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The Journal of Indian Leather Technologists' Association (JILTA) is a monthly publication which encapsulates latest state of the art in processing technology of leather and its products, commerce and economics, research & development, news & views of the industry etc. It reaches to the Leather / Footwear Technologists and the decision makers all over the country and overseas.

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Impact of US – China Trade War



An ugly, and dirty trade war has been triggered between two economic superpowers i.e. U.S. and China, and stock exchanges all over the world have tumbled. The million dollar question is its effect on India in this business battle? And what should India do to avoid any loss?

The US President Trump announced tariffs up to \$60 billion on major Chinese products. This means that tax on the import of these products would be massively increased, in order to discourage them inside the USA. If a product which costs \$10 right now to import from China suddenly becomes \$100, then the companies and consumers using them will think twice, thrice; and this is exactly what US President Trump wants. As per Trump, Chinese companies have been stealing intellectual properties of US firms, and then selling them at a higher price back to Americans, which is 'not fair'.

He said, "They are helping us a lot in North Korea. But we have a trade deficit ... there are many different ways of looking at it, but no matter which way you look at it, it is the largest trade deficit of any country in the history of the world."

China has retaliated instantly, without wasting any time. China's Commerce Ministry has said that they will now place increased import duty of 25% on several popular American products which are imported into China. Some of these include U.S. pork imports and recycled aluminium; wine and fruits from California and more. On the other hand, US tariffs on Chinese imports will be mainly on technological products. The list will be announced in the next 15 days. As soon as US and China announced their respective declarations to increase import duty, stock prices across major exchanges took a major dive. The Dow Jones Industrial Average, the exchange of 30 biggest publicly traded companies in the US lost 724 points, or 2.9%, which is their 5th largest dip, in the entire history. The S&P 500 lost 2.5% points and the Nasdaq 2.4%. The negative effect was witnessed across Asia as well. Hong Kong's Hang Seng dropped 3.4%, meanwhile, China's CSI 300 index of mainland-listed stocks shed 3.1%. In Asian stock markets, technological stocks faced the biggest fall.

For Indian businesses, the biggest and most prominent question is: How will India's commerce and economy be impacted ?

The exact answer will be visible in coming days, but on a first look, it looks bleak and dark. Last year, India and US conducted a trade of \$67 billion, which included both exports and imports; whereas, with China, we conducted a total trade of \$71.48 billion last year. While China is our No. 1 trade partner, US is No. 2 and when these two countries have pointed guns at each other, then India is bound to suffer in the cross-fire.

Last year, India had imposed an anti-dumping duty on 90+ Chinese products, which was seen as an act of protectionism, and to stop the invasion of cheap Chinese products.

China's aggression, at least in business and commerce, has been counter checked by Indian Govt. In a response to a question, Commerce and industry minister Nirmala Sitharaman informed the Rajya Sabha that India has imposed anti-dumping duty across 93 Chinese products. Besides, Directorate General of Anti-Dumping and Allied Duties has initiated investigation across 40 cases of dumping by Chinese exporters, and action would be soon taken against them. She said, "Anti-dumping duty is in force on 93 products concerning imports from China," She also informed that imports from China during 2016-17 marginally dropped to \$61.28 bn, from \$61.7 bn a year back. As per the reply given by the Minister, the products wherein anti-dumping duty has been imposed are part of these categories: chemicals and petrochemicals, products of steel and other metals, fibres and yarn, machinery items, rubber or plastic products, electric and electronic items and consumer goods. Electronic items and consumer goods are also included in the anti-dumping duty list, which means that Chinese mobile phone prices sold in India may go up in coming days.

In the world of economics, Dumping is a predatory pricing, especially in the sectors of imports and exports. Dumping happens when a manufacturer or exporter sells a products to another country at a price which is lower than the original manufacturing cost, or lower than the price of the same product in the home country. Say Chinese manufacturer called ABC Inc. makes water bottles, which each costs Rs 15 to make. ABC Inc. sells the same water bottles for Rs 20 in China, thereby making a profit of Rs 5. However, now they want to sell the same product in Nepal, and aims to grab a market share. ABC Inc. enters Nepal, and sells the same water bottle for Rs 10. Now, this selling price is lower than what it is selling for in China, and certainly lower than any water bottle being sold in Nepal. In such case, the Govt. of Nepal can impose anti-dumping duty on the water bottles being sold by that Chinese manufacturer in Nepal. When this happens, then an additional charge is imposed on those products where anti-dumping duty is being imposed. Hence, naturally, the cost of the product may increase, if the manufacturer doesn't reduce the price.

In the past, India has condemned the US for employing protectionist measures for their own employees and their own products.

India banned Chinese toys starting January 23 for six months. Good news for Indian toy makers who are facing a losing

battle with the Chinese toy deluge. Not so good news for China which supplies 70% of the world toys. As per India, it has done in the public interest. China thinks otherwise and wants to appeal to the World Trade Organization (WTO). US is close to passing a bill about limiting the H1-B's. The most popular US visa for a foreigner to work in the US. The limit is only for the US banks which were bailed out with tax payer's money. Is that fair? Let's hear their logic. The unemployment rate in the US is at an all time high. 600,000 Americans have lost their jobs in January alone. Now, so many qualified Americans are jobless so these semi-nationalized institutions want to hire foreign workers? It is fair enough ridiculous argument.

What goes around comes around –India banned toys from China. America limited H1-B's from India. This looks like a vicious cycle. These bans are not the first. US have banned around 30 drugs from Indian drug manufacturer Ranbaxy citing irregularities at the manufacturing facilities. The other side of the story is again to protect American drug manufacturers. US is the biggest consumer and India and China are the major producers. It makes sense to protect the respective economies from imports from these Asian countries. India and China do not yet have the consumption led economy – though India is a better off.

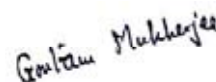
The world is going into a cocoon by protecting their respective economies. This does not augur well for the global economy which is already contracting. Would this get any worse is the biggest question.

If we do think that Donald Trump-led USA is the only country which is stopping the inflow of skilled professionals in their country, then think again.

In an anti-free-market move, Singapore is now stopping Indian IT professionals from entering their country as their issuance of work visa has dropped "to a trickle", in the last 12 months. In a clear cut case of protectionism, Singapore Govt. is indirectly forcing Indian firms to only hire local talent and the after-effects are clearly visible, as most of the IT biggies are now slowly but gradually moving away from Singapore, and establishing their presence elsewhere. As per a report published, it has been revealed that Singapore is using a regulation called "Economic Needs Test" or ENT to deny a visa to Indian IT professionals.

ENT requires compliance with some economic criteria, using which, they are forcing Indian firms to only hire local talent. Same like the US, Singapore is actually using a maze of regulations and laws to protect their own citizens, and ensuring that only they get jobs in IT firms. Nasscom president R Chandrashekhhar said, "This (visa problem) has been lingering for a while but since early-2016, visas are down to a trickle. All Indian companies have received communication on fair consideration, which basically means hiring local people," As per unofficial reports, leading Indian IT firms such as HCL, TCS, along with Infosys, Wipro, Cognizant, L&T Infotech and others are now considering to relocate from Singapore and establish their overseas offices in other countries.

Meanwhile, after analyzing the scenario, and understanding the fact that Singapore Govt. wants only locals for IT jobs, Indian Govt. has decided to put on hold the crucial Comprehensive Economic Cooperation Agreement (CECA) between India and Singapore. As per reports, Indian Govt. is upset over Singapore denying work visa to Indian IT professionals, and consider it as a violation of trade pact signed under Comprehensive Economic Cooperation Agreement (CECA). An Indian official said, "They (Singapore) are doing it despite the CECA clearly stating that there will be no ENT or quotas on agreed services. This is a violation of the agreement," If CECA is put on hold, then trade ties between India and Singapore can come to screeching halt, and mutual trade relations can severely hamper. Interestingly, after US Govt. started imposing newer, stricter rules against H1-B visa holders and Indian IT firms established in the US, other frontiers opened up for Indian professionals. Japan has already rolled out a red carpet for Indian skilled workers, whereas European Union has welcomed Indian IT professionals with open arms. Meera Shankar, former Ambassador to the US has said in the past that India has enough safety measures to stop the impact of a trade war. She had said, Industry watchers are saying that India needs to keep its boundaries and markets open and encourage the concept of free trade. In case the situation worsens, then this free trade policy will help us to forge alliances with other countries.



Dr. Goutam Mukherjee
Hony. Editor, JILTA

From the Desk of General Secretary



506th Executive Committee Meeting

The Executive Committee at its 506th meeting held on 12th April, 2018 decided as follows :-

- 1) "General Secretary ILTA" will be appointed publisher of JILTA.

Due to steep increase in cost of papers & printing, the price per copy of JILTA will be increased to Rs.110/- from Rs.50/- and the Annual Subscription to Rs.1,000/- from Rs.400/-.

Registrar of Newspapers for India will be approached to issue us a revised Registration Certificate incorporating above changes which will be effective only on receipt of the revised Registration Certificate.

- 2) In F.Y. 2018-19 LEXPO will be organized for the 25th time in succession at Siliguri. A four member committee consisting of Mr. Asit Baran Kanungo, Mr. Jiban Dasgupta, Mr. Kaushik Bhuiyan & Mr. Aniruddha De was formed by the Executive Committee to study and report on feasibility of organizing LEXPOs at other locations in F.Y. 2018-19 along with suggested schedule.
- 3) A few months back Mr. Shomenath Ganguly, author of "Comprehensive Footwear Technology" published by ILTA informed General Secretary that the 2nd edition of the book will require some revisions. G.S. requested him to go ahead with writing of the revisions.

As on 31.03.2018 the stock of the book being 64, Mr. Ganguly was requested to let us know when the revisions will be completed. Mr. Ganguly advised that the revisions will be completed in around 4 months when ILTA will undertake publication of the 2nd edition of the book.

- 4) Considering the immense contribution of Late Prof. S. S. Dutta for leather & allied industry and in response to the appeals received from our members, the subject to honour him was discussed at length.

E. C. Members were requested to offer their suggestions which were many & varied. Some suggestions were received in respect of introducing a scholarship in the name of Late Prof. S. S. Dutta. Eventually it was decided that we will first introduce Prof. S. S. Dutta Memorial Lecture. Also the proposal of giving award can be included while organizing the memorial lecture.

Updation of Members' Data

For the past three years, we have been approaching our Members through JILTA to provide us their Mobile No. / Telephone No. / Email Ids etc. whichever is available. Whilst some Members have obliged us with the required information, many are yet to do so.

In view of the fact that days are not far off when communication to Members by sending hard copies will have to cease for several reasons besides for reasons of faster communication, we would request our Members who are yet to provide us the requested data to kindly do so without any further delay.

BEREAVEMENT

With profound grief and a heavy heart we announce the sad demise of Sri Rathin Das on 12th March, 2018 and of Sri Bimalendu Majumdar, on 28th March' 2018. Both were Life Members of ILTA.

May their souls rest in peace and may God give strength to the members of the bereaved families to bear the irreparable loss.

You are requested to :-

- Kindly inform us your 'E-Mail ID', 'Mobile No', 'Land Line No', through E-Mail ID: admin@iltaonleather.org or over Telephone Nos. : 24413429 / 3459 / 7320. This will help us to communicate you directly without help of any outsiders like Postal Department / Courier etc.
- Kindly mention your Membership No. (If any) against your each and every communication, so that we can locate you easily in our record.



(Susanta Mallick)
General Secretary

Executive Committee Members meet every Thursday
at 18-30 hrs. at ILTA Office.
Members willing to participate are most welcome.



Balmer Lawrie Corner



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APPLICATION OF 3D PRINTERS IN FOOTWEAR MANUFACTURING

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Abstract

The footwear industry is no stranger to three-dimensional (3D) printing technology. Creating models by using 3D printing techniques is based on the digitally cut layers of the model which are applied layer to layer in real physical space creating the final object. Many shoe designers use the technology to experiment with prototypes and help visualize new cutting edge designs. The technique uses the digital data either from a 3D scanner or a Computer Aided Design (CAD) to develop the digital form of a 3D solid model. This mode allows creating complex models with thin walls and complex internal structures which are almost impossible to make by applying traditional methods. Materials used for making model shoes are typically plastic resins, commonly used in liquid, powder and filament form that is hardened by chemical reactions or an ultraviolet (UV) light sources such as a laser, lamp, projector or light-emitting diodes (LEDs). Some new material chemistries are allowing curing with visible light. The continuous growth since the early days and the successful results during the present time allow anticipating that the emerging technology of 3D printing is likely to have a significant impact on the future of manufacturing.

Keywords: 3D body scanning, 3D printer, product design, digital model, additive process.

