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Fair News from the Fairs **Editorial**

A high level international participation in the Italian Fashion Events, **Micam Milano, Mipel, Milano Fashion & Jewels, TheOne Milano, Lineapelle & Simac Tanning Tech,** held in the mid-September, 2026 at Fiera Milano, Milan, Italy, proved that the unified strategy as highly successful. The events in all attracted over 37,000 professional visitors which included significant number of visitors from overseas countries, mainly from key European markets which include, Spain, Germany, France, Turkey, Greece, Poland and also from international markets such as China, the USA, Japan, Nigeria and South Africa.

The edition put the spotligtht on evolving buyer journey, reflecting changing market dynamics and sourcing preferences, To support the journey, the fairs developed digital tools, matchmarking platforms, in-depth content, training sessions and catwalk shows, each adopting approaches tailored to their respective markets.

The 108th edition of Lineapelle hosted 1,029 exhibitors and recorded the attendance of 22,800 professional visitors, including more than 17,000 buyers, with 43% of attendees coming from abroad, representing 114 countries. This shows an increase of 10%, compared with the benchmark September 2025 edition.

According to the organisers, “This result **is particularly significant in light of an economic and commercial environment that continues to require the supply chain to exercise caution**, demonstrate responsiveness and seek new perspectives”.

Although Lineapelle reflected the challenges facing the global leather and materials supply chain, the organisers **also identified signs of improving market sentiment** in 2026. Against this backdrop, the fair emphasised the importance of maintaining industry relationships and preparing for ongoing sector-wide changes.

So also, the 26th edition of All China Leather Exhibition (ACLE), held on 1-3 September 2026 in Shanghai, despite recent global macroeconomic pressures and localised industry downturns, recorded the attendance of over 32,000 professional visitors and buyers and the fair was viewed as a casual networking event and an indispensable gateway to revitalize cross-border trade.

CSIR Transfers Technologies for Sustainable Leather Processing and Safer, Greener Roads to Industry

The Council of Scientific and Industrial Research (CSIR) organised a Technology Transfer Event at CSIR Headquarters, New Delhi, on 16th September 2026, bringing together technologies developed by CSIR-Central Leather Research Institute (CSIR-CLRI), Chennai, and CSIR-Central Road Research Institute (CSIR-CRRI), New Delhi, for transfer to industry.

The event, held at the SSB Auditorium, CSIR Headquarters, included presentations of the technologies by the two laboratories, followed by their transfer to industry. Dr. N. Kalaiselvi, Secretary, Department of Scientific and Industrial Research (DSIR) and Director General, CSIR, addressed the gathering. The programme also included remarks by the Directors of CSIR-CLRI and CSIR-CRRI.

The technologies showcased for transfer reflect CSIR's continuing emphasis on taking laboratory-developed solutions towards industrial deployment and addressing challenges relating to sustainability, circular economy, waste utilisation, road safety and infrastructure.

CSIR-CLRI technologies turn industrial waste into valuable resources

CSIR-CLRI presented a technology for producing protein-based syntans from chrome shavings, addressing an important waste-management challenge of the leather industry. Chrome shavings are a non-biodegradable solid waste, but they contain valuable collagen protein that often remains underutilised. The CSIR-CLRI process recovers chromium-free protein hydrolysate from this waste and converts it into acrylic-, phenolic - and melamine-based syntans that can be reused in leather retanning.

The technology has been demonstrated at the 100–200 kg pilot scale and validated at a commercial scale of 1,500 kg. According to CSIR-CLRI, its adoption can lead to up to 50 per cent reduction in total dissolved solids (TDS) in the post-tanning stream. The patented technology has been industry-validated and is ready for commercial licensing.

Another CSIR-CLRI technology focuses on the sustainable valorisation of spent pickling acid, a highly acidic waste stream generated during steel processing. The process enables recovery of iron and chloride from spent pickling acid and their conversion into value-added products, including pigment-grade iron oxide and ammonium chloride.

The technology seeks to convert a hazardous industrial waste into commercially useful products while reducing environmental pollution and strengthening domestic manufacturing. It is aligned with circular-economy principles and contributes to Sustainable Development Goals relating to clean water and sanitation, industry and innovation, and responsible consumption and production.

CSIR-CRRI technologies address road safety and pothole repair

CSIR-CRRI presented two technologies for transfer to industry: ClariVisor – A Glare Mitigation Device for Four-Wheelers and a Two Pack Onsite Pothole Filling Mix.

