

## Nantex Machineries Inventing & innovating new technologies for textile industry



Rajkumar Lakshman, Managing Director, Nantex Machineries Pvt. Ltd.

**O**ne of the most important sectors of the economy all over the world, in terms of revenue, trade, investment and employment generation is the Embroidery Industry. Nantex Machineries Pvt. Ltd. was established in the year 2009, with the purpose of producing various types of textile machineries for the tremendous product variety that the embroidery industry had to offer. Owing to India's expenses spent on importing highly expensive machines as well as the current technologies that require a lot of manpower, **Rajkumar Lakshman, Managing Director, Nantex Machineries Pvt. Ltd.**, after 5 years of research and development, invented the world's first ever Vertical Computerized Embroidery Machine, which does lengthwise (along with grain line of fabric) embroidery instead of widthwise.

"When each and every process of the fabric value chain like weaving, processing or cutting the fabric is done lengthwise, then why not embroidery. I started this company, after analyzing how much manpower, electricity, rent, space, etc. is used for each machine imported. I wanted to design textile machineries, so that buyers would not need to import them from other countries, particularly China," says the enthusiastic Rajkumar, who has almost 20 years of experience in the textile industry, predominantly

in the embroidery sector. Starting his career at a young age as a CAD designer, his talent and technical understanding made him the Vice-President (Product Development) at Pioneer Embroideries Ltd. before starting his own venture.

While working with Pioneer, Rajkumar recognized the short product lifecycle, tremendous product variety, volatile and unpredictable future demand of embroidery in the textile industry. The conventional schiffli machines being used were made for laces and not for all over embroidery. Therefore, the technical drawbacks of these machines were affecting the demand of embroidered commodities, making 2006-07 witness the rise of printing over embroidery. "To reduce all the manpower, space problems and all other costs, I thought why we can't make this entirely automatic by putting an automatic roll in the embroidery machine similar to a printing machine. I discussed the same with Swiss and Chinese companies who could

help produce a machine like this but the idea was dropped saying it's totally impossible, because all the technologists use quilting embroidery machine to do the embroidery in continuous form," explains Rajkumar.

Therefore in April 2009, after 3-6 months of R&D, Rajkumar developed a machine on an aluminum structure without motion controller, CAM, or any such mechanical thing, but was accessible with computer printing port that could run up to 4 robotics only. "I called up all exporters known to me and gave them the details about this machine. There was little puckering while doing embroidery in the first model developed but the concept was clear and the machine was running fine. A concept that will help reduce manpower (i.e. one operator is good enough for 3-4 machines) and space had finally arrived.

Now, the machine is world's first vertical computerized electronic embroidery machine, which can run 150 inches wider width as

continuously, also can use 3 widths of 48 inches long fabric, can attain speed of 350 RPM, occupies very less space, includes low maintenance, is easy to use, and employs fewer people. “This new invention has a number of advantages, it needs low capital investment, yarn and fabric waste is minimal,” he adds. Owing to the widthwise embroidery on conventional schiffli machines, schiffli embroidery has been carried out in wrong direction, i.e. against the grain line of the fabric. This has always had a negative effect on the cost efficiency of such embroidered products across globe. By bringing in the revolutionary change in the schiffli machine – wherein embroidery could be done along the grain of any fabric – the company has been able to solve a long lasting problem of this industry.

“This machine can work with woven, non-woven, knitted, mesh all kinds of fabrics through which an embroidery needle can pass. The major difference between schiffli and our machine is of accuracy. In schiffli, it is mandatory to keep the fabric completely stretched. In case of circular knitted fabrics, a 30 inch tube after slitting becomes 60 inches in width on floor and when laid on machine, it becomes 90 inches, keeping 30-40% stretch in consideration. After the embroidery when the fabric is released back to its original form the shape and design of the embroidery tends to change, the stitches become irregular. But in case of our machine, when you insert a 60 inches width fabric, the stretch is so minimal that it remains 60 inches on the machine as well. Therefore when you take out the embroidered fabric off the machine the embroidery remains intact. Our USP is value added knitted fabrics, synthetic, Lycra and lots more,” he informs.

In Indian domestic and export market, the consumption of normal woven fabric is less as compared to knitted garments. But in knitted only printing is successful in terms of

value-addition and due to no unusual value addition in this segment, knitted garments have gone down to being a cheaper category. Embroidery on knits is not possible on every machine, but this new machinery and its embroidery technique has shortened the difference between knitted and woven. “We run dyed yarn; in our machine it is possible to do dyed yarn schiffli. Suppose you have 2 colours, you want to do pink embroidery on yellow fabric and yellow embroidery on pink fabric, to load one batch of thread in a schiffli machine, you require 1100-1200 thread tubes, this is how yarn and time is wasted, because of which dyed on dyed embroidery is difficult and majorly nobody does it. But in our machine you can work on dyed on dyed with much ease. You take out one thread put another and the machine is ready, easily customized. A flow is maintained. You can do placement embroidery and can create motifs from 50 cms. In the normal schiffli, the stitches used to get loose in the knitted garments after washing, but now the embroidery doesn’t shrink,” informs, Rajkumar.

The machine is manufactured, assembled and programmed entirely in-house, some components are made and



The world's first Vertical Computerized Embroidery Machine (VEM), with 150 inches in length it can use 3 widths of 48 inches long fabrics

### USPs of the product

- Embroidery in right direction (along with grain line or fabric length wise)
- Best machine for knitted and fabrics
- Can create designs with 'free-hand'. The embroidery flow will be length wise and can use the embroidered fabrics for Home Furnishings
- Installation space reduced drastically and can be installed on any floor
- Minimal foundation
- Economical & competitive pricing
- Reduction in Manpower to operate 'VEM'
- Less electricity consumption
- Best machine for knitted fabrics
- Less noisy
- Fabric loaded through roll form
- Less maintenance
- There is no fabric wastage in edge joining
- Embroidered fabric shrinkage will be less
- Fabric dimensional stability will be the same after embroidery
- Less mending
- Overall manufacturing cost will be less

sourced from different parts of India and the motherboard is sourced from US. The machine can be modified according to the requirement of the customer. “It’s a 3-month build cycle whether it is one machine or 100 machines. The lead time is 3 months. We can also customize as per the needs of the customer. If somebody asks for sequin device or cording device attachment or he requires a different size, all can be achieved. As per the industrial needs and specification we can add the variations. We can do any type of embroidery in this be it garment, home furnishing, curtains, carpet etc. It is a versatile machine, which can embroider anything,” he adds.

With the durability of the existing machines shrinking, this new 150 inch width machine being available at the cost of few lakhs, has become a solution to the industries problems related to cost, import duties, export quality, etc. Comprising of 10-12 people in the technical team, the company also provides electronic parts and online support. “We have made operating tools that can diagnose internal problems from our office itself. While selling the machine, we invite the person responsible to our factory and train them for 15 days on how to use the machine,” he sums up.