Introduction

Digital fabrication will allow individuals to design and produce tangible objects on demand, wherever and whenever they need them. It is the ability to turn data into things and things into data. 3D printing, also known as an additive manufacturing (AM) or additive fabrication or freeform fabrication process that refers to processes in which material is joined or solidified under computer control to create a 3D object, with the material being added together such as liquid molecules or powder grains being fused together. There are different 3D printing technologies and materials that turns a digital model into a solid 3D physical object based on the same principle of laying down successive layers of material until the object is created (Wohlers, 2012). The technology of 3D printing is a method of making a 3D object from Standard Tessellation Language (STL) files created by Computer Aided Design (CAD) programs, as an end product of the 3D modeling process. '.STL' is the file extension of the STL file format and stores information about 3D models. This format describes only the surface

geometry of a 3D object without any representation of color, texture or other common model attributes. This technology is one of the processes of rapid prototyping. Many different technologies are included in the processes of rapid prototyping, but they all work on a similar principle. The model is created layer by layer with the application of certain materials, depending on the technique of printing. 3D printing has revolutionized the footwear industry with the introduction of new solutions to make insoles, midsoles, and outsoles with unique designs, offering improved performance which cannot be achieved with traditional manufacturing processes. 3D printing allows shoe makers to quickly manufacture small or medium series of customized parts to personalize a shoe model while accelerating its market launch. The technology enables the process of making a very complicated geometry of fashion footwear which would be very difficult or impossible to make by applying other, conventional methods of production.

Additive Manufacturing Processes

The technology for printing physical 3D objects from digital data was first developed by Charles W. Hull in 1984. He named the technique as Stereolithography and obtained a patent for the technique in 1986. The word 'Stereolithography' comes from the Greek words 'stereo', meaning solid, and '(photo) lithography', which is a form of writing with light. In 3D printing, Stereolithography technology uses light to turn liquid resin into a solid object, one layer at a time. While Stereolithography systems had become popular by the end of the 1980s, other similar technologies such as Fused Deposition Modeling (FDM) and Selective Laser Sintering (SLS) were introduced in 1993. Massachusetts Institute of Technology (MIT) patented another technology, named '3 Dimensional Printing Techniques' which is similar to the Inkjet technology used in 2D Printers. In 1996, three major products, Genesis from Stratasys, Actual 2100 from 3D Systems and Z402 from Z Corporation, were introduced. In 2005, Scarp launched a breakthrough product, named Spectrum Z510, which was the first high definition color 3D Printer in the market. Another breakthrough in 3D Printing occurred in 2006 with the initiation of an open source project, named RepRap, which was aimed at developing a self-replicating 3D printer. There are several systems to classify the AM processes, e.g., the one proposed by the ASTM F42 Committee classifies the AM processes into seven areas (ASTM, 2009; Bathula and Virupakshi, 2017).

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Table 1: The seven AM process categories by ASTM

Process Type	Brief Description	Related Technologies	Companies	Materials
Vat Photo-polymerization	Liquid photopolymer in a vat is selectively cured by light-activated polymerization	Stereolithography (SLA) Digital Light Processing (DLP)	3D Systems (US) Envisiontec (Germany)	Photopolymers
Material Jetting	Droplets of build material are selectively deposited	Multi-Jet Modeling (MUM)	Objet (Israel) 3D Systems (US)	Polymers, Waxes
Material Extrusion	Material is selectively dispensed through a	Fused Deposition Modeling (FDM)	Stratasys (Israel) Bits from Bytes (UK)	Polymers
Powder Bed Fusion	Thermal energy selectively fuses regions of a powder bed	Electron Beam Melting (EBM) Selective Laser Sintering (SLS)	EOS (Germany) 3D Systems (US) Arcam (Sweden)	Metal, Polymer
Binder Jetting	A liquid bonding agent is selectively deposited to join powder materials	Powder Bed and Inkjet Head (PBIH) Plaster-Based 3D Printing (PB)	3D Systems (US) ExOne (US)	Polymers, Foundry sand, Metals
Sheet Lamination	Sheets of material are bonded to form an object	Laminated Object Manufacturing (LOM) Ultrasonic Consolidation (UC)	Fabrisonic (US) Mcor (Ireland)	Paper, Metals
Directed Energy Deposition	Focused thermal energy is used to fuse	Laser Metal Deposition (LMD)	Optomec (US) POM (US)	Metals

Current 3D Printing Technologies

Stereolithography

3D printers (known as Stereo Lithography Apparatus or SLAs) position a perforated platform just below the surface of a vat of liquid photo curable polymer. A UV laser beam then traces the first slice of an object on the surface of this liquid, causing a very thin layer of photo polymer to harden. The perforated platform is then lowered very slightly and another slice is traced out and hardened by the laser. Another slice is then created, and then other until a complete object has been printed and can be removed from the vat of photo polymer, drained of excess liquid, and cured (Figure 1).

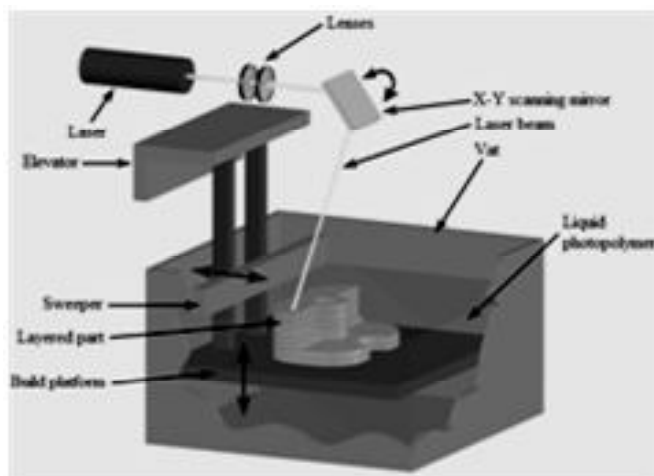


Figure 1: Stereo Lithography Apparatus

Fused Deposition Modeling (FDM)

Fused deposition modeling is an additive manufacturing technology commonly used for modeling, prototyping, and production applications. It is one of the techniques used for 3D printing. FDM works on an 'additive' principle by laying down material in layers; a plastic filament or metal wire is unwound from a coil and supplies material to produce a part. The technology was developed by S. Scott Crump in the late 1980s and was commercialized in 1990. The term fused deposition modeling and its abbreviation to FDM are trademarked by Stratasys Inc. (Figure 2).

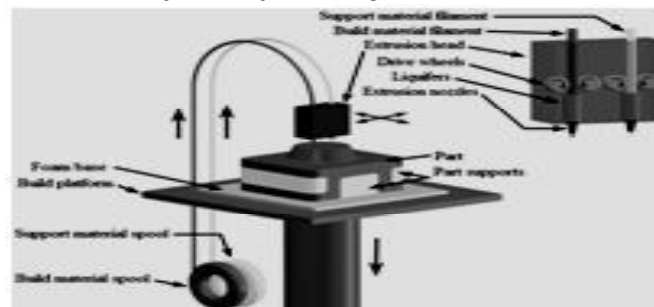


Figure 2: Fused Deposition Modeling

Selective Laser Sintering (SLS)

This builds objects by using a laser to selectively fuse together successive layers of a cocktail of powdered wax, ceramic, metal, nylon or of other materials. Objects printed with SLS are made with powder materials, most commonly plastics, such as nylon, which is dispersed in a thin layer on top of the build platform inside an SLS machine. A laser, which is controlled by a computer that tells it what object to "print," pulses down on the platform, tracing a cross-section of the object onto the powder. The laser heats the powder either to just below its boiling point (sintering) or above its boiling point (melting), which fuses the particles in the powder together into a solid form. Once the initial layer is formed, the platform of the SLS machine drops usually by less than 0.1mm exposing a new layer of powder for the laser to trace and fuse together (Figure 3). This process continues again and again until the entire object has been printed. When the object is fully formed, it is left to cool in the machine before being removed (Hopkinson et.al., 2006).

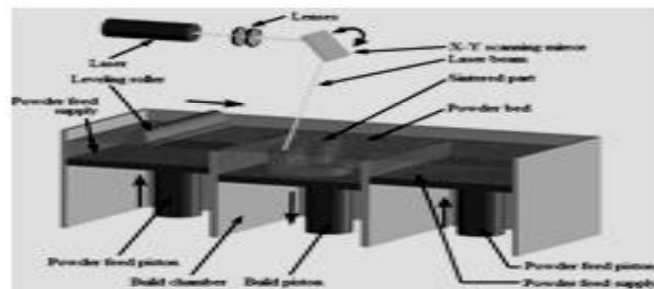


Figure 3: Selective Laser Sintering

Multi-Jet modeling (MJM)

Multi-Jet modeling is an inkjet printing process that uses piezo print head technology to deposit either photo curable plastic resin or casting wax materials layer by layer. MJM is used to build parts, patterns and molds with fine feature detail to address a wide range of applications. These high-resolution printers are economical to own and operate and use a separate, meltable or dissolvable support material to make post-processing a breeze (Figure 4).



Figure 4: Multi-jet modeling

MJP printers offer the highest Z-direction resolution with layer thicknesses as low as 16 microns. In addition, selectable print modes allow the user to choose the best combination of resolution and print speed, so it's easy to find a combination that meets your needs. Parts have smooth finish and can achieve accuracies rivaling SLA for many applications. Recent material advances have improved the durability of plastic materials and are now suitable for some end-use applications. This again builds up objects from successive layers of powder, with an ink jet-like print head used to spray on a binder solution that glues only the required granules together (Hopkinson et.al., 2006). Depending on the choice of material, this technology is used in applications where high precision, strength, and series-like prototypes are needed. The repeatability, pass through the machine structure, offers ideal conditions for small batches, or even produce complete, assemblies series which fits perfectly.

3D printer and the manufacture of footwear

Originally developed at the Massachusetts Institute of Technology in 1993, 3DP forms the basis of physical prototyping process by solidifying layers of deposited powder using a liquid binder. 3DP is an extremely versatile and rapid process accommodating the geometry of varying complexity in hundreds of different applications, and supporting many types of materials. Z Corp. pioneered the commercial use of 3DP technology, developing 3D printers that leading manufacturers use to produce early concept models and product prototypes. Utilizing 3DP technology, Z Corp. has developed 3D printers that operate at unprecedented speeds, extremely low costs, and within a broad range of applications. (Gebhardt, 2012).

Many shoe designers use the technology to experiment with

prototypes and help visualize the cutting-edge designs and the right fit. 3D printing could alleviate that compromise between comfort and fashion. And it's not just the fit that can be easily adjusted, but consumers can change features at little to no cost. Another benefit of 3D printing is virtually eliminating industrial waste since 3D printing involves adding layers of materials rather than cutting them out. It can also address other issues in the footwear industry, such as creating too much inventory and manufacturing imperfections.

Figure 5 shows the principle of making models of fashion footwear and cutting into thin layers where we get a stepped surface of the model. The 3D model constructed by the computer is cut into two dimensional layers of equal thickness, which are placed one on the other. This provides a 3D shape, with a stepped surface appearance, because of the principle of stacking layer after layer.

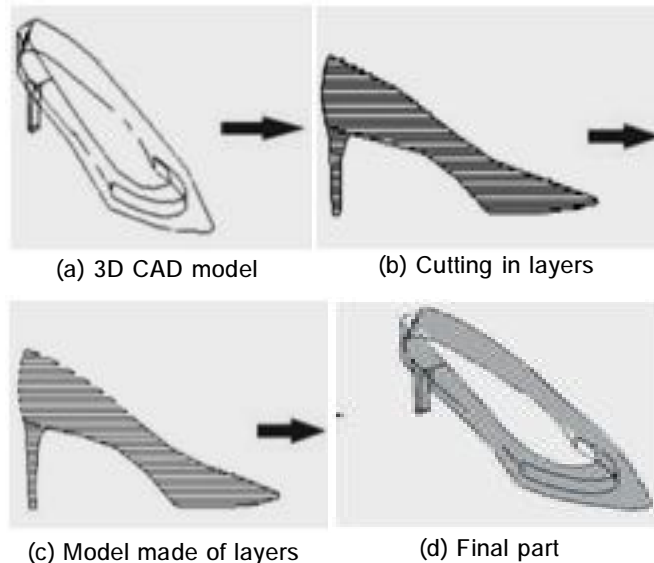


Figure 5: Development process layer by layer

Fashion footwear is produced directly on the equipment for 3D print processes based on 3D computer model of fashion footwear, without the need for additional tools. At present, 3D printers can print fashion footwear of complicated geometry of different elasticity by dripping of a melted filament of all kinds of plastic.