ClariVisor is designed as an in-vehicle glare mitigation solution for four-wheelers. The technology has been designed for fitment within the same footprint as the vehicle's original equipment manufacturer (OEM) sun visor, without requiring structural changes to the vehicle.

The Two Pack Onsite Pothole Filling Mix offers a cold-application approach to road repair. The material is supplied in two separate packs for on-site blending and immediate application. Unlike conventional hot-mix approaches, it does not require a hot-mix plant or heating, thereby reducing energy consumption and emissions. The technology is solvent-free and enables faster repair and early reopening of roads to traffic.

The technologies being transferred build on CSIR-CRRI's wider portfolio of innovations in sustainable and resilient road infrastructure.

Addressing the gathering, Dr. N. Kalaiselvi emphasised the importance of accelerating the translation of CSIR technologies from laboratories to industry and ensuring that scientific research delivers tangible societal, environmental and economic impact. The DG, CSIR highlighted that stronger partnerships between CSIR laboratories and industry are essential for scaling indigenous technologies and enhancing their reach and impact.

The Technology Transfer Event underscores CSIR's focus on strengthening industry partnerships and moving proven indigenous technologies towards wider commercial deployment. Through such technology transfers, CSIR continues to advance its mandate of translating science and technology into solutions that contribute to sustainable industrial development, improved infrastructure and national economic growth.

109th Annual General Body Meeting of AISHTMA

The 109th Annual General Body Meeting of the All India Skin and Hide Tanners and Merchants Association (AISHTMA) for the year 2025-2026 was held on 20th of August 2026 at the Association Office in Chennai.

The Meeting was presided over by Dr. M. Rafeeque Ahmed, President of the Association. Sixty Five Members participated in the meeting.

The President's welcome speech featured a thought-provoking presentation on India's leather exports. He highlighted a prolonged stagnation in performance and outlined urgent measures needed to restore the industry's global competitiveness and relevance.

Dr M Rafeeque Ahmed in his address, highlighted a concerning trend in India's leather and leather products sector. He noted that export figures have stagnated around the USD 5 billion mark for nearly a decade, showing no sustained growth.

The President said that during the 1970s and 1980s, leather was one of India's premier export sectors, holding a position of significant prominence in the nation's overall export basket. He called on the industry to look past the numbers and analyse the structural causes of this declining competitiveness.

He noted that while the leather industry creates many jobs, high labour capacity alone no longer ensures a competitive edge in global markets. The sector must confront broader competitiveness challenges, specifically optimizing productivity, operational costs, scale efficiency, and market access. Furthermore, he highlighted that the challenge is compounded by regional competitors who have effectively leveraged labour advantages alongside structural

manufacturing frameworks, economies of scale, and integrated global brand networks.

A particularly stark comparison was drawn with Vietnam. The President noted that while both nations held comparable positions five to seven years ago at roughly US$ 6 billion, Vietnam has since surged significantly ahead".

This success is driven by large-scale manufacturing facilities, substantial Foreign Direct Investment (FDI), and optimized production timelines. Furthermore, cost-effective effluent treatment, streamlined domestic logistics, and efficient raw material sorting collectively lower final export costs."

Dr Rafeeque Ahmed expressed concern over India's limited engagement with multinational brands. The Data below illustrates on how global brands allocate orders across sourcing nations highlighted a stark structural disparity, Vietnam 60%, Indonesia 30% and India around 5 to 10%.

India boasts a strong manufacturing foundation, abundant raw materials, skilled talent, and a massive consumer market. Nevertheless, its share of global procurement orders from major international buying brands remains lagging. Therefore, the Indian leather industry must urgently prioritize building deeper, lasting ties with global brands." The Indian leather industry must move beyond being a mere manufacturing hub and position itself as a strategic, end-to-end partner for global brands.

He noted that some of the recently announced policy changes could help make the leather industry more competitive. He highlighted that the Union Budget 2026-2027 introduced critical enablers such as duty rationalisation, duty-free imports of select raw materials, and streamlined export processes alongside the landmark conclusion of the India-EU Free Trade Agreement in January 2026.

The President informed members during his address that export performance for the 2025-2026 fiscal year achieved a positive growth of **2.62% in Rupee terms.**

He pointed out that the domestic leather industry faced severe revenue declines and mass order cancellations after the US imposed a steep 50% tariff on Indian leather goods. This tariff artificially inflated prices, driving international buyers toward competitors like Vietnam and Bangladesh, who benefited from significantly lower US tariff rates.

