

# NIFT develops revolutionary Concept for 3D printing of textile machine parts

National Institute of Fashion Technology, a premier Institute of Design, Management and Technology has been playing a crucial role in benchmarking performance and processes in the areas of fashion education, research and development, training and consultancy. NIFT always encourages its talented, sincere and enthusiastic students who can contribute effectively and strive to take the institute to greater heights.

The institute also undertakes research and consultancy projects for the industry with its expertise in design, management and technology at strategic and operational levels. NIFT recently participated in Garment Technology Expo, New Delhi to present two of the latest innovations developed by its students under the guidance of its faculty members. First product was the Poly packaging machine made by one of its alumnus and other was a revolutionary concept called 3D printing machine parts for textile industry.

"NIFT does a lot of research and development which is either student driven or faculty driven. Those are sometimes part of their curriculum, which generally remains in the lab and is really not always commercialized. One idea behind participating in this show was to show something commercialised to the industry for which it has been made. First product is poly packaging machine made by one of our alumnus and then we are showing a concept called 3D printing machine parts. Generally, a user of the machine when a part is broken is usually dependent on the manufacturer to get supply. With our 3D concept, if a machine part is necessarily broken and needs to be changed, you don't have to depend on the supplier to get the same, as you yourself can print and use it," said Prof. (Dr.) Prabir Jana, Head Research, National Institute of Fashion Technology, while speaking exclusively to Swati Sharma, Assistant Editor, Apparel Views.

According to Dr. Deepak Panghal, Assistant Professor, Department of Fashion Technology, NIFT, "There are two basic techniques of developing a component; one is subtractive way and another is additive way, and we are using the second one. It is a layer by layer deposition to manufacture a component, which is a very common technology across the world but in garment industry it is not that popular. We hope that it will have a very high impact on garment industry over a period of time. As per a literature, there are no. of components but the industry is using only couple of them. The reason behind is that they are not readily available with the industry as their requirement is very less. So, keeping the inventory is a very costly affair to them. Then using this additive manufacturing outcome of 3D printing is one solution for them."

"We can manufacture these components in house but challenge is that most of the components are metal based. Now to make them with the polymer base, which we are using here with a cheaper additive manufacturing technology, there's a lot of design intervention is required because we require same functionality but using a different material. As the volume is very less required so we are able to do that," says Panghal. "The printer which we are using is the FDM technology. We do testing in real garment working environment, perform certain changes if required, and then finally are able to make 3-4 components. Currently, we are using this technology for printing sewing machine spare parts, folders, attachments etc."

While speaking over the cost factor Dr. Jana said, "It's for a special niche market where purpose is not to supply something at a cheaper cost. It will definitely be little costlier than readily available metal parts. But idea is to give something customised at very short period of time. Stockiest usually have components which are commonly in demand so when you require something different urgently, you have to wait. We are having various models of the machine like with one model a person can keep



Dr. Deepak Panghal, Assistant Professor (2nd from L) with Dr. Prabir Jana, Head-Research (C) from National Institute of Fashion Technology with their students behind the newly developed innovations

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the printer at its plant and whenever required could download the design from the website and then print it. The other model could be kept at a cluster, so whenever someone from any unit requires a spare part he could go to the manufacturer who could have the design and print it. Today, one of the largest garment manufacturers in India is already having this machine. That is an initial project we have done successfully with them," said Jana.

As with the newly developed concept, the machinery parts are developed through polymers base rather than metal, so quality could be a major concern a machinery user could have. To this Dr. Jana says, "Our focus is that printer needs to be reasonable and the product to be lasting. We assure that quality of the spare part developed is going to be equal to the old part. Our plan is to concentrate on designing of the parts which is very crucial and making the design available to the user so that they get it printed at whatever time they require. We will be making designs for them, where engineering and R&D have a major role to play."

When asked about industry's response to the new development, Dr. Panghal said, "Most of the machine manufacturers are not aware of the 3D printing technology and its applications in spare parts manufacturing. At GTE we are getting very good response from the industry; some of the people are helping us by sharing their problems regarding the component they require to manufacture, and some are suggesting us to try it in their real industry. So everybody is very happy, and once told that we have actually used these components in the industry, they've become quite confident. Future is there!" ■

## NIFT encouraging entrepreneurship among its students...

It was the first instance for a student to convert its graduation project to a prototype and make it commercially available at a trade platform.

The journey from a student to an entrepreneur was facilitated by NIFT that provided the necessary industry and market exposure and guidance through the journey of a 'striking idea' to an actual 'prototype'. NIFT came forward for the first time at GTE '17 platform to provide their alumni-cum-entrepreneurs motivation and exposure. Team StitchWorld brings to our readers an exclusive interaction with **Krishna Kant, Founder, Minflator** sharing his story of NIFT's role in his entrepreneurship.

"When I was doing my NIFT summer internship, I observed that poly bags are kept over the table in the packaging section of the factory. That's when I realized that most of the factories pack the garments manually and this bright idea suddenly struck my mind about why don't I automate the packaging process. And I came up with the idea of Minflator, a poly packaging machine," shares Krishna.

**Minflator is a compact garment poly packaging system having a slant shape for easy insertion of the finished garment pieces into the polybag and its easy release. The machine is capable of packing up to 350 garments per hour.**

**Krishna Kant, Founder, Minflator shares that his dream would not have been possible without the motivation and guidance of Prabir Jana and Deepak Panghal, Professors, NIFT Delhi.**



Krishna Kant (L), Founder with Aamil Hussain, Co-Founder of Minflator

With a bachelor's degree in Electronics Engineering, Krishna overwhelmingly shares that his dream of automation in packaging section would not have been possible without the motivation and guidance of Prabir Jana and Deepak Panghal, Professors, NIFT Delhi. "After realizing the need of automation in the packaging section of the factory, I took up the same idea as my graduation project," avers Krishna.

The journey of this idea to a working prototype was challenging. "The prototype failed at many stages, but I didn't give up and I was ultimately successful in making a prototype," further adding, "Prabir Jana sir and Deepak Panghal sir gave me industry contacts and their valuable suggestions whenever I got stuck."

Minflator is a compact garment poly packaging system having a slant shape for easy insertion of the finished garment pieces into the polybag and its easy release. The machine is capable of packing up to 350 garments per hour. Already having an advantage of using no electricity at all, the machine has a pneumatic compressed air flow that inflates the loaded polybags so that operator can easily insert the folded garment into the poly bag. The pressure of the air can be adjusted as per the requirements of the operator. It is designed in a way that only the top polybag from the stack is inflated.

Commenting upon the need of automation in packaging section, Krishna says, "Everyone is now looking towards upgradation and automation. We are facilitating less dependence on labour with this durable machine that requires no maintenance and skills. It is an operator-friendly system that absolutely requires no training."