The production of fashion footwear with 3D printer greatly simplifies and reduces the work of the designer or manufacturer. An adjustment to the jointly developed products and distribution of products intended for sale on the internet has become faster. This makes it easier to get an insight into the desires of consumers and to build better relations between the manufacturer and the customer (Mijovic and Ujević, 2016).

A method of manufacturing fashion footwear by using 3D printers can be divided into the following phases of

development :

- 1) The development of the first conceptual design and the development of solutions by designers/engineers
- 2) Designing CAD models and 3D visualization. The first step of all 3D printer procedures is making the 3D geometric model in some of the CAD programs, Figure 6.

The operating cycle of the future prototype begins with design, in particular with the concept. After adopting the concept, preliminary sketches, technical drawings, and finally the CAD files are made or digital 3D model of the object. In the process of creating CAD files, testing of model shoes by numerical methods can be conducted (Elsen and Leclercq, 2008).

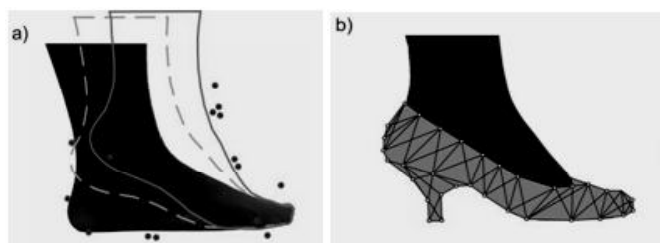


Figure 6: CAD model of fashion footwear

- 1) Turning CAD models into .STL file. STL file is a standardized format for transmitting data using devices for the rapid prototyping. That is a representation of the geometry of 3D surfaces in the shape of a triangle. The surface of the model is logically broken up into a series of small triangles, the so-called faces. The direction and orientation of the face are described by three points in space. The file in that form is used for cutting the model into horizontal cross-sections or layers. The file is displayed in a web form mesh, made up of face. The mesh, which forms the model must be thick in order to meet the desired surface quality, and in order to display smaller details properly. Otherwise, when the mesh is of a low density, a rough surface is obtained.
- 2) Turning STL file into the program for virtual cutting of the object into layers.
- 3) Selecting the parameters of 3D printers (thickness of the layer, strength, speed, temperature, generating support structures, etc.).
- 4) Setting up a 3D printer (replacement of materials, calibration, etc.).
- 5) Making the final product with a 3D printer. The quality of 3D printed fashion footwear depends on the height of the layer, if you are working with thin layers, transitions

between the layers are less visible, a stepped structure is less evident and the items have a finer surface. The thickness of one layer usually ranges in value between 75 microns, which is slightly thinner than a sheet of paper.

- 6) The final procession of the 3D object of fashion footwear (removal of excess material, subsequently, merging, removing the support structure, coating, sanding, gluing, painting, sandblasting, etc.).
- 7) Packing and delivery of the 3D object of fashion footwear.

Before the prototyping of fashion footwear, it is necessary to define its purpose and intention and choose the technique of rapid prototyping of fashion footwear accordingly. After the verification of shapes and sizes, the prototype is made. Possible disadvantages of the prototype are eliminated and corrected in the CAD file. The prototyping process is shown in Figure 7.

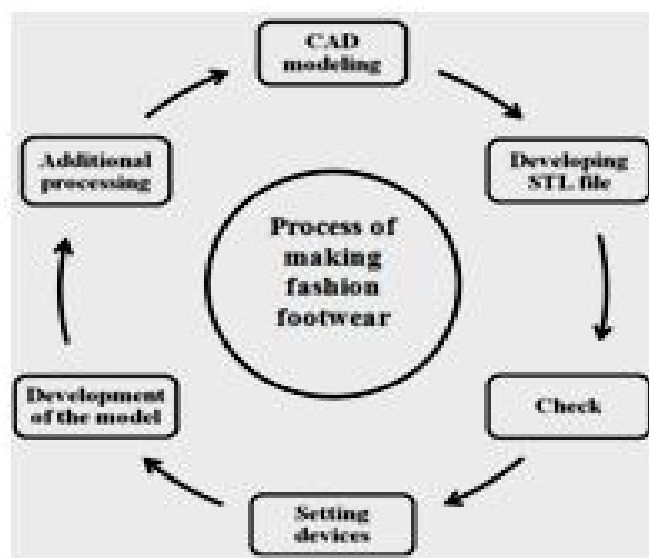


Figure 7: Cycle of a fast prototyping

The benefits of AM technology

- 1) 3D Saves Time and Cost : Creating complete models in a single process using 3D printing has great benefits. This innovative technology has been proven to save companies time, manpower and money. Companies providing 3D printing solutions have brought to life an efficient and competent technological product.
- 2) Complexity : The advent of 3D printing has seen a proliferation of products (designed in digital environments), which involve levels of complexity that simply could not be produced physically in any other way. While this advantage has been taken up by design and artists to impressive visual effect, it has also made a significant impact on industrial applications, whereby

applications are being developed to materialize complex components that are proving to be both lighter and stronger than their predecessors. Notable uses are emerging in the aerospace sector where these issues are of primary importance.

- 3) Increased employment opportunities : Widespread use of 3D printing technology will increase the demand for designers and technicians to operate 3D printers and create blueprints for products.
- 4) Rapid production of prototypes : 3D printing enables quick production of prototypes or small-scale versions of the real object. This helps researchers and engineers plan the actual object and catch any design flaws that may affect quality and functionality.
- 5) No storage cost : Since 3D printers can "print" products as and when needed, and does not cost more than mass manufacturing, no expense on storage of goods is required.
- 6) Ability to customize products : Customization is the norm when it comes to 3D printing. With the desired raw material, a 3D printer, and the required blueprint, you can "manufacture" any object you want, with the specifications and design of your choice.
- 7) Low cost of production : Although the initial cost of setting up a 3D printing facility may be high, the overall savings in the form of labor costs, time saved, and equal effort for small-scale and mass manufacturing ensures that the cost of production is relatively low.
- 8) Quick availability of organs : The long and often traumatic wait for an organ donor could come to an end with advances in bio printing or manufacture of 3D printed organs. Research is on to create bio printers that can create living organs along with the structural lattice for the organ using the patient's own cells and tissues.

The limitations of AM technology

- 1) Intellectual property issues : The ease with which replicas can be created using 3D technology raises issues over intellectual property rights. The availability of blueprints online free of cost may change with for-profit organizations wanting to generate profits from this new technology.
- 2) Unchecked production of dangerous items : Liberator, the world's first 3D printed functional gun, showed how easy it was to produce one's own weapons, provided one had access to the design and a 3D printer. Governments will need to devise ways and means to check this dangerous tendency.
- 3) Limitations of size : 3D printing technology is currently limited by size constraints. Very large objects are still not feasible when built using 3D printers.
- 4) Limitations of raw material : At present, 3D printers can work with approximately 100 different raw materials. This is insignificant when compared with the enormous range

of raw materials used in traditional manufacturing. More research is required to devise methods to enable 3D printed products to be more durable and robust.

- 5) Cost of printers : The cost of buying a 3D printer still does not make its purchase by the average householder feasible. Also, different 3D printers are required in order to print different types of objects. Also, printers that can manufacture in color are costlier than those that print monochrome objects.

Future of 3D printed footwear

3D printed footwear seems to be almost constantly in the news lately and can easily be integrated into our daily life (Kaur, 2012). The use of the 3D printer in several stages of footwear design help Adidas, Nike and PUMA to compress its design cycles and squeeze in more design iterations within limited time frames. 3D printing is a great way to get shoes perfectly adapted to the feet. 3D printing allows manufacturers to design and produce shoes that are fully customized to the wearer's feet, making them more comfortable and healthier to wear. The 3D scanning technology has advanced to the point at which it is becoming easy to obtain complete data about a person's foot, leading to perfectly molded shoes. Personalized pairs of shoes are now accessible to everybody and mass customisation will gain ground in the upcoming years. Personalization is increasingly important to today's consumers, and 3D technologies are making this a viable reality and one industry significantly benefiting from an uptick in 3D scanning and 3D printing is footwear. No matter what the size number is on the side of a shoe box, everyone's feet are different; properly fitted footwear can make all the difference in the world for those who spend a lot of time on their feet, working, running, just living. Fully customized insoles and even shoes are becoming not only more common but more accessible, with the proliferation of 3D technologies. Some big names in footwear and technology have already entered the arena, and the latest big name to throw its hat into the ring is none other than HP Inc. as the company announced its technologies power FitStation, a new platform designed to reimaging personalized experience. FitStation takes customization to a personal level, incorporating individual 3D scanning of each foot, dynamic gait analysis to see how an individual walks and/or runs, and bringing 3D printing into the manufacture of commercial footwear. The end-to-end process provides recommendations of off-the-shelf shoes best suited for a particular foot shape and activity level. In addition to being a great innovation for fashion lovers, 3D printing is used for making orthotic shoes for individuals suffering from diabetes, flat feet, and plantar fasciitis (FitStation, 2018). 3D printing technology is increasingly deployed within leading footwear companies to improve manufacturing performance and pursue customization at a new level. Designers will prefer to work with 3D printing as it allows to create incredible designs with a lot of freedom. It can constantly push the boundaries of innovation in order

to make people's lives more exciting, more fulfilling, and easier to manage. It is going to play an important role in both design and manufacturing and will have a big impact on industry and society (Figure 8).

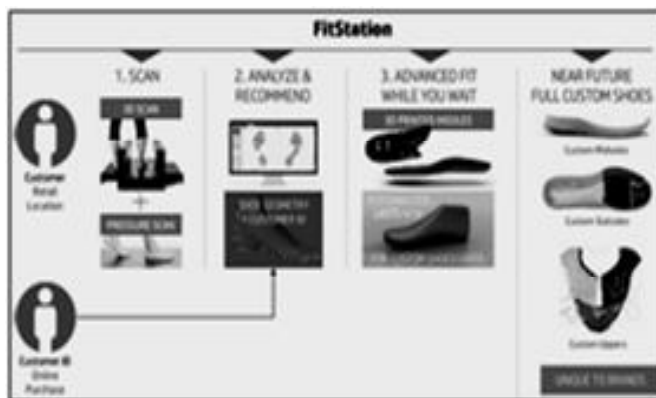


Figure 8: Customized 3D scanning and 3D printing with HP FitStation

Conclusion

3D printing technology has received significant attention globally and its application in diverse fields demonstrate its influence. In the field of fashion, 3D printing is applied to innovative designs as a new aesthetic concept referred to as the convergence of digital technology and design. It is rapidly evolving and finds its application in the industry of fashion footwear. The new techniques, while still evolving, are projected to exert a profound impact on manufacturing. They can give industry new design flexibility, reduce energy use, and shorten time to market. To make the most of this technology it is necessary to achieve a certain quality of the printed model, respecting certain rules. Predictions for future commercial 3D printing, starting with today's infancy period, require manufacturing firms to be flexible, ever-improving users of all available technologies in order to remain competitive. Advocates of additive manufacturing also predict that this arc of technological development will counter globalization, as end users will do much of their own manufacturing rather than engage in trade to buy products from other people and corporations. While the traditional shoes are still widely used, it is a foregone conclusion that 3D printed shoes are the shoes of the future. 3D technology continues to advance at a fast rate globally and what was thought impossible in years gone by is becoming a reality right before our eyes. The software is

poised to push the emerging 3D printing technology substantially in the coming years. It will make printers smarter, more capable by extending support to multiple materials, multiple colors, and more autonomous, requiring less skill and labour to operate. Together, they form the foundation for the industry to move beyond prototyping and pivot toward printing finished products and components. The final properties of the shoes made by 3D print technology depend primarily on the chosen technology, the chosen material, and adjustable production parameters. For the optimum utilization of the advantages offered by the 3D print technology we need to be informed about the advantages and disadvantages of the technology compared to other additional technologies, but also to conventional production methods.

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JILTA : Read & Let Read



STAHL Corner





STAHL Corner



L W G

Dinker Bajpai

LEATHER TECHNOLOGIST, BUREAU VERITAS CONSUMER PRODUCTS SERVICES INDIA (P) LTD, NOIDA

The objective of this multi-stakeholder group is to develop and maintain a protocol that assesses the environmental compliance and performance capabilities of leather manufacturers and promotes sustainable and appropriate environmental business practices within the leather industry. The LWG is made up of member brands, retailers, product manufacturers, leather manufacturers, chemical suppliers and technical experts that work together to maintain an environmental stewardship protocol specifically for the leather manufacturing industry.