"He further pointed out that the ongoing conflict involving Iran, the US, and Israel has severely impacted both the global and regional leather industry. Rising crude oil prices have driven up the cost of all Petro-based chemicals, spiked marine and air freight costs by 30%, and caused major shipping delays and stranded containers across key hubs like Kanpur and Chennai.

He informed members that the All India Skin and Hide Tanners and Merchants Association (AISHTMA), in collaboration with CSIR-Central Leather Research Institute (CLRI), conducted workshops at the Ambur Trade Centre and South India Tanners & Dealers Association (SITDA), Ranipet to promote eco-friendly technologies across the Vellore and Tiruppattur Districts. The presentations focused on sector sustainability, advancements in wastewater treatment, pollution minimization techniques, and energy efficiency improvements in leather processing.

In collaboration with the Quality Council of India, AISHTMA conducted a leadership workshop focusing on quality initiatives within the leather and footwear sectors. The insightful presentations, thoughtful guidance, and effective coordination provided by the CEO of NBQP made the session highly informative and productive.

The President thanked the Government of India and the Government of Tamil Nadu for their continued support in the development of

leather Industry.

The following members were elected unanimously as office bearers and Executive Committee members of the Association for the year 2026 - 2029

President: Janab Dr. M. Rafeeque Ahmed Sahib of M/s. Farida Prime Tannery Pvt. Ltd

Vice-Presidents: Janab T. Mohamed Mubeen Sahib of M/s. Softan Leathers

Janab M. Abdul Wahab Sahib of M/s. K. H. Exports India Private Limited.

Hony. Secretary: Janab M. Faiyaz Ahmed Sahib of M/s. International Prime Tannery

Hony. Jt. Secretary: Janab N. Imtiaz Ahmed Sahib·of M/s. Shauaaz Tanning Company

Hony. Treasurer: Shri R. Ramesh Prasad of M/s. P.R. C. Leathers

and also 21 members of the executive committee

Janab M Abdul Wahab Saheb & Mr T Mohammed Mubeen, Vice-Presidents of AISHTMA, Mr K R Vijayan, Chairman, Good Leather Group, Mr T Mohammed Adnan and Mr Yavar Dhala addressed the gathering and shared their views on the present scenario of the industry and also offered practical solutions to some of the industry's most pressing challenges

The AGM came to a close with Janab N Imtiaz Ahmed, Hony. Joint Secretary, proposing the vote of thanks, where he lauded the President's visionary leadership and clarity of thought in guiding the Association forward.

Vasan's Voice

- Vasan Suri, A Passionate Leather Lover & Professional, Hi-Tech Consultancy
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Supply Chain or Channel Partner

A supply chain indicates a set of suppliers. The marketing team refers to a team of marketing guys.

But, the real benefits are derived with a **channel partner** who is always your extended arm be it the supply chain or in the production and process or in the marketing.

The success of any business depends on its buying power.

If the raw material is bought at the right price with the right quality, the marketing becomes much easier and profitability in business grows.

The business war is won at the purchase point and not at the sales point where you are supposed to be in line with many competitive organisations.

A disruptive competitor could offer a crazy price to get the business but, that is all temporary.

Right quality and the right price which will support the buyer or the brands to stand tall in the market.

This is not possible only as a supply chain but, recognising the supply chain as a **channel partner**.

This is like a relay race. And the winning is all about the right timing of coordination and cooperation.

In our business, it all starts with the right source of raw material at the right quality and the right price.

Then, comes the right combination of chemicals to tan the leather right way to get the best results and at the same time with minimal cost and lesser inventory.

How does the **channel partners** from raw material supply, chemicals supplies can be lined up as **channel partner** to create a win-win situation for everyone in the channel up to the tannery which provides the finished leather to the products industry.

The next channel partnership happens between the finished leather supply source in good alignment with their product manufacturers.

The cooperation have to start from the right type, quality and colors for the coming season at the best price.

This **channel partner** tannery provides the base for the leather products manufacturer to stay ahead in the market with his products well designed, with best leather by quality and feel/finish including the specific season colors.

For the leather products exporter, it is the finished leather supplier, good designer and team, perfect sampling team and the provider of ancillaries and auxiliaries.

This is the first step in creating the market and next comes the production team who work in tandem with the design and sample team to reproduce exactly what was sampled.

