Technology Advancements in the Global Apparel Industry

By Dr. Michael Fralix, [TC]² President

The following are excerpts from a recent interview in conjunction with an international presentation.

Question: How far has apparel manufacturing industry reached in terms of Industrial Automation Globally?

Answer: In my opinion, it has not moved far enough. The level of automation in apparel manufacturing has been directly related to the cost of labor. In countries where labor costs are very low, the tendency has been to not invest in automation. As labor costs rise it becomes necessary to use automation as a mechanism for competing on total product cost.

Sometimes I am still amazed when I visit cutting rooms that are using traditional hand-cutting systems. The technology for CNC cutting has been fully developed for a long time now – yet there are many companies that are not willing to make the investment in what should be the accepted practice.

In sewing, the same applies. There are many machine attachments and semi-automated sewing systems that are not being used in lower wage countries. I realize that automation is not the primary answer to staying competitive, but ignoring it will assure that one will fall behind. The United States is a good example. The product areas that invested heavily in automation maintained their manufacturing base longer than those that were not willing to make such investments. Jeans manufacturers for example, were able to compete long after many other product categories were forced to go offshore in search of more competitive prices.

I am continually disappointed by the approach to technology and automation that is adopted when a product moves from a developed country's factories to those that are less developed. It would seem logical to adopt the latest systems and technologies that had been employed in the developed country. Instead, it often happens that the process begins anew and labor becomes the focus because of its low cost. It is always a matter of time before wage rates increase and the need to improve efficiency through automation occurs.

Granted there are more complex financial implications regarding the investment strategies that are used; however, many companies do not have a long term strategy to determine if and when they should move to the next level of industrial automation.

Question: Which new Technologies are expected to revolutionize the fashion industry globally and how?

Answer: Our focus is on those technologies that allow the product to maintain its digital identity up to and including the distribution of the product. It is a proven fact that the Internet has connected the world and can be used as the vehicle to communicate product information globally.

There are four major steps in the supply chain for apparel products. They are design/product development, sales/marketing, manufacturing, and delivery. Delivery is complete when the consumer has possession of the product. Digital technologies exist and are being further developed for each of these areas.

Design and product development will make use of 3D tools that allow for garments to be created in 3D and converted automatically to 2D for traditional manufacturing methods. Body scanning systems will be used to create digital body models that allow digital products to be draped over them. Fiber and fabric characteristics will be incorporated into the simulation of these digital products on the body. These avatars will be shared digitally and monitored through the product development process without the need to make a physical sample of either the fabric or the garment.

Sales and marketing will make use of the same technology to present concepts and digital storyboards. Again body scanning will allow brands or consumers to use their data to understand the fit and performance characteristics of the products. Developments in digital touch and digital smell will provide the customers with all of the necessary

information to make a purchase decision without the need to make a physical sample.

Manufacturing must become a conversion process from digital to physical. At some point the product must take on a physical form, but today that process is tedious and time consuming. A number of industries have already moved in this direction. Examples can be found in the airline industry, the newspaper industry, the music industry, and the movie industry. In addition, knitting technology already exists that allows the conversion of 3D product data into 3D finished product without intermediate cut and sew steps.

Delivery of the product in digital form will revolutionize the way in which the supply chain is operated. The music industry is a great example of this. Rather than manufacture a device that contains music and ship it to a customer, the music is being shipped in digital form and converted by the customer. The apparel industry must be looking for ways that it can do likewise.

Question: How can other industries integrate with the apparel industry to enhance the Technology Index of the Garment Manufacturing sector?

Answer: As I stated earlier, such industries as the airline industry, the newspaper industry, the music industry, and the movie industry have already changed the way they distribute products. Technologies that are being developed and/or utilized in those industries should be studied to determine the applicability to the apparel industry. At the minimum, there may be segments of the apparel industry that are already positioned to capitalize on these advancements.

There is a wealth of resources available to help the garment industry to advance its level of technology. These include equipment suppliers, logistics companies, transportation providers, advanced technology centers, educational institutions, and training organizations. The most important requirement is a strong desire on the part of the industry and its supporting government and trade associations to make the changes that are necessary. In addition, they must be prepared to provide sufficient financial and technical resources to drive the changes.

It has also been recognized that those countries or regions of the world that are either vertically integrated or have access to raw materials in close proximity have a competitive advantage over those areas that can only supply assembly labor. China and Brazil have a well developed textile industry in addition to their garment production facilities. The challenge is to truly integrate the two such that they appear and operate seamlessly.

In other words, the co-development of new fabrics must be done in conjunction with the product development for the finished garments. In addition, all players in the supply chain must be actively engaged with the brand owners and retailers in the development of new products and new concepts. The earlier in the process that one is able to participate in the creation of new products; the more likely they are to be selected to manage the delivery of the manufactured garments.

Question: How can [TC]² and other organizations work together to unleash the knowledge potential and develop a method of putting classroom practices to practical application?

Answer: [TC]² has 25 years of experience in defining the direction of technology in the U.S. and helping to transfer that knowledge to the industry at large.

One of [TC]²'s guiding principles is "we would rather partner than compete." There are more problems than all of us can solve working together, hence we do not see the need to work independently or at cross purposes. I am also cognizant of the fact that the United States is not the source for all of the good ideas in the world. Innovation occurs daily in many places – our challenge is to recognize when a good idea surfaces and be prepared to capitalize on it. It is not the one who thinks of the next great idea or strategy that becomes the market leader, it is the one who executes ideas better than the rest.

May 2006