The Leather Working Group was founded in 2005. It is a multi-stakeholder group made up of brands, retailers, leather manufacturers, suppliers and technical experts. The group's objective is to develop and maintain an environmental auditing protocol that assesses the environmental stewardship and compliance of leather manufacturers, while promoting sustainable and environmental business practices. LWG has more than 400 members made up of brands, leather manufacturers and suppliers. LWG audited tanneries can be found globally and represent approximately 20% of the world's production of footwear leather and 16% of total leather volume.

The audit protocol was developed by brands and leather manufacturers together over a period of several years. It has been updated several times to include member input and to address topical issues. The audit protocol is focused on the factors related to the environmental performance of tannery operations. Following successful completion of a comprehensive audit, a certificate is issued which entitles the leather manufacturer to automatic membership in the LWG for as long as the certificate is valid. Brands & Suppliers are able to join the LWG by paying an annual subscription fee.

The scoring system for the original versions of the protocol was based on benchmarking data and information gathered during piloting studies conducted around the world. The later versions of the protocol have incorporated the data gathered during previous audits, and the scores have been determined by a Technical Sub-Group (TSG) made up of leather manufacturers, brands and auditors. Depending upon the score achieved a rating is awarded for tanneries: gold, silver, bronze, or audited.

A major influence on the leather industry was the release of the Zero Discharge of Hazardous Chemicals (ZDHC) Leather Manufacturing Restricted Substances List (MRSL) in

December 2015. LWG contributed to and endorse this MRSL for leather related aspects. The management of the MRSL forms part of the LWG Chemical Management Module (CMM) launched in April 2017 as a standalone voluntary addition to the main audit protocol.

Traceability is an important topic for brand members as there is increasing pressure from consumers who want to be reassured that materials used are appropriately sourced. The LWG environmental audit assesses the ability of leather manufacturers to trace material back to a specific slaughterhouse. The audit is site specific and does not assess farms, animal husbandry, transportation of animals or slaughtering practices.

What is the Leather Working Group's Mission Statement?

LEATHER WORKING GROUP MISSION STATEMENT - The objective of this multistakeholder group is to develop and maintain a protocol that assesses the environmental compliance and performance capabilities of tanners and promotes sustainable and appropriate environmental business practices within the leather industry.

How was the audit protocol developed?

The audit protocol was developed by brands and leather makers together over a period of several years. It has been updated several times to include members input, cover topical issues and improve the general quality of the audit.

How much time is there between updates?

To maintain a level of continuity for the audit process the protocol will remain in each issue state for at least three years. However, minor or correctional updates may be made during this time.

What is the philosophy of the audit scope?

The protocol covers key areas of environmental stewardship within leather production. The philosophy is to keep the subject of the protocol focused on the environmental elements. For this reason it does not focus on social, ethical, health and safety, or animal health issues; nor the setting of restricted substance specifications or limits. The LWG works closely with other symbiotic groups around these other topics.

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What is the scoring system based on?

The scoring system for the original versions of the protocol was based on several benchmark studies undertaken by BLC Leather Technology Centre Ltd and involving over 40 tanneries in five leather manufacturing sectors around the world. It aims to reflect environmental impact and has drawn on published data such as the European Commission Reference Document "Best Available Techniques for the Tanning of Hides and Skins" (May 2001) and United Nations Document US/RAS/92/120/11-51 "The scope for decreasing pollution load in leather processing". The later versions of the protocol have incorporated the data gathered during previous audits, and the scores have been determined by a panel representing tanners, brands and auditors thereby ensuring that the protocol is an accurate reflection of what is both feasible and attainable by a tannery.

How has the grading system been developed?

To achieve a given grade a minimum score in each area is required. The system of scoring for awards has drawn on some of the concepts used by the International Safety Rating System (ISRS), a health and safety management system promoted and supported worldwide by Det Norske Veritas (DNV). That health and safety management system is based on a series of safety audits which comprise a number of sections with some 600 questions. Each answer is individually scored and finally the scores are aggregated. Five standard levels are used in the ISRS approach whereas Audited, Bronze, Silver and Gold are used in the Leather Working Group approach. Audited indicates that the leather manufacturer has gone through the audit process, but has not achieved a high enough score to be rated (Gold, Silver, Bronze).

How can national tannery associations take part in LWG or how can they become members of LWG?

Currently, Trade Associations are not permitted to join the LWG as members. This is to prevent political, block and regional lobbying by associations which is not helpful. There are other forums such as COTANCE and the International Congress of Tanners (ICT) that have this express purpose. Trade associations that express interest can attend one meeting as a guest observer.

How do leather manufacturers join the LWG?

Once a leather manufacturer has an audit conducted they automatically become a member. They remain a member while they have a valid certification.

Are tanneries processing from raw skins penalized due to the additional waste they create?

The scores for the manufacturing sections are rationalized so that tanneries are compared on their overall manufacturing

operations, not on the individual components of those operations. The focus of the protocol is based upon ensuring that wastes are treated in an environmentally sound manner rather than on the amount of waste generated per se.

Do tanners operating in regions with stricter environmental legislation score differently?

The aim of the protocol is to ensure that tanners across the world are assessed against a common framework. The protocol is based on environmental compliance and environmental stewardship and therefore all tanners are expected to be in conformance with local regulations or with protocol requirements, whichever are the more stringent.

Do tanners with their own effluent treatment plants score more highly?

The greater the effort that a tanner takes to reduce environmental impacts whether by reducing usage of environmental resources such as water or energy, or by reducing the level of emissions to the environment gaseous, solid or liquid, the higher will be the score on the protocol. The score is based on emissions to the environment whether that is from the tannery's own system or a common or municipal system. Can an auditor terminate an audit if standards are found to be too low?

In general terms the audit will not be terminated although a low score or a failure may be the result. However, if an auditor has concerns about the credibility or integrity of the data they may decide to cancel the audit.

What feedback does a tanner get from the audit?

The auditor will provide a verbal report at the end of the audit to whichever representatives the auditee wishes to appoint. The auditor will provide constructive advice regarding elements that could be improved upon and about any elements of the auditee's operations that are observed to require immediate attention. A copy of the completed audit will be provided with a commentary on the performance of the auditee and relevant recommendations for improvement.

How frequently should I have an audit?

Certification is valid for 18 months or 24 months if the manufacturer achieves Gold. If a subsequent audit is undertaken within the month leading up to expiry the new expiry date will be entered as 18/24 months from the current expiry date. If the audit is undertaken in the month following expiry the new expiry date will be entered as 18/24 months from the current expiry date provided the audit had been confirmed (date agreed, payment for the audit made) prior to expiry of the current certification. It is recommended that

certification is maintained through an audit being conducted every 18/24 months.

Can I schedule an audit earlier or later than the renewal date?

An audit can be conducted as often as the audited party wishes, but for some metrics a minimum of six months new data may be required. Currently, an audit can be conducted up to one month after the expiry date. The subsequent 18/24 months will run from the original renewal date. If the audit falls outside this one month window the audited party will be removed from the LWG web-site and the certificate deemed to have expired.

What documents need to be made available?

Copies of valid operating permits will need to be made available during the audit. The auditor may contact the company to be audited in advance of the audit to ascertain which regulatory authorities are responsible for issuing permits.

Will a tannery group require more than one audit?

The audit is an assessment of the site, not the organization; therefore, where an organization has multiple sites each site should be audited. In most cases an audit site will be considered to be one geographical location and the audit will be based on the full range of leather making operations (and relevant related activities) undertaken there. An exception will apply in those cases where two geographically different sites exist, but only if those sites are located close to each other, they operate as one unit and all operating permits issued apply to the two sites as one unit. Two companies operating on one site will be treated as separate audits only if they are distinct legal entities with separate operating licenses and operating as separate units. NOTE: Where the organization works through a marketing company, reference can be made to this company in the body of the summary report, but only the site name can be included on the LWG audit reports, certificate and website. This is to ensure that there is no ambiguity for the customer purchasing the leather, as in some cases the marketing companies may sell leather from other sources which are not LWG rated.

Will the scale of operation (size or output of the tannery) affect the audit result?

Factors such as air emissions, energy consumption etc are determined per unit of leather produced not gross values.

What is the correct level of restricted substance testing?

The correct level of testing, whether it is for restricted substances or any other property, remains subject to agreement between the individual supplier and customer. This

protocol aims to assess the tannery's system for managing restricted substances.

Will an LWG audit mean I will have no restricted substance failures?

No. The audit covers a leather manufacturer's compliance with each customer's requirements and its ability to understand and manage chemicals. The audit will verify that the tannery has relevant customer's restricted substance specifications and that it has tested against these using an ISO17025 accredited laboratory during the 18/24 month period between audits.

Can the audit protocol be used to improve performance?

The tanner undergoing audit is provided with a copy of the assessment so that it is possible to identify those aspects which score less highly. The auditor will be a trained professional assessed and appointed as an LWG auditor by the Executive Committee of the LWG. The auditor will be capable of giving advice on the best means of achieving improved performance. This advice will be given at both the verbal debrief and in the audit report.

is it advantageous for the tanner to be accredited by any other scheme such as ISO14000 or EMAS?

A company that operates according to an internationally recognized scheme and which is accredited as being in compliance by an independent third party will be given due credit and will score more highly than a company operating a self-certified or self-designed management system. Our Organization is already certified to ISO 14001.

In what way is this different from the LWG audit?

ISO 14001 and the LWG audit do not assess environmental performance in the same terms. The LWG audit quantifies environmental performance whereas the ISO standard does not. The operation of the ISO (or other) standard is a component part of the LWG protocol. The ISO standard relates to the management system and is explicit in not attempting to quantify environmental performance, indeed, in the introduction it states "This International standard does not establish absolute requirements for environmental performance beyond the commitments, in the environmental policy, to comply with applicable legal requirements and with other requirements to which the organization subscribes, to prevention of pollution and to continual improvement. Thus, two organizations carrying out similar operations but having different environmental performance can both conform to its requirements". It further states "...adoption of this standard will not in itself guarantee optimal environmental outcomes". In contrast the LWG audit proclaims "The purpose of this [LWG] tannery auditing protocol is to evaluate the environmental

performance of tannery operations" The LWG protocol assesses tannery operations in absolute terms, for example energy requirement to produce a square foot of leather, proportion of wastes recycled etc. In a third-party pre-publication peer review the World Wide Fund-US (WWF) reported "The Protocol has also admirably emphasized management by metric measurement in almost every phase of processing" and "As described above, measurement is one of the strongest aspects of this Protocol. It gives good performers credit for what they have already done, an issue that many standards processes have not resolved to the satisfaction of new entrants. It will allow tanneries and leather finishers to demonstrate their baseline level of performance, improve it systematically, and report measurable results. It will also allow participating tanneries to report on an aggregate and a cumulative basis the levels of impacts of their operations on the local environment, and could even lay the basis for carbon or water rights trading regimes in this sector." What is the audit duration? Audit duration is typically two days per site. If the company uses sub-contractors these also will need to be assessed (although they will not necessarily need to undergo a full audit unless the range of operations falls within an audit category).

Additional time and costs will be associated with assessment of sub-contractors. Will information from third party organizations be required?

A certain amount of information, such as copies of permits from regulatory authorities issuing operating permits, third party restricted substance test reports etc will be required. The auditor can advise the auditee well in advance of the audit what documents will need to be examined.

Are there sections that lead to automatic failure in the audit?

If Operating Permits apply to the facility, for which the facility is unable to demonstrate compliance, automatic failure of the audit will result, irrespective of how well other sections of the protocol score. Gross failures can occur in relation to operating permits and two aspects of effluent treatment. What happens if my score just misses making a grade? The distinctions between grades are based on calculations of what tanneries are capable of achieving and on test audits undertaken in the development of the protocol. Some of the assessments are, however, necessarily subjective, therefore in the case of borderline score the auditor may make a recommendation based on the overall observations that an award be granted provided that the company being audited agrees to undertake recommended corrective actions.

Are sub-contracting operations taken into account?

An LWG mini-audit will be required on all sub-contractors (sub-contracted out) to the company. All sub-contractors will be

required to complete the mini-audit document on a self-assessment basis. It is the responsibility of the tannery being audited to facilitate this but it is the auditor's responsibility to ensure that the tannery is aware of the process correctly. The mini-audit is based on a limited number of the sections of the protocol but does not result in a rating for the sub-contractor. The results from all sub-contractors must be submitted to the auditor in advance of the tannery audit. Depending upon the number of subcontractors used the auditor will select up to three sub-contractors but no more than five, who will be visited (at the time of the tannery audit) and whose responses will be verified by means of normal audit procedures. The results of all the mini-audits will be reported in the auditee main audit report. The following additional points apply:

- The mini-audit will be undertaken on a self-assessment basis by ALL subcontractors used by the tannery
- The self-assessments must be completed prior to the audit of the tannery itself
- The auditor will undertake a confirmation audit on each of the sub-contractors (up to a maximum of five)
- The confirmation mini-audits must be undertaken at the same time as the audit
- Additional time will be required to undertake the confirmation mini-audits and may result in additional changes
- It is the responsibility of the company being audited to ensure that the auditor/audit body is informed of the full extent of all sub-contracting operations in advance so that sufficient time is allowed. The scope of the mini-audit for the various subcontracting operations is given in the protocol:
- Automatic audit failures can occur in some sections of a mini-audit and the full scope is in the protocol.
- The audit is intended to ensure that the leather manufacturer and its operations conform to good environmental practice; this includes the selection and monitoring of sub-contracted operations.