The final job is in the hands of the marketing team as to how well they can present it to their customers.

Important to have the right customer, right product, right quality and the right price synchronised and presented.

Hence, it is important to have **Channel Partners** who are the partners in progress and not just a supply chain.

Above all, the bottom of the pyramid which is the workers and the next tier the staffs and executives, who form the integral part of the channel partnership.

This term of converting supply chain as **channel partner** was conveyed to me by a TATA liaison Officer, who was directly reporting to Mr. Ratan Tata in the early millenium period.

I had the blessings of traveling with this gentleman from Tata Dewas to Indore Airport and onward to Mumbai by the same flight.

He wanted to recognise my connect with Tata in those days as a **"Channel Partner",** which does not mean just the supply chain, adding value to the production process and also the extended marketing arm.

Fortunately, I had the opportunity to be in all the position of supply chain, value addition in production process and marketing and felt proud to be referred to as a **"channel partner"**.

Let us all like minded people, come together to make a formidable group of **channel partners,** combining all the strengths in creating the best synergy to achieve the best results for our Industry, which will translate to the growth of the Country.

Global Leather Alliance Launches to Unite the International Leather Industry

Global Leather Alliance (GLA) is an independent, global non-profit organisation created to unite and mobilise the leather industry around a shared mission: to protect, promote and advance real leather through engagement, education, collaboration and science-based communications. Built for the industry, by the industry, GLA serves as a transparent funding and coordination hub, ensuring that global resources are directed toward initiatives that strengthen the reputation, sustainability, and long-term future of real leather.

New independent, non-profit organisation brings industry leaders together to protect, promote and advance the future of real leather.

During the Lineapelle international leather exhibition, on 15th September 2026, industry leaders from around the world officially announced the formation of the Global Leather Alliance (GLA), a new independent, global non-profit organisation dedicated to protecting, promoting and advancing the future of real leather.

The announcement, made before an audience of international leather manufacturers, suppliers, associations and other industry stakeholders, marks the beginning of a new era of collaboration for one of the world's oldest and most important industries.

Created for the industry, by the industry, GLA was established in response to unprecedented challenges facing the global leather

sector, including declining consumer demand, misinformation about leather and increasing regulatory pressure.

GLA will serve as a unified platform to help the global leather industry speak with one voice, coordinate outreach efforts, promote factual information about leather, support education and research, and strengthen confidence in one of the world's most natural, durable and circular materials.

"The challenges facing our industry are greater than any one company, country or trade association can address alone," said Marc Smit, Owner and CEO of Royal Smit & Zoon and Chair of GLA Board of Directors. "The Global Leather Alliance represents something our industry has needed for a long time - a truly global organisation where we can work together to protect leather's future, communicate its value with one voice and ensure this remarkable material continues to thrive for generations to come."

Unlike existing trade organisations that primarily represent regional or sector-specific interests, GLA has been designed to complement and strengthen the work already being undertaken throughout the industry by providing a global platform focused on engagement, education and collaboration.

"The future of leather depends upon our willingness to work together," added Randy Johnson, CEO of Pangea Made and Vice Chair of GLA Board of Directors. "This is an invitation to every part of our industry to help write the next chapter."

GLA's ethos is built on four core pillars that combine the operational discipline of a for- profit organisation with the transparency, accountability, and collective decision-making of a non-profit.

Unite: Bring together existing leather organisations, suppliers, manufacturers, and artisans under a unified global strategy. Working groups will be set up with global organisations to ensure all voices are heard and initiatives are supported. The goal is to honour the principle that the industry is stronger together than apart.

Fund: Create a trusted mechanism to raise, manage and deploy resources where they can have the greatest impact for leather. Membership fees are not the end goal – they are the foundation that enables GLA to build the strategy to unlock millions of dollars in new funding.

Empower: Give members a direct voice in setting priorities, selecting projects, and making investment decisions. One company, one vote. Companies vote on board members, budgets, and industry proposals.

Protect: Safeguard the reputation, value and future of real leather through coordinated global initiatives.

Further information about Global Leather Alliance, including membership opportunities, can be found on its website: www.globalleatheralliance.org.


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"Obuv. Mir Kozhi – 2026. Autumn"

The 65th edtion of "Obuv. Mir Kozhi – 2026. Autumn" the leading specialized exhibition of footwear and leather goods in Russia and the CIS in the B2B format, will take place from 13 to 15 October 2026, in Pavilion 57 at VDNH, Moscow, Russia.

