shoes in small volumes," he says, "and this will help us scale up."

However, his impression is that many producers in places such as Agra may feel that an investment in a CAD system is beyond their means and their needs.

Designers there charge as little as \$1 or \$2 to provide the design of a shoe, he claims, with the pattern and the full gradings included. "With a CAD system it would cost at least 20 times as much to produce that design," he claims. "It's not that those companies don't like software, it's just that they can't keep paying the service charges. CAD is not economical for them."

By Mr Pal's assessment, Agra is probably home to 30,000 shoe producers but, of these, he says only 2,000 are "well organised" and only 1,000 or, at most, 1,500 are focused on the export market. This is the same as saying that the target market of the CAD technology



An operator using Lectra's CAD software. The technology provider says accurate, instant information-sharing with partners around the world is the biggest benefit from using applications like this one.

CREDIT: LECTRA.



It's all about the lace.

Auburn Leather

any lace, any color, any size, any shape.

125 Caldwell Street • Auburn Kentucky 42206-0338

Phone: 270/542-4116 • Fax: 270/542-7107 • www.auburnleather.com

providers is not the Agra footwear industry but, if they're lucky, 5% of it. And the same would be true of India's other footwear manufacturing clusters.

"The companies in these clusters have available to them skilled people of many generations' experience," he continues. "It's not difficult for them to make large numbers of samples with all the grading their clients could wish for. Not difficult, and not expensive." He feels that technology providers may have a much better chance of winning customers in Europe where, by his calculations, operators earn in one day what their Agra counterparts can earn for a month's work.

But in the opinion of Pierre Bonnet, director of the footwear, luggage and leather goods market for one CAD technology provider, Lectra, money ought not to be the primary concern for footwear manufacturers in India—or anywhere else—who are contemplating an investment in the software.

Global share

India is changing, he believes, and one of the consequences is that Indian companies "cannot stand alone". They're sourcing from and selling to a global market, which means the real pressing issue, according to Mr Bonnet, is being able to share

information quickly and accurately.

"What we are talking about is the collaborative development of a product," he says. "It's not a question of money. Companies in India need to have the tools to communicate as fast as possible with their customers and their partners on the manufacturing side. But this affects everyone. Companies in China, Vietnam, Europe, the US and Korea all need a solution to communicate faster and with less cost."

He argues that a 3D CAD system can help fulfil this need, that the software is a way of saving costs and time. It's a tool for sharing "the whole collection of information" among the players involved. One of the main areas in which manufacturers can save costs is in reducing waste, which has the important added benefit of causing less harm to the environment.

Mr Bonnet explains: "Traditionally, shoemakers create 100 prototypes for a new collection and throw away 80 of them. With the software you can carry out a first analysis with a virtual 3D view. And instead of sending the ideas or the information physically, in a box with a carrier, you can do it over the internet. It's quicker and uses far less energy."

He distinguishes between 2D and 3D systems by saying the manufacturing is the domain of the former, while 3D is more for the creative and marketing people who have to pass ideas to their manufacturing partners. The main point is that CAD makes the connection between the two groups accurate and easy; you can drop a 2D photo or sketch onto a 3D digital model of a last to create an image of the shoe in 3D. As Ms Nagy points out, you can then modify the design quite easily, trying new colours, new finishes and so on.

As far as Pierre Bonnet can see, the only difficulty that would remain for a designer in Finland, a production manager in China and a range manager on the retail side in the US would be that they all live in different time zones.

He's excited about the future of footwear production in India, saying that, ten years from now, it will occupy the position in the global footwear supply chain that China has today. India's growth, in terms of production for the export market, will be fast, while growth in China will come from burgeoning domestic consumption. That's his view.

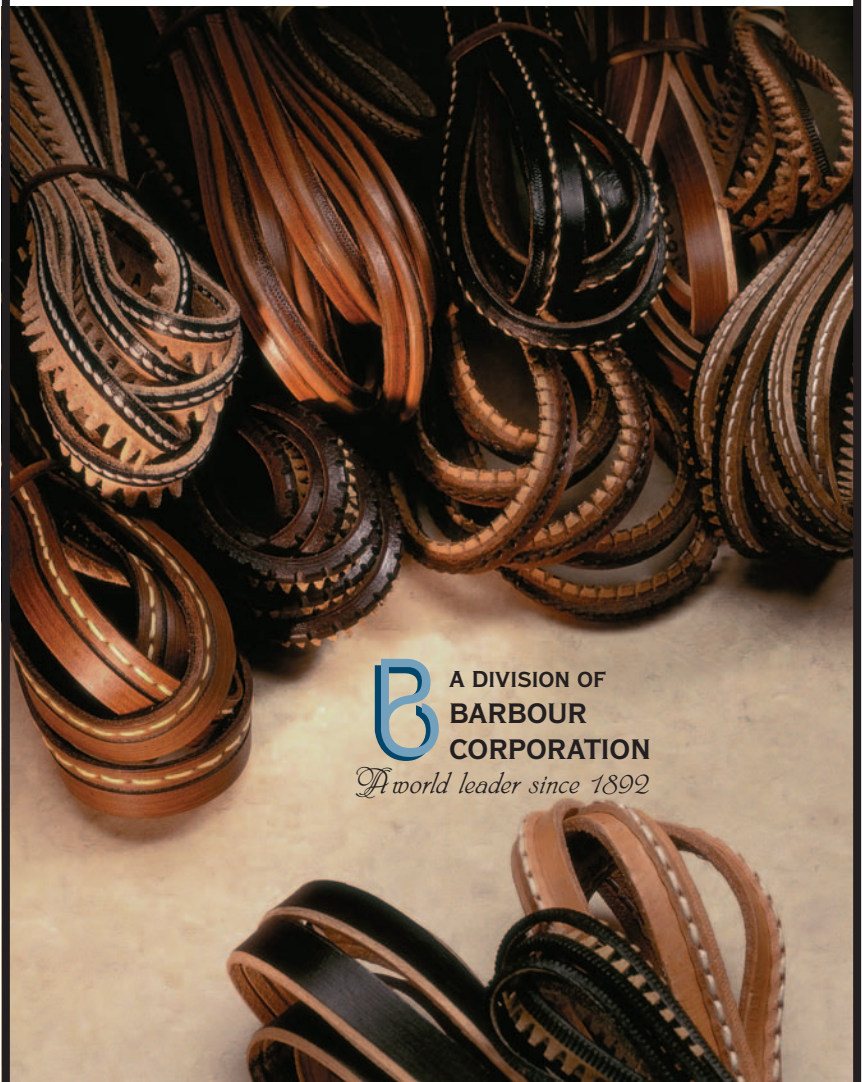
"India's problem now is the huge

number of very small companies involved," he says (echoing the reservations of Prem Pal), "and the lack of infrastructure. However, we are already seeing that Chinese, Taiwanese and Korean companies are investing heavily in India. Brazilian last-makers are also opening factories there to support their clients."

His understanding is that Vietnam now lacks a sufficient volume of affordable labour for the footwear industry there to sustain growth and that Korean- and Taiwanese-owned companies are taking investment out of Vietnam and putting it into India. The pace of this investment will pick up and it's clear that he believes more money will become available for Indian operators to spend on technology as a result. 

BARBOUR WELTING CO.

SPECIALIZING IN THE FINEST GENUINE LEATHER GOODYEAR WELTS



 A DIVISION OF
**BARBOUR
CORPORATION**
A world leader since 1892

1001 North Montello St., PO Box 2158, Brockton, MA 02305 USA
Tel (508)583-8200 • Fax (508)583-4113
email: sales@barbourcorp.com
www.barbourcorp.com