What process is in place to ensure the accuracy and confidentiality of the data and results of individual company audits?

If a leather manufacturer wishes to be listed on the LWG website they will need to submit their results to the LWG contracted facilitator for benchmarking. Auditors will be required to submit their clients full audit results. All results will be treated with the strictest confidentiality. Data and results from individual audits are treated in the strictest confidence and are only made available to the LWG contracted facilitator for verification purposes and use in benchmarking studies, only upon permission having been granted by the audited party. The data is aggregated and at no time is any of the data recognizable as coming from an individual tannery. In the event of a dispute between the auditor and the audited party, the audited party can appeal to the LWG Executive Committee for final resolution.

What constitutes the audit peer review process?

All completed audits must be submitted to a peer review process so that the results, calculations and assumptions can be verified. All audits will be peer reviewed by another LWG auditor, who will review the calculations and findings using a systematic process of evaluation. How does LWG take into account tanneries that produce 30% of their production as small samples or that produce very small amounts of leather? The banding within the audit protocol is wide enough to cope with minor variations in production such as this. In addition, many of the tanners already audited, produce high numbers of samples; also tanners already audited, which have this type of profile, have achieved Gold and Silver. Scope of traceability The audit assesses the leather manufacturers ability to trace its material back to a specific slaughterhouse. This is rated separately from the environmental score and shown as a letter A to C with A indicating the highest level of traceability.

Why is traceability important in Europe?

Traceability is one of the most important topics for the member brands. They have repeatedly said that they want to know where their material comes from, as there is increasing pressure from consumers who want to be reassured that materials used are appropriate.

Traceability is a global requirement, not a regional one.

Does the audit cover animal husbandry and slaughtering practices?

No. The audit is site specific and does not assess farms, animal husbandry, and transportation of animals or slaughtering practices. Individual customer's may have their own sourcing specifications in this respect.

How does the audit cover discharge violations?

The audit protocol has a section that identifies previous violations and scores the tannery accordingly. Violations are declared by the leather maker at the time of the audit. The audit is a two day snapshot in time and not a live situation. So it is possible that leather makers may have violations posted against them during the 24 months between audits. Any violations or warnings will be scored at the next audit date.

What if a tannery experiences major violations or persistent discharge problems?

If a leather manufacturer is seen to have persistent problems or a major violation then their certification may be suspended by the auditing body or the LWG Executive Committee depending on the circumstance.

What is the position with regard to LWG audit certification and effluent treatment plant violations?

If the tannery operates its own ETP and there is a violation of sufficient severity to prompt withdrawal of certification a re-audit will be required for the company to be recertified. The treatment is subject to the direct control of the tannery and it is the conditions within the tannery's own operating permits that is being breached. If the tannery discharges to a CETP or METP and there is a violation of sufficient severity at the treatment works to prompt withdrawal of certification a re-audit will NOT be required for the company to be recertified. The certification would have been suspended due to the actions of the third party, not the tannery. The audit is a site audit (the tannery) and although operations of the tannery had not changed the certification was withdrawn as a result of third party discharges of effluent to the environment. If the situation with regard to discharges by the third party is rectified, and there is evidence of this, the fair response would be to reinstate certification, the operations in the tannery still being unchanged. Definitions: ETP - Effluent Treatment Plant Equipment and processes solely dedicated to clean the tannery waste-water, located on the tannery site or nearby. CETP - Common Effluent Treatment Plant Equipment and processes for cleaning industrial waste-waters, where two or more operations send their water to be processed communally. The waste-waters may or may not come totally from tanneries. METP - Municipal Effluent Treatment Plant Government operated equipment and processes for processing waste-water. What happens if a leather manufacturer deliberately misleads an auditor? If a leather manufacturer withholds critical information or is found to be providing misleading information then their certificate will be suspended and they may be restricted from re-audit for a period of time and their membership of the LWG cancelled. Will an LWG audit ensure my leather manufacturer has no violations in the future? No. The audit is a two day snapshot in time and does not provide live monitoring. LWG certification is based on a site audit conducted shortly before the certificate is issued. Following certification it is the tannery's responsibility to maintain compliance throughout the certification term. How does the protocol cover common effluent treatment plants? The quality of the final effluent is assessed as part of the audit which means the efficiency of a CETP could affect the scores achieved by the tannery. It should be noted that the CETPs are not audited as part of the scope of this audit but third party evidence of CETP performance will be required as part of the audit.

How will I be scored if my effluent plant performs better than the CETP?

If the discharge from the in-house ETP is of a higher standard than that of the municipal or CETP then this will form the basis of the audit scores. The ETP must meet local legislative requirements as a minimum. Does the audit measure air

quality? Currently the audit requires leather manufacturers to comply with local legislation, identify emission points and have appropriate control devices. There are higher scores for lower solvent usage and regular measurement. There is an informational non-scoring olfactory assessment conducted inside, outside and at the boundary. There are currently no measurements of internal air quality as part of this audit. Is there a full legal compliance check conducted as part of this audit? No. This is a site audit and it does not include a full legal compliance check with local authorities. In some countries this process is augmented by local web-based providers such as IPE in China. Is worker safety assessed in this audit? No. The focus is environmental issues. There is an assessment of emergency plans which includes a limited assessment of the provision of health and safety equipment.

Will an LWG audit mean I will have no Chrome VI failures?

Due to the batch nature of leather processing it is impossible to guarantee that chrome VI or any form of RSL failure will not occur. However, in general terms by their nature the LWG rated tanneries will tend to have a more thorough understanding of their critical processes and more consistent approach to production control and therefore present a lower risk.

The best way to understand the scoring is to read the protocol and review the scoring table at the front of the document. The scoring has been developed as far as possible in accordance with the following hierarchy · Reduce – the amount of resource used (energy, water, chrome etc.) · Reuse – material for the same purpose without additional (or minimal) input (pallets, wastewater etc.) · Recycle – material that cannot be reused into other products · Recover – raw material (i.e. heat energy for example from oils or solvents that cannot be recycled) · Refuse – any material that can only be disposed of (provided

disposal is safe and legal) The majority of questions require that the most appropriate option is selected, i.e., select 1 answer from 5 potential answers. There are also a number of cumulative questions where all appropriate options should be recorded. Where the activities of the tannery fall between two or more possible options the auditor is required to assign a score (or partial score) that appropriately reflects the evidence presented. Leather manufacturing operations vary considerably depending on the type of hide or skin being processed and the type of leather being made. Pigskins for example have little or no hair, so questions relating to hair save are inappropriate. Some types of sheepskin have a very high natural fat content, others have much lower levels of natural fat; operations involving the removal of fat therefore differ. Discretion and realism must be practiced by the auditor during the audit, the score calculation and the reporting to reflect these differences. Scoring for awards. The sections with values in the columns for Gold, Silver or Bronze in the table on page ix are critical scoring sections. That is to say that if you do not score the minimum for each and every one of those sections you do not get the classification. The total percentage score at the bottom refers to the overall minimum percentage score required for the classification. You must score at least the minimum for each critical section plus additional points from the non-critical sections and so doing achieve the minimum total score for the classification.

Differences between medal awards The medal levels have been set based upon best practice within the industry and also the incremental improvement philosophy of the LWG. Therefore, because of both the content of each section and the above items there is not necessarily a linear connection between the environmental impacts of the awards. The sections are scored 85 (Gold), 75 (Silver), 65, (Bronze) for simplicity. A non medal rated and fail are also possible outcomes.

FICCI WITH AMAZON CONDUCTS WORKSHOPS FOR LEATHER EXPORTERS

Kolkata : FICCI in partnership with Amazon has organized a workshop on going global through e-commerce Marketplace for B2C Leather Product Manufacturers, exporters, retailers and online sellers.

Under the aegis of the Ministry of Commerce and Industry, Government of India, Council for Leather Exports (CLE) caters to the needs of the leather exporters and serves as a connecting bridge between Indian leather exporters and buyers over the world.

Abhijit Karma, Head – Global Selling, Amazon India said : “We launched our with the aim of helping Indian businesses take their “Made in India” products to million of the active customers across the globe,” through 10 global Amazon marketplace.

Amazon Global selling has witnessed a high interest from leather manufacturers and exporters across country. Considering that there are thousands of such exporters in Kolkata, we see a huge potential for these small & medium scale industries to scale up their export business through B2C e-commerce channel across product categories.

Sanjay Bhatia, President, FICCI CMSME said, “The number of digital 2.07 billion in 2019 from 1.3 billion in 2014. E-Commerce shopping is thriving market, with people increasingly choosing this option to order products and services at their convenience.

Global e-commerce transaction in the year 2016 was USD 1.9 trillion accounting for 8.7 percent of the total retail spending worldwide.

Ramesh Juneja, Regional Chairman, Council for Leather Exports, Eastern Region and MD, JC International said that “E-Commerce has emerged as a preferred mode to reach out to global customers in an efficient manner.”

Leather sector has been recognized as one of the ‘Focus Sector’ both by Govt. of India & Govt. of West Bengal. I am proud to state that around 95% export of Industrial Leather Hand Gloves is from Eastern Region & also contributes a significant share in the export of Fashion Accessories by around 1000 number of exporters.

(Source : Echo of India – 10.03.2018)

BATA HOPES INDIA WILL BE ITS ‘LARGEST MARKET’ IN TERMS OF TURNOVER

Bata Shoe Organization, the holding company of Bata India, is expecting India to be its biggest market in terms of turnover by the end of this year.

Italy currently is the largest market for the company. According to Christine Bata Schmidt, Director, Bata Shoe Organization (BSO), volume-wise India is already the largest market for them. She declined to reveal the global revenue figures for BSO.

“By the end of this year(2018), we expect India to be our largest market in terms of turnover,” she told reporters on the sidelines of a CSR initiative, called Ballerina Project. Under the CSR project, Bata India has introduced specially designed Ballerinas women shoe with illustrations by children from schools adopted by the Bata Children’s Programme (BCP).

With each pair of these special Ballerinas being sold, Bata will provide 65% to the girl child education for one year. The Ballerina Project will be jointly managed by the KC Mahindra Education Trust and Naandi foundation.

According to Schmidt, Bata India is expected to increase focus on its digital presence over the next few years. But, the company will see to it that there is a balance between online and offline presence here.

Online does not mean a discounted model and studies in developed markets have shown that digital sales go up if companies have an offline presence. However, if the store is closed, then there is a decline in sales as the brand goes out from the consumer’s sight.

“Over the next few years, our focus area is going to be digital. We don’t believe that digital should be discounted. It might be the way you shop,” Schmidt said.

(Source : Businessline – 21.03.2018)

ANTI DUMPING PROBE ON CHEMICAL FROM BRAZIL

New Delhi, April 16 (PTI) : India has initiated probe into alleged dumping of a chemical used in paint and leather industry from Brazil, Indonesia and Thailand following a complaint from a domestic player.

The commerce ministry’s investigation arm – Directorate General of Antidumping and Allied Duties (DGAD) – has stated that it has found sufficient evidence of dumping of non-piasticised industrial grade nitrocellulose excluding nitrocellulose damped in Ethanol and waterwet from these three countries.

“The authority hereby initiates an investigation into the alleged dumping, and consequent injury to the domestic industry,” DGAD has said in a notification. In the probe, the directorate would determine the existence, degree and effect of any alleged dumping.

If established that dumping has caused material injury to domestic players, the DGAD would recommend imposition of

anti-dumping duty on the import of the chemical from these nations.

The product is a flammable compound and it is used in the manufacture of wood lacquers, auto refinish paints, leather finishing lacquers, nail varnishes and printing inks. Nitrex Chemicals India Ltd has filed an application for initiation of the probe and imposition of the duty. The period of investigation covers April 2016 ? September 2017 (18 months). However, for the purpose of injury investigation, the period will also cover the data of 2013-16.

Anti-dumping duties are levied to provide a level playing field to local industry by guarding against cheap below-cost imports. Imposition of anti-dumping duty is permissible under the World Trade Organization (WTO) regime. Both India and China are members of the Geneva-based body.

The duty is aimed at ensuring fair trading practices and creating a level-playing field for domestic producers vis-à-vis foreign producers and exporters.