This bi-annual event will, as usual showcase premium genuine leather products, including footwear, bags, and accessories. A significant portion of the display will feature Russian representatives of Italian brands; understanding the demands of the Russian market, they carefully select the best products for their stores.. More than 400 brands are expected to be present at this event.

"Obuv. Mir Kozhi" has long established itself as an effective business platform for forging connections not only with manufacturers but also with experienced retailers from premium boutiques.

FUTURMODA

56TH FUTURMODA

The 56th edition of Futurmoda, the International Fair of Leather, components and machinery for footwear and leather goods will be held on 14 & 15 October at Fira Alacant, Elche, Spain, presenting Fall / Winter 27 - 28 trends and collections.

During the two days, brands, manufacturers, suppliers and schools come together to discover trends, innovation and new business opportunities in a 100% professional environment.

It features more than 300 exhibiting companies from Spain, Italy, Portugal, France and other countries. It occupies an exhibition area of more than 12,000 m2 and receives more than 5,000 visitors interested in seeing the latest trends in the sector.

AYMOD Strengthens International Trade Connections

75th AYMOD Brings the Turkish Footwear Industry Together with Global Markets

AYMOD, the International Footwear Fashion Fair, one of the international trade platforms of the Turkish footwear industry, is opening its doors for its 75th edition. Taking place at the Istanbul Expo Center (IFM) from 7–10 October 2026, the fair brings new collections and product groups for the Spring/Summer 2027 season together with buyers from different parts of the world.

Held across 26,000 square meters, the 75th edition of AYMOD features more than 200 exhibiting companies, including 35 international exhibitors. As one of Europe's leading footwear trade platforms, AYMOD is expected to welcome approximately 20,000 industry professionals this year, with around 5,000 of them expected to be international buyers.

Featuring a wide range of products, from women's, men's and children's footwear to sports and classic models, bags, leather goods and leather accessories, the fair brings Türkiye's footwear production capacity together with international buyers while providing a platform for developing new business connections. As part of AYMOD's efforts to expand its international trade volume, the VIP Hosted Buyer Program is also being held with the support of the Ministry of Trade.

Approximately 600 qualified buyers from different countries are being hosted in Istanbul as part of the program. The travel and accommodation expenses of the hosted buyers visiting Türkiye are covered by TASD. The program aims to facilitate direct business meetings between Turkish footwear manufacturers and international buyers and to support the development of new business partnerships.

Euro Shoes August 2026 presented the New Season SS27 Collections

The August edition of Euro Shoes premiere collection took place in Moscow from 25th to 28th August 2026. Leading Brands specializing in footwear, bags and accessories from Russia, Europe, and Asia presented their Spring/Summer 2027 collections.

Once again, the exhibition became a key venue for meetings between brands and buyers, manufacturers and clients.

For over twenty years, European footwear brands from Germany, Spain, Italy, France, Turkey, Sweden, Switzerland, and many other countries have held a central place at Euro Shoes fair. As usual exhibition also features local Russian footwear and accessory brands, and brands and factories from China, too.

Many reputed European footwear brands that are warmly beloved and popular in Russia, such as Caprice, Tamaris, Marco Tozzi, Peter Kaiser, Rieker, Remonte, Waldläufer, IGI&CO, EXTR4, W6YZ, Pikolinos, Wonders, Pitillos, El Naturalista, Abbacino, Pitas, Laura Vita, Wonders, Alpino, Esse, and many more were presented at this event.

New names of the August fair included Russian sports-style footwear brand Gekkon and the "smart" socks brand SOAR, Belarusian

children's footwear brand IDZI, Swedish ICEBUG, and Panchic from Italy, Turkish brands VSN and FAST STEP.

As always, a highlight of Euro Shoes was the runway show of the new Spring/Summer 2027 collection from the German brand Caprice. Meanwhile, the long-established and stylish Peter Kaiser made its debut with a men's footwear capsule collection that caused a sensation; now, Peter Kaiser's elegant style will be appreciated by men in Russia just as much as by women.

A dedicated section of the expo featured footwear factories from China offering private-label manufacturing services - a promising area taking into account growth of local fashion brands who are looking to expand their product ranges to include footwear and accessories as well.

Footwear collections from Chinese brands also attracted significant interest among the buyers as they always do. In particular, Ballina women's footwear collection enjoyed among great success along fair visitors.

Euro Shoes August edition set a working spirit for the new season boosting activity and engagement in footwear business community. Buyers from across Russia and the CIS countries placed orders, networked with new partners, exchanged news and enjoyed a highly positive experience and atmosphere of the fair venue.

Many brands have confirmed participation in the next 39th Euro Shoes fair scheduled for 23-26 February 2027.

Notably, Euro Shoes will be held in synergy with the CPM Moscow fashion Trade Show, providing visitors of both events with the opportunity to curate a complete "total look" of shoes, bags, accessorizes and clothing just in one visit.

SIMAC TANNING TECH ACCELERATES ITS INTERNATIONAL EXPANSION AND OPENS UP NEW DEVELOPMENT OPPORTUNITIES FOR TECHNOLOGIES IN THE FASHION AND LEATHER INDUSTRY

Simac Tanning Tech is the international event showcasing the finest range of machinery and technologies for the footwear, leather goods and tanning industries, held in Milan alongside Lineapelle.

- **Simac Tanning Tech records a 25% increase in attendance, with international visits accounting for 50% of the total and international exhibitors and brands for 30%, confirming its role as a strategic platform connecting technology demand, companies and new markets.**

- **The 52nd edition strengthens dialogue with Latin America by addressing the technological and production needs of 12 countries in the region, including the Mercosur area. A three-year Memorandum of Understanding was signed between Assomac and ACCAL, setting the stage for technical, educational, and industrial collaboration aimed at supporting the growth and modernization of local supply chains.**

- **The initiative launched in Africa with the Robbiki Leather City project and the partnership with AICS Cairo continues, opening up new opportunities for dialogue between Italy and Egypt on technology, expertise, sustainability, industrial cooperation, and investment.**

Simac Tanning Tech, the leading international trade show for machinery, technologies, and solutions for the footwear, leather goods, and tanning industries, organized by **Assomac** - the Confindustria association representing Italian companies in the sector-concluded its 52nd edition at Fiera Milano Rho, further solidifying its role as a strategic international platform. Over the

three days of the exhibition, from 15 to 17 September, more than **8,800 attendances** were recorded (+25% compared with 2025), with **international visits accounting for around 50%** and 30% of international exhibitors, brands and innovative organisations coming from more than 20 countries - a testament to the platform's ability to foster engagement with foreign markets and open up new business opportunities for companies in the sector. Added to these were the visitor flows generated by the concurrent events Lineapelle, MICAM, and MIPEL, bringing the total number of visitors recorded at Simac Tanning Tech to over 11,500, confirming the value of the synergy among the industry's events and the support provided by the Italian Trade Agency (Agenzia ICE).

This result confirms Simac Tanning Tech's role as an international platform for the Italian tanning industry, at a time when geographic diversification, access to new markets, and the ability to meet evolving technological demands are becoming increasingly important drivers of business competitiveness.

The work carried out with **Latin America** fits into this framework. During the event, **Assomac and ACCAL-Agrupación de Cámaras de Calzado de América Latina-signed a three-year Memorandum of Understanding** to strengthen industrial cooperation, technological exchange, and economic relations between Italy and the region. The agreement concerns a network that brings together footwear industry associations from twelve countries and aims to more directly align the needs of local production systems with the expertise of Italian companies.

Initial findings across the different markets show a clearly defined demand for technology, including the **upgrading of cutting systems, with CNC, laser and automatic die-cutting machines, as well as programmable stitching and greater digital integration. Strong attention is also being given to CAD/CAM software, ERP and MES systems, traceability and production data collection**. This demand for modernization therefore concerns both factory technologies and the digitization of processes, and directly aligns with some of the key areas of specialization within Italian industry.

The region's significance amplifies its prospects: with approximately 1**.5 billion pairs of shoes produced in 2024**, Latin America is **the world's second-largest producer and the largest in the Western Hemisphere**, accounting **for about 6% of global production-**a sector that includes **over 30,000 factories and more than 600,000 employees**, within a regional economy valued at approximately **7,400 billion dollars.**

The agreement with ACCAL now aims to build on this work through **B2B meetings**, **trade and institutional missions, and investment-focused initiatives**, transforming an understanding of local needs into new business opportunities for companies. A **first stop is already scheduled for Mexico in October, during the ANPIC trade show in León**, and further activities are planned for Colombia and Argentina.