(Source : P T I)

SHOES MADE FROM MUSHROOMS, CHICKEN FEATHERS & TEXTILE WASTE

US researchers have designed biodegradable shoes aimed at helping to tackle the waste that comes from fashion consumption.

Their prototype shoes, which were recently unveiled at the USA Science and Engineering Festival in Washington, were created using mushrooms, chicken feathers and textile waste.

Masters degree student Jillian Silverman and undergraduate Wing Tang, both from the University of Delaware, created a bio-composite material using mushrooms and chicken feathers that forms the sole of their prototype shoe with help from professors Huantian Cao and Kelly Cobb.

The team was invited to take part in the festival after receiving 15,000 dollars (£10,476) in support from the Environmental Protection Agency (EPA). Ms Silverman said : "The fashion industry produces a lot of waste, so sustainability is an issue everyone is trying to address."

"It's hard to believe that people are going to change their consumption habits, but with this shoe, when someone gets tired of it or it wears out, it can go into the compost pile and not the landfill."

The team experimented with different mushroom species, looking in particular at how the mycelium – mushroom roots – forms its network of roots. For the prototype sandals, the

mycelium – which was mixed with chicken feathers and other materials – was grown in a soft mould in the shape of a sole so there would be no waste from cutting it into that shape, according to Prof Cao.

He said : "Chicken feathers were used as a component in the composite shoe sole for three reasons – for providing nutrients for mycelium growth, for providing structural support for the composite and improve composite strength, and for finding a way to utilize the abundant locally available waste, which is costly to dispose of."

Ms Silverman added : "As the mycelium grew outward, it consumed portions of feathers as nutrients while binding the feather fibres together." The team used a type of vegan leather to cover the sole and make it more durable.

Then using discarded scraps from muslin fabric, Ms Tang then designed and made the top of the shoe, gathering the fabric to give it bulk and shape. She said : "I used vegetable dyes and 100% cotton thread."

"The design looks like mushrooms look when they're stacked, and everything is completely biodegradable."

BAN ON SALE OF CATTLE FOR SLAUGHTER GOES

NEW DELHI : The government has withdrawn a ban on the sale of animals for slaughter in livestock markets across the country, in draft rules pertaining to prevention of cruelty to animals.

Once the new rules are notified after consultation with stakeholders, cattle, including cows can be sold in animal markets, even for slaughter wherever it is legal. The old notification mandated declarations by sellers and buyers that the animals would not be taken for slaughter. The move had drawn widespread criticism.

The old notification also had stringent guidelines such as the purchaser of the cattle shall not sell it for slaughtering. Several states had opposed the notification. Kerala approached the centre raising its concern over the issue.

The Madurai bench of the Madras High Court had stayed the notification on livestock market rules. The Supreme Court then stayed the rules in July last year.

Such regulations, however, have now been removed from the new draft, which will be notified as 'rules' after analyzing stakeholders comments later this month. The new draft deals with cruelty aspect of animal sales and specifies 'prohibited practice', including certain 'do's and don'ts'.

For instance, acts such as hot branding or cold branding for identification of animals, shearing of horns, bishoping in horses

and ear cutting in buffaloes, among other "cruel and harmful" practices have been prohibited.

It also states that "no unfit or young animal" shall be sold in an animal market. However, it also dilutes many provisions that were there in last year's rules for not only regulating livestock markets but introducing best practices to minimize cruelty and trace sources of procuring animals to weed out unhealthy ones.

HEALING WOUNDS WITH LEATHER, MEAT WISE

A team of scientists at the Chennai-based CSIR-Central Leather Research Institute (CSIR-CLRI) has extracted protein from discarded animal tissues and demonstrated a better use in the form of wound healing and human tissue engineering.

Tonnes of animal tissues that are rich in collagen protein go waste in the meat industry. The researchers have found that various collagenous tissues available as inedible by-products in abattoirs can be successfully used for the production of collagen-based products for biomedical applications. Collagen has been reported to play a major role in healing of tissues, but their low mechanical strength and fast biodegradation has restricted its use. The research tried to overcome these limitations by incorporating the collagen with another biopolymer, chitosan, obtained from shells of crustaceans.

The hybrid scaffold is specifically developed for highly exuding wounds to absorb the fluid and to keep the wound dry for faster healing.

(Source : Culled from Net)

HC DECLINES TO STAY PLASTIC BAN IN MAHARASHTRA

The Bombay High Court declined on Friday to stay the Maharashtra government's decision to ban plastic materials and asked citizens to dispose of their existing stock within three months.

The court, while giving an interim ruling on a bunch of petitions opposing the ban, maintained it cannot overlook the adverse impact of plastic waste on the environment.

On March 23 this year, the state government had issued a notification, imposing a ban on manufacture, use, sale, distribution and storage of all plastic materials such as one-time-use bags, spoons, plates, PET and PETE bottles and also thermocol items.

The notification gave a period of three months to the manufacturers, distributors and retailers to dispose of the existing stock of the banned items. Consumers and users were, however, given only a period of one month to dispose the same.

The notification was challenged in the high court by plastic, PET Bottle and thermocol manufacturers and retailer associations on the ground that the ban was arbitrary, bad in law and violates their fundamental right to livelihood.

(Source : P T I)

MW MARCH 2018 (Bata)

The new premium range by Bata comprises of the European collection. Ambassador by Bata as well as Hush Puppies Moccaasins and is a great option when you want to transition seamlessly from an office to a party look. The brand has stood for impeccable quality for over eight decades, and has been the pioneer of classic dress and formal footwear. While blacks and browns are the usual pairs, this collection offers stylish pairs in various offbeat colours as well. Styles include oxfords, brogues, derbies, loafers and more.

CENTRAL PACKAGE TO BOOST LEATHER, FOOTWEAR EXPORTS

The leather and footwear industry is expecting the recent central government announcement of a Rs.26 billion package for the sector to help currently stagnant export to see growth. However, they add the time given is short and the government is yet to release Rs.5 billion from the previous scheme.

The government has approved a special package for employment generation in the leather and footwear sector, C R Chaudhary, minister of state of commerce and industry, said in Rajya Sabha on Thursday.

Dilip Kapur, President & Founder of Hidesign, a premium leather goods maker, said the biggest issue was labour laws which encourage one to sub-contract (with issues of poor quality), rather than add to one's roster.

"We are glad they (government) are thinking about us but usually government schemes are too complicated and stuck in procedural headaches," he said.

The package involves implementation of an Indian Footwear, Leather & Accessories Development Programme, with approved expenditure of Rs.26 billion over 2017-18 to 2019-20. It would help address two major problems, including that of raw materials, says Israr Mecca, Regional Chairman (South), Council for Leather Exports.

The package supports backend investments through a grant/subsidy at 30 per cent of the cost of new plant and machinery to micro, small and medium enterprises (MSMEs) and at 20 per cent to other units for modernization/technology upgrade and also for setting up of new units.

The other assistance is provided for upgrade/installation of common effluent treatment plants at 70 per cent of the project cost.

The package also envisages training 200,000-300,000 people. "People need to be trained at the factories," said Farida Group Chairman m Rafeeqe Ahmed. "Many MSMEs could not invest in capacities due to capital crunch because of delay in reimbursement of goods and services tax. Around Rs.5 billion has been stuck from the previous scheme."

Ahmed and Mecca feel the package will increase leather and footwear export by four to five per cent from the current annual one per cent growth.

"We will be more price competitive, since most of the cost, including important components like raw material and labour, will be observed through this scheme," said Mecca.

(Source : Business Standard, New Delhi – 08.04.2018)

BATA LAUNCHES FIRST EXCLUSIVE 'POWER' SPORTSWEAR STORE IN NOIDA

TSN / New Delhi : Global footwear giant, Bata, riding on India's growing demand for footwear that supports a healthy and active lifestyle, has launched its first exclusive store for Power – its international sportswear brand. The first store is located at the favourite shopping hub of Noida within Great India Place Mall. Alexis Nasard, Global CEO, Bata Shoe Organization and Rajeev Gopalakrishnan, President, Asia South were joined by fitness enthusiast and Bollywood star, Diana Penty.

The 750 sq. ft., spacious high-tech store, will cater to the increasing demand for active lifestyle with a range of shoes, apparel, bags, and accessories.

"Designed in Canada, Power is an iconic brand world over, and building exclusive retail touch points for Power with an international retail environment is a key aspect of our growth strategy. The active lifestyle trend across India presents a big opportunity for the Power brand. The choice of India for our global launch of Power sportswear format tells of our long-lasting commitment to the Indian market," said Alexis Nasard, Global CEO, Bata Shoe Organization, at the launch.

Creating a new-age, high-tech retail experience, the store has six high-tech merchandise display walls with a large LED Panel and blue LED lights that lend an attractive yet clean and minimal look to the store. Power's newest range – XO Rise (Running shoes with 25 per cent more rebound) and Glide Vapour (sock-fit light-weight walking shoes with memory foam) are some of the new and exciting collections available at the Power store. In addition, the Power apparel comes with unique technologies like Activent (mesh area for breakthrough

breathability), pWick (wickable fabric for moisture management) and pSoft (natural cotton for casual comfort) to give comfort and style during fitness routines.

"Over the last few years we have witnessed a change in the Indian consumer, who is becoming more focused on leading an active lifestyle. This has spurred a demand for international running and training footwear. Exclusive Power stores shall enable us to fulfill this growing demand by delivering world-class products in an unmatched retail environment. We are supporting this new brand initiative, through our latest 'FIND YOUR POWER' campaign which features celebrity Indian cricketer Smriti Mandhana who has been an inspiration to scores of young Indians for adopting an active and fit lifestyle" said Sandeep Kataria, Country Manager, Bata India.

"It is a pleasure to be associated with Bata to unveil this first & exclusive 'Power' store in India. I personally give a lot of importance to fitness and the right pair of shoes is critical for that.

(Source : Top Story – New Delhi, 2018)

GST REFUNDS STILL AN ISSUE FOR LEATHER EXPORTERS

Swathi Moorthy, Chennai, March 27 : Though liquidity crunch is easing for leather exporters, GST refunds continue to be a challenge for some, even nine months after its implementation. Lack of clarity and inability to afford professionals, especially by smaller players, is a major issue.

Challenges

Ajay Sahai, Director General and Chief Executive Officer, Federation of Indian Export Organisation, said that for small and medium companies, a substantial portion of the refunds is locked in GST and they continue to face liquidity crunch. Unlike the bigger players, who have access to the domestic market, these companies solely depend on exports. Siddiq Ahmed, who handles finance for a small shoe manufacturer, agrees.

Though refunds have started coming in, they are still suffering from liquidity crunch. The company does business worth Rs.3 crore annually, which requires a working capital of Rs.1.5 crore.

"Earlier close to Rs.70 lakh were stuck in refunds," he added. Though the initial liquidity crunch has eased, they still have a hard time catering to the order of 35,000 pairs of shoes. With not many banks willing to come forward to give them loans, they now find themselves in a tight spot.

Issue of LUT

Israr Ahmed Mecca, Regional Chairman – South, Council for Leather Exports (CLE), said : "There are two parts to getting

GST refunds – automated refunds and letter of Undertaking (LUT).” In the case of the former, refunds are processed in a matter of a month if your documents and bills uploaded in the GST platform are right. The challenge is getting refunds through LUT route.

Under GST, Leather was levied a tax of 5-28 per cent, with raw materials coming under higher tax bracket than products. For these products, exporters have to take the LUT route. Around 30 per cent of the exporters of finished leather come under this category and are unable to get refunds. Finished leather accounts for about 15 per cent of the total exports.

“We have to submit the documents manually to get refunds. This takes longer time as there is not enough clarity about the process,” he said. P R Aqeel Ahmed, Vice Chairman, CLE, said even consultants and auditors need to be trained. The CLE is working with FIEO to educate the exporters, he added.

“These issues are impacting auxiliary service providers as well. The demand for spare parts has reduced by half,” said K Rajasekaran, owner of Ramya Engineering Works and executive member, Ambur Consumer Council. Most spare parts have come under the 28 per cent tax slab as opposed to 14.5 per cent in the previous tax regime. Due to cash crunch, companies that stock up are doing it sparingly. “For example, in the place of 10 orders, I’m getting orders only for two,” he explained. His turnover is likely to come down to Rs.20-25 lakh from Rs.35-40 lakh last year.

(Source : Business Standard, New Delhi – 28/03/2018)

BATA HOPES INDIA WILL BE ITS ‘LARGEST MARKET’ IN TERMS OF TURNOVER

Our Bureau, Kolkata, March 20 : Bata Shoe Organization, the holding company of Bata India, is expecting India to be its biggest market in terms of turnover by the end of this year. Italy currently is the largest market for the company.