In Africa, Simac Tanning Tech continued the work begun in 2025 with Kenya, focusing in 2026 on Egypt and the **Robbiki Leather City project**, developed in collaboration with **AICS Cairo** and the institutional and industrial partners involved.

The project forms part of the programme "Support for the development of the Robbiki Leather City tanning district", funded by Italian Cooperation to the tune of 6 million euros, which has supported the modernisation of the district through infrastructure, training, technology transfer, technical assistance and skills development. Within this framework, **Assomac has helped to strengthen the link between the Egyptian production system and Italian companies in the sector, facilitating the transfer of technology and know-how and supporting the sector's evolution towards more advanced production models**. **Around 90 per cent of the technology used in the production workshops at Robbiki Leather City is, in fact, 'Made in Italy'**, reflecting the well-established role of Italian companies in the modernisation of the local supply chain.

At Simac Tanning Tech, this initiative provided a further opportunity for dialogue with an Egyptian business and institutional delegation, comprising, amongst others, representatives from **the Ministry of Industry**, **the Leather Technology Training Centre (LTTC) and**

Cairo for Investment and Development (CID), during a **Study Tour dedicated to the leather and footwear supply chain and related technologies**. The visit also led to **the signing of an agreement between Assomac and the LTTC** to develop joint training programmes for technicians and young professionals, as well as research into new tanning processes and sustainable chemicals, with the aim of enhancing the quality and competitiveness of **Robbiki Leather City** and facilitating its integration into international value chains.

The initiative will continue with a second phase, dedicated to the development of the footwear sector, with the aim of supporting the creation of an area specifically dedicated to footwear production and thereby expanding the opportunities for growth and integration of the supply chain at Robbiki Leather City.

Mauro Bergozza, President of Assomac, commented: "*Internationalisation is a key driver for growth in the technology sector and for our companies' ability to establish a presence in increasingly diverse markets. Simac Tanning Tech plays a decisive role in this process: it does not merely bring together operators and technologies from around the world in Milan, but creates the conditions for building lasting industrial relationships and opening up new avenues for development. This year, 65 delegates arrived from Latin America with the support of Agenzia ICE, a region where the demand for production modernisation aligns directly with the expertise of Italian companies. The agreement with ACCAL, together with the new trade framework between the European Union and Mercosur, further strengthens our focus on markets such as Brazil, Argentina, Mexico and Colombia – strategic partners given their size and technological needs. At the same time, our established work in Egypt confirms the value of a sustained presence in these markets and of collaboration with local partners. This is the direction in which we wish to continue investing: making Simac Tanning Tech an international platform that is increasingly capable of connecting demand, technology and businesses. In 2027, this journey will continue with a particular focus on India, another strategic market for the development of the supply chain*."

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LINEAPELLE

THE REMARKABLE STRENGTH OF LINEAPELLE 108: THE SUPPLY CHAIN RESTARTS FROM MILAN 22,800 PROFESSIONAL VISITORS,

A SIGNIFICANT INCREASE COMPARED WITH SEPTEMBER 2025, CONFIRM LINEAPELLE'S STRATEGIC IMPORTANCE AND INTERNATIONAL LEADERSHIP

- LINEAPELLE confirms its position as the international benchmark for innovation and business development
- With 43% of visitors coming from 114 countries, LINEAPELLE reaffirms its essential role for the market and the supply chain, despite the continuing uncertainty of the economic environment

The 108th edition of LINEAPELLE held at Fiera Milano Rho, Italy from 15 to 17 September 2026 continues to demonstrate its remarkable strength, further consolidating its strategic centrality for the international leather, materials, accessories and components industry serving fashion, luxury and design.

This edition hosted 1,029 exhibitors and welcomed 22,800 professional visitors, including more than 17,000 buyers, with 43% of attendees coming from abroad, representing 114 countries. Attendance recorded a 10% increase compared with the benchmark September 2025 edition.

This result is particularly significant in light of an economic and commercial environment that continues to require the supply chain to exercise caution, demonstrate responsiveness and seek new perspectives.

LINEAPELLE 108 fully expressed its international dimension and its ability to attract the global market, providing a clear picture of a supply chain that continues to navigate challenging conditions which have profoundly reshaped the foundations of the market. At the same time, the event captured some of the positive signals that

emerged during 2026, offering those exhibitors able to interpret them grounds for confidence as they approach the final part of the year.