According to Christine Bata Schmidt, Director, Bata Shoe Organization (BSO), volumewise India is already the largest market for them. She declined to reveal the global revenue figures for BSO.

“By the end of this year (2018), we expect India to be our largest market in terms of turnover,” she told reporters on the sidelines of a CSR initiative, called Ballerina Project.

Under the CSR project, Bata India has introduced specially designed Ballerinas women shoes with illustrations by children from schools adopted by the Bata Children’s Programme (BCP).

Digital initiatives

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According to Schmidt, Bata India is expected to increase focus on its digital presence over the next few years. But, the company will see to it that there is a balance between online and offline presence here.

Online does not mean a discounted model and studies in developed markets have shown that digital sales go up if companies have an offline presence. However, if the store is closed, then there is a decline in sales as the brand goes out from the consumer’s sight.

“Over the next few years, our focus area is going to be digital. We don’t believe that digital should be discounted. It might be the way you shop,” Schmidt said.

(Source : Businessline, New Delhi – 21/03/2018)

PURE SOPHISTICATION - GLAZED LEATHER

DR. G. PISI, Managing Director, Fenice S.p.A.

The by-product of human nourishment becomes a prestigious object of high aesthetic value and appeal thanks to the wise application of advanced technology.

In life there are things capable of transmitting intense emotions that words cannot express. This is the case of a Porsche car, a suit by Ferré, Miss. Campbell's movements. This is also the case of a bright glazed leather.

Bright, transparent, natural, prestigious, delicate to the touch, attractive, long-lasting; it absorbs care creams well and it perspires with users' great benefit.

In this moment India is the world's greatest producer of glazed leather. This predominant position was Italy's until ten years ago; the subsequent restriction on wet-blue and crust exports, together with the differential in the production costs, made Italian production less interesting. As a consequence, India which was Italy's main supplier of crust leathers, won the first position in the market.

Glazed leather is made on chrome-tanned or semichrome-tanned sheepskins, goats, kids, calves and bovine sides destined to be used for leathergoods.

"My father sent me to the nearby farm every evening to buy some fresh milk. It had to be as fresh as the milk used in our kitchen, otherwise it would have left a bad smell on the leathers.

Back in our tannery, we applied the milk, with a natural sponge, on the leathers previously hand-dyed and dried.

JILTA JAN. 1999

We then left them lay over the horse until the next morning.

The day after we glazed the leathers by using a strong polished stone thus obtaining a high aesthetic result and an excellent handle".

"Here, it is chemistry's essence connected with the mechanical glazing process," as told me by a friend from Graulhet France.

The average composition of milk is: casein and albumen 3.5%, plasticising fats and those increasing the smoothness of the friction agent 3.4%, lactose 5% and the rest is water. The use of these fresh products avoids the need for preservatives.

Today high standards of excellence have been achieved; differences among finished leathers are minimal. The hundredth of second that selects the champion in several sports, corresponds and illustrates how critical small differences are to the world of leather and chemical specialties. This, in particular, is the case for glazed leather articles for which working technologies have been highly implemented, the demand has become very specialised and the fight without quarter.

A leather which is a little brighter, slightly more transparent, just a bit more natural, whose handle is somewhat better makes a huge difference.

The oldest known glazed finishing

50

process was the following: hand dyeing, use of bright natural binders, glazing by hitting and stretching done with a proper tool (usually a tough polished stone).

This simple kind of finishing, which is destined for high class natural-looking and very bright leather can now be obtained by using a glazing machine. This simple machine utilizes the hitting and stretching actions of a glass or steel cylinder on the leather laid on a flat steel base whose pressure is adjustable.

A jack arm slides onto the leather at 90-120 strokes a minute. The best glazing machines have a wooden jack arm that guides the glazing cylinder; that is to say that these machines are elastic, capable of slightly adjusting themselves to the surface and to the thickness of the leather. During the glazing operation the surface of the leather reaches a temperature of about 120°C; changes in temperature depend on the working pressure and on the frequency with which the leather is exposed to the strokes.

The finishing of goat and kid skins usually require that the glazing operation is performed twice: the first glazing is done with low pressure on the base plate, and with wide space between each stroke on the leather; the second glazing, performed after several finishing coats, needs higher pressure

on the base plate and strokes much closer together on the leather.

Today it is preferred to glaze calf skins only one time, not to run the risk of moving the delicate grain which could crease less elegantly.

The critical elements in a good glazing process are :

1. Selection of chemicals, where each thermoplastic auxiliary must be avoided or introduced in very small quantities;

2. The leathers must be adequately prepared, that is to say properly selected, fatliquored and retanned for this particular finishing;

3. The leather must be properly extended and flatten, its thickness must be regular with the flesh side that allows the leather to flow under the glazing machine. Moreover, leathers must be buffed if not previously well shaved and shimmed.

The binders used to create the thin, very bright

finishing coat are of a natural type.

The protein-based finishing film originates from a minimum thickness of about 3-5 m while films based on synthetic polymer binders vary from 20m thickness of polyacrylates to 40-50 thickness of polyurethanes.

The natural appearance and handle that gives a thin film and the pleasantness to the touch make protein binders the absolute masters of the situation.

The oldest known glazed finishing process was the following: hand dyeing, use of bright natural binders, glazing by hitting and stretching done with a proper tool (usually a tough polished stone)

Protein binders are not thermoplastic, so they grant an excellent behavior and easy workability of the leathers subject to glazing which are smooth, without striations and very bright.

Protein binders are externally plastified polymers, that is to say their elasticity depends on the addition to the system of substances with a lower molecular weight.

Some protein product are plastified internally, their effect is permanent; the migration of plasticizing substances inside the leather, by osmosis, that is to say by capillary absorption, is avoided. This is the case of FENICE's product DC 147.

Remember that the thin films of the plastified protein glazing agents, which form discontinuous films, even in the case of partial migration of the plastifiers due to the leather's aging, will not produce any noticeable inconveniences.

Natural polymers largely employed in protein-based finishings are :

1. Casein, dissolved in water with weak alkali like borax, ethanolamine or ammonia, and added with specific preservatives. This is the most important binder, the basis for any recipe.
2. Modified caseins through solubilization, in presence of amidic substances, change permanently the film's brightness and flexibility that will become lighter in shade and not thermoplastic.
3. Blood or egg albumen solubilized in their turn into water

with weak alkali and preservatives.

4. Gelatins and glues, like fish glue, fix poorly with formalin and reduce the wet fastness of the finishes.
5. Mucilages, where the most important subjects are linseeds soaked in water.
6. Shellac dissolved with weak alkali, does not require any fixing agent and links very well with nigrosine used for black tones.

Caseins' external plasticizers are numerous. They can be: glycerin, polyglycols, sodium sulfated castor oil or neatsfoot oil.

Commercial casein is a protein product of about 87%; it probably contains calcium phosphate, and fats of about 1-2%, the rest are traces of cinders and humidity of 7-10%. Its isoelectric point is at pH 4.5 so its solubility into water is minimal at this value. Solubility can be increased if pH is raised over 8 with weak alkali that don't hydrolyze proteins, or with weak acids near pH 3-3.5 if preparing cationic binders.

Caseins in alkaline solution are the most common. For their very nature, they are insolubilized and therefore fixed by the chemical button formalin or by other aldehydes, or by weak acids such as acetic acid or formic acid, in the fixing mixture.

Heavy metals also play an important role in the precipitation of the proteins and, therefore, are able to increase the fixation of casein films. Chrome sulfate, for example, is proven

to be a very effective co-fixing agent.

Previously, the finisher carefully added some formalin to the water solutions of an anionic casein finish.

If casein has been solubilized with ammonia, compatibility and very long pot-lives are obtained because formol forms hexamethylenetetramine when reacting with ammonia, this latter is a low reacting agent with casein. It is a good habit to dilute the formalin, in water and ammonia, before adding it to the prepared finishes.

When methyl and benzyl alcohols could be freely used, their addition to formalin-based fixing agents and acid and/or chrome salt, was suitable to swell the casein film which consequently had a higher fixing power.

The fixation process of protein films, to be glazed, is fundamental to obtain finishes which are wet-rub resistant and more suitable for the hard process of mechanic glazing.

Sometimes the finish's insolubilization is not satisfactory. This can be caused: by old formalin, partially polymerized; by inadequate wetting of the film; by the leather being too dry, below the ideal 18% humidity degree; not enough rest given to the leather after the fixing coats were applied or the leather was dried too quickly.

Formalin completes its action 24 hours after drying. FENICE's formalin-free fixing product is FIXOGEN and completes its action in the same time.

Egg and blood albumen are protein substances which are obtained respectively from the white part of the egg and from serum. Both are soluble in water, slightly alkaline and precipitate in an acid environment.

Albumen has an isoelectric point at pH 4, which is their lowest solubility point.

Albumen, the contrary of casein, becomes insoluble when temperature is over 60°C, they coagulate, therefore, solutions containing them should not be heated over 40-45°C.

Egg albumen is obtained from eggs: to get 1 kg. of dry albumen, 200-250 eggs are needed; albumen is present in the egg at 60%.

Albumen is used in small quantities in casein finishes and gives them more brightness and transparency.

It is suggested to use albumen in small quantities because of its hardness, which could cause dry wrinkled folds. FENICE's product that avoids this inconvenience is DC 206.

Blood albumen is usually employed in black finishes because it increases their tone and brightness. Animal blood coagulates on contact with the air and generates a red-brown solid of white and red corpuscles, hemoglobin and platelets. The remaining liquid called serum is yellow and contains 10% of albumen and 90% of water. Separated albumen will always have a color that makes it suitable for dark or black tones.

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ILTA
Since 1950

The trade mark EMOPAN is FENICE's product derived from preserved blood.

Gelatins are obtained from alkaline hydrolysis of pelt pieces while glues are obtained from leather and fleshings that usually are not very clean.

Gelatins are produced by hydrolysis of peculiar parts of fish such as the sturgeon's swimming bladder, but are carefully washed and pulled out so they can be used also as food.

However, gelatins and glues are considered fragile and achieve poor wet fatness which is not acceptable today; moreover, they increase the solution's viscosity with a poor penetration into the finishes, but they create a beautiful brightness and stick exceptionally well to the leather.

Casein is the best protein to be used in protein finishings. It is used as a pure alkaline water solution, thick, not modified. It is medium-hard, bright, filling and fixes very well with aldehydes. FENICE's product is DC 201.

In the modified polyamide version, casein forms a lighter film, more extensible brighter, better to the touch and of the same fixability.

FENICE's product are: DC 147, AR 650, DC 153.

When wax and oil emulsions are added to solutions of modified casein the products thus obtained are more suitable for use; softer, better to the touch, more elastic or more stretching resistant during shoes lasting.

These kinds of finishes repolish

well after occasional wetting-backs or stretching and restore the original brightness.

Products of this kind are: DC 27, the softest DC 217, DC 103, DC 146, BRILLANTE 1, BRILLIANT 7, DC 188.

Sometimes in basecoats hard wax emulsions are added that do not melt completely during glazing and are used as fillers and feel-modifiers. The two better waxes for this aim are carnauba and candelilla. They melt at about 70°C and are medium hard and medium bright. FENICE's special emulsions are: DC 211, DC 108, DC 228, DC 209, DC 191, DC 1000/C, DC 346.

Synthetic superior waxes are sometimes used, such as PTFE waxes which are of a great smoothness, handle and resistance. This kind of product is our DC 182.

Small quantities of suitable synthetic polymers can be added to prebottomings and in bottoms coats of leather to be glazed, even if slightly thermoplastic. It deals with selected formulated polymers: they can have an acrylic nature such as DC 071, DC 210, DC 511, or a polyurethane nature such as FENICE's GLAZING BINDER.

Let's conclude with a remark on the structure of the glazed finishing. After a gentle snuffing of leathers, that today is the habit, a first soft glazing is done. A subsequent glazing and application of hard dressings follows. Their hardness increases with the addition of the applications. The final glazing and finiflex plating will show the painstaking construction.

Typical recipes for glazed leathers, suggested by FENICE :

Analytic recipe for a black aniline, glazed BOXCALF. This recipe comes from a famous tannery, well-known for the quality of its products :

FINISH	Dried %	Quantity
Casein alkaline solution	10	25
Shellac solution	10	25
Egg albumen	10	15
Carnauba wax emulsion	10	15
Marseilles soap (sodium oleate)		3
Pure neatfoot oil (-10°C) (emulsified differently)		3.4
Preserved blood		100
black nigrosine in powder		13
Violet nigrosine in powder		2
Water		up to 1000

PROCEDURE

Leathers acidifications by pad with :

Black nigrosine	6
Oxalic acid	15
Denatured ethyl alcohol	50
Water	up to 1000

Air Dry at 25-30°C, let rest overnight.

A finishing padding, dry warm, let rest overnight.

The following day is the first glazing, medium pressure and large bands.

JILTA JAN. 1999

A finish padding, dry, 2 crosses of finish to which 250 gr./l of formalin or FIXOGEN are added.

Let rest 3-4 hours, plate at 80°C 200 atm, let rest one night, dry warm again, second glazing with high pressure and tight bands.

Let rest overnight, the next day lozenge grain. Hand plating.

ANTOLOGY OF FENICE S.p.A.

GLAZING SPECIALITIES :

Prebottomings

DC 223	an impregnation oil, used for a better leather reactivity to glazing, an easier repolishing after lasting and for a more delicate grain pattern.
DC 071	glazable acrylic binder
GLAZING	glazable polyurethane
BINDER	binder
DC 210	partially polymeric glazable prebottoming for buffed leathers

Basecoats binders and auxiliaries

DC 130	protein plasifier pure oil
DC 132	hard and bright natural waxes
DC 158	protein synergistic plastifiers
DC 182	polyamides, waxes, PTFE waxes
DC 191	synthetic wax
DC 211	carnauba wax
DC 217	polyamide, plastifiers, waxes

DC 27	more waxy and less plastified preparation than DC 217 of which repeats the other peculiarities	DC 188	flexible polyamide, waxes, it repolishes very well
DC 228	plastified polyamide and waxes, medium hard	DC 206	modified albumen
DC 220	medium-hard polyamide. It is softer than DC 250 of which repeats the other peculiarities	DC 147	very glossy polyamide, elastic, excellent glazability
DC 250	bright medium hard polyamide with an excellent fixability	DC 195	PTFE hard polyamide
DC 222	synthetic oil emulsion	DC 511	polyamide and glazable synthetic binders
DC 226	repolishable leather wax and darkener	Fixing agents	
DC 346	very hard natural waxes	FIXOGEN	water-based solution of aldehyde compounds, formalin-free
AR 650	special fixing agent for colors, plastifier, it increases repolishability.	Special products for black	
Final glazing agents		EMOPAN	preserved blood
BRILLANTE 1	polyamide and carnauba	DC 141	black covering basecoat
BRILLIANT 7	polyamide, noble protein and waxes	DC 166	hard and bright final finish, specific for black
		DC 192	black finish
		DC 369	special nigrosine and dyestuffs solution

LESSON ON LEATHER GOODS – Part V

Shome Nath Ganguly

Former Principal of Karnataka Institute of Leather Technology

(The purpose of this article is to advise the students as well as artisans engaged in leather goods industry.
Shri Puranjan Mazumder of FREYA helped me to prepare this article)

PORTFOLIO AND PADFOLIO



Ladies Portfolio



Gent's Portfolio

Portfolio Bags are usually rectangular. It has a top handle & a strap which is attached to both ends of the bag. It has a flap or zip covered over the top of bag which protects the content carried in the bag. This bag can be used for carrying books, files and other items used for work. It can also be utilized to carry Laptops and is often used as a Laptop bag. Simple definition of portfolio is a flat case for carrying documents or drawings or paintings or photographs that are presented together in a folder. It is a flat, portable case, usually made of leather, for carrying loose sheets of paper, manuscripts, and other useful documents.

What is the difference between a Padfolio and Portfolio ?

Padfolios and Portfolios are two slightly different objects. Before discussing the differences, we will discuss about their similarities. Both the type of bags (Padfolio and Portfolio) are available in a variety of materials. Leather being the most popular materials among all others. Both the folios have sufficient space to hold papers, confidential notes & legal documents. These bags have additional space to keep pen, pencil, highlighter, calculator, mobile phone, iPads, iPods etc. These bags have become an essential item in the business world. It is increasingly becoming a very popular as a gift item for seminar & conventions.



PAD FOLIO

Portfolios are generally viewed as types of briefcases. They were designed for carrying by hand or in shoulder. It has two handles at the top. Some Portfolios have a zipper that runs from top to the bottom to allow easy access. Portfolios are available in small as well as large sizes. The larger versions have carrying straps or longer handles so that they can be carried over the arm like messenger bags or purses. Larger portfolios are often used by artists and models to show their artwork or pictures to potential clients.

Padfolios do not have handles at the top because they are meant to be hand held, carried in arm. They are available in two sizes, letter size and legal size. This refers to the size of the Padfolio when it's closed. The letter size fits standard-sized pieces of paper, while the legal size holds a standard-sized legal pad. Some Pad folios have zippers, and some do not; many have a buckle-type closure on the front instead.

There are also inner structural differences between Padfolio and Portfolio. Portfolios are typically larger & thicker because they are designed to hold many items. Many of them are accordion-style to accommodate more than just papers. On one side of the portfolio there is space for a steno or a legal pad, and on the other side there are extra pockets used to store miscellaneous office items.

Generally, Padfolios are thinner and lighter in weight because they are designed to contain "flat" items like paper or notebooks. They have the same space on one side for a notepad or a legal pad, but instead of having extra pockets like portfolios, they usually have only one pocket. This pocket is large enough to store a thin file or several extra sheets of paper. However, there are some versions that have small storage compartments for pens & pencils.

It is very easy to become confused when shopping for either a Padfolio or a Portfolio! If you're not sure which you need, it's helpful to consider the items you'll be transporting. If you need a quality item to carry to a seminar to take notes (or to encourage others to take notes), the Padfolio would probably be a good choice. The largest available Padfolio is less than one foot long, so it would be a lesser load to carry for an occasional business meeting. If you need a personalized gift for an executive that is constantly on the run, then a Portfolio may be a better option because of its zip-up feature. Portfolios are available in the standard and the smaller sizes, but they can be two-feet-long or even larger to accommodate a variety of useful business items.

GST ENERGIZERS ON WAY

The GST Council at its next meet will focus on simplifying returns, incentivizing digital transactions and turning the GST Network (GSTN) into a majority-owned government entity.

The 27th meeting of the council, comprising state finance ministers, will meet through video-conferencing on May 4.

Measures to simplify returns to boost compliance have been on the cards for a long time. In March, the council had held discussions on the two models of GST returns and suggested that the group of ministers work on further simplification.

The official said an amendment to the law would also be taken up once the council clears the new return format. One of the models presented before the council suggested provisional credit should not be granted unless the taxpayers file returns and pay the taxes. The second model stated that provisional credit can be granted to a taxpayer, but returns must be filed within three to four months.

After consulting with the stakeholders, the GoM earlier this month worked out a third model for returns under which credit could be extended once the invoice uploaded by the supplier is verified by the purchaser on the GSTN portal.

M. S. Mani, partner at Deloitte India, said, "In deciding the various return simplification models, it should be ensured that the buyer is not prevented from taking input tax credits on account of the seller's non-payment of tax, leading to working capital blockages."

Digital incentive

Proposals to encourage digital transactions are likely to be placed before the GST Council, chaired by finance minister Arun Jaitley.

According to the proposal being worked out by the revenue department, consumers paying through the digital mode would be offered a discount over the maximum retail price. The discount will be capped at Rs 100. Businesses, on the other hand, could get a cash-back based on the turnover through the digital mode.

GSTN ownership

Earlier this month, Jaitley had asked the revenue department to examine the possibility of converting the GSTN into a firm promoted by the government. This has been a long standing demand from several quarters who have argued that sensitive data, which the GSTN is handling, should be under government control for safety reasons.

(The Telegraph - 02/05/2018)

PUBLIC PROVIDENT FUND : WHAT TO DO WHEN YOUR PPF ACCOUNT MATURES ?

A PPF account matures at the end of 15 years. The question is what are the options left for you when your PPF account matures? Public Provident Fund (PPF) has been a very popular mode of small savings for Indian investors. There are a variety of reasons for its popularity. Firstly, it is backed by the government and, therefore, the principal and interest are guaranteed. Secondly, the interest is entirely tax free in your hands. So even at the current low rate of 7.6% on PPF, the investment is still attractive. Thirdly, "the amount invested by you in PPF qualifies for tax exemption under Section 80C of the Income Tax Act. Lastly, the maturity amount is entirely tax-free in the year of redemption. It is these tax benefits that make the PPF attractive," says Vaibhav Agrawal, Head of Research and ARQ, Angel Broking.

The PPF matures at the end of 15 years. The question is what to do when the PPF matures? There are 3 options for you when your PPF account matures:

1. You can extend the PPF account without additional contribution

This is the default choice in PPF. If you don't select any other option, then by default your PPF on maturity gets extended for a period of 5 years without additional contribution. While you can extend only for a block of 5 years, this extension can continue as long as you want. You continue to earn the tax-free interest on the PPF. What is more, you can also withdraw the amount any time you want.

2. You can extend the PPF account with additional contribution

Remember, when your PPF account matures, you need to specifically fill up Form H for extending the PPF account with contribution. Like in the previous case, you can keep extending your PPF for blocks of 5 years. But make sure that you submit this Form H to extend the PPF account with contribution within 1 year of your PPF maturity. "If that is not done, then you do not get Section 80C benefits on your contribution nor do you earn interest on your additional contribution. Opt for Form H carefully because once you opt for the PPF account extension with contribution, you cannot go back to the previous option," says Agrawal.

3. Close the PPF account on maturity of 15 years

In PPF, the interest is not paid out regularly but it is accumulated in your PPF Account. When you withdraw, you get the principal and interest component without any tax liability. Once you opt for withdrawal, you can either withdraw the money in lump-sum or you can withdraw in installments over a maximum period of 12 months. In case you do not specifically apply to close the PPF account it will, by default, get extended for 5 years with "No Contribution".

What to do with the PPF corpus?

That is an interesting question. There are a variety of options. Firstly, if you are looking at safety and stability, you can invest the money in a debt mutual fund. Secondly, "if you are looking at immediate liquidity, you can opt for liquid funds. Alternatively, if you are still looking at wealth creation, then you can invest the sum in a liquid fund and sweep a fixed sum each month into equity funds. You get the best of both worlds," informs Agrawal.

So, whatever you do, the choice is entirely yours!
(Financial Express – 26/04/2018)

SPECIAL RS. 26 BN. PACKAGE TO BOOST EXPORT OF LEATHER PRODUCTS / FOOTWEAR

Industry insiders believe the package will help increase exports by 4-5%

The leather and footwear industry is expecting that the Rs 26-billion special package announced by the governed recently, will help the stagnant sector grow by easing the pricing pressure.

However, they feel the time duration of the package is short and say around Rs 5 billion from the previous scheme is yet to be released by the government. The package involves the implementation of the central sector scheme 'Indian Footwear, Leather & Accessories Development Programme (IFLADP)' with an approved expenditure of Rs 26 billion over the three financial years from 2017-18 to 2019-20.

The government has approved a special package for employment generation in the leather and footwear sector, announced Minister of State of Commerce and Industry, C R Chaudhary in the Rajya Sabha on Thursday.

It may be noted, originally it was expected the package would be over Rs 40 billion. Industry representatives opine that the outlay was also brought down as the duration has been reduced.

The scheme would help address two major problems including that of raw materials, says Israr Mecca, regional chairman (South), Council for Leather Exports. It supports backend investment through a grant/subsidy at 30 per cent of the cost of new plant and machinery to Micro, Small & Medium Enterprises (MSMEs) and of 20 per cent to other units for modernisation /technology upgradation in existing units and also for setting up of new units.

The other assistance is provided for upgradation/installation of Common Effluent Treatment Plants (CETPs) at 70 per cent of the project cost.

Firstly, these two schemes would help address the raw material challenges. The second major challenge which will be addressed is shortage of human resource. The scheme envisage to train around 200,000-300,000 people.

Farida Group Chairman M Rafeeqe Ahmed agrees adding that one major challenge is that people need to be trained at the factories. Since many of the MSMEs could not invest in capacities following the capital crunch owing to delay in the reimbursement of GST, around Rs 5 billion has been stuck from the previous scheme.

Both agree that the scheme will increase leather and footwear exports, currently at \$6 billion, by around 4-5 per cent compared to mostly flat or around one per cent growth presently.

"We will be more price competitive now since most of the cost including raw material and labour, which are important components, will be helped by this scheme," said Mecca.

Exports of Indian Footwear and Leather Manufacturers		
Year	Exports (in million dollars)	
FY10		3381.34
FY11		3913.82
FY12		4806.63
FY13		4883.92
FY14		5722.54
FY15		6195.21
FY16		5554.34
FY17		5308.3
FY18(Till Feb)		4989.67
Data Source: DGCIS Kolkata		
Compiled by BS Research Bureau		

(Business Standard – 07/04/2018)

-: JILTA :-

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