Geopolitical tensions remain unresolved, while brands are undergoing a profound transformation in both their strategies and operating models. Against this backdrop, being present at LINEAPELLE takes on even greater strategic value for companies capable of maintaining a strong market presence, demonstrating reliability and a clear project vision, building relationships and preparing for the changes already under way.

Particularly significant was the strong rebound, both in the number of exhibitors (+21%) and attendance (+35%), compared with the previous February edition, which was heavily affected by logistical disruption caused by the simultaneous staging of several Milano Cortina 2026 Winter Olympic events at the Rho exhibition district.

The strength of the edition was also reflected in participation in the events, presentations and talks held throughout the three days of the fair. The programme expanded the exhibition's commercial dimension, turning LINEAPELLE into an opportunity for dialogue and discussion around the key issues that are reshaping the supply chain: creativity and innovation, sustainability and technology, education and training, and emerging market scenarios.

The results therefore reinforce one essential fact: LINEAPELLE is the trade fair the supply chain needs and cannot do without. Not only because it brings together in Milan a unique and comprehensive international offering, but because it represents an indispensable platform for networking, dialogue and project development, particularly at a time of such complexity and unpredictability.

In a scenario that continues to evolve rapidly, LINEAPELLE confirms its role: to be the place where the supply chain comes together, interprets the present and builds the conditions for renewed growth.

The next edition of LINEAPELLE, dedicated to the Summer 2028 season, will take place from Tuesday 23 to Thursday 25 February 2027.

Leather Formally Excluded from the EUDR: A Historic Victory for the European and Global Leather Industry

On 14th September exclusion of hides, skins and leather from the scope of Regulation (EU) 2023/1115 on deforestation-free products (EUDR) became official.

This is a historic day for the European tanning industry and for the global leather community that stood united behind the case for evidence-based regulation.

A decision grounded in science

The exclusion of hides, skins and leather reflects a fundamental structural reality: raw hides account for just 1.50% of a bovine's total value at the abattoir, as confirmed by the 2026 UNIDO Guidelines for Assessing the Environmental Footprint of Leather. The academic study commissioned by COTANCE and UNIC, conducted by the Sant'Anna School of Advanced Studies at the University of Pisa and drawing on over 94 million data records, found no scientific evidence linking leather to deforestation - a finding reinforced by research from Montana State University.

The Commission's decision also avoids a regulatory incoherence that would have penalized European producers: under the previous scope, goods produced with EU leather would have been subject to EUDR compliance requirements while those produced with non-EU leather would not, placing European tanneries at a direct competitive disadvantage and putting at risk tens of thousands of rural jobs across the continent.

A collective achievement

This outcome is the result of two years of sustained, evidence-based engagement by COTANCE, its national member associations, and a

united global leather industry - from the United States to Australia, the African Union and New Zealand - working together under the International Council of Tanners to make the evidence-based case to EU institutions.

"Today the European Union saved a European industry recognized worldwide for its excellency. This is a historic day for every tannery, every worker, and every stakeholder who stood behind this cause." **- Manuel Rios, President of COTANCE.**

"Fair policy making is no easy task, but after much debate clarity eventually arises. As raw hides are a by-product of the livestock industry, leather producers do not have the economic leverage to enforce EUDR requirements on cattle breeders." **- Edoardo De Paola, Secretary General of COTANCE.**

The work continues: traceability and due diligence remain within the industry's top priorities

COTANCE wishes to be unequivocal on one point: the EUDR exclusion does not diminish the European leather industry's commitment to responsible sourcing where this is feasible, in its own value chain. The industry remains committed to demonstrate those credentials through evidence, through standards, and through concrete action.

Traceability was a priority for the leather industry long before the EUDR was conceived and it will remain so long after.

Looking ahead: the 2030 review

The EUDR foresees a review of the Regulation in 2030. COTANCE notes this provision and will stand ready to assess any developments surrounding leather's status under the EUDR. Considering the current economic figures for the European tanning industry, the conclusions drawn in 2026 are likely to be valid also in 2030.

13th Asian International Conference on Leather Science and Technology (AICLST 2026)

(Contd., from August 2026 issue)

Technical Session – V (03:00 PM – 05:00 PM) Innovative Process Technology (TI)

Chair: Dr. Buddhadeb Chattopadhyay, Former Principal, Government College of Engineering & Leather Technology (GCELT), Kolkata and Member, AICLST Scientific Committee

Co-Chair: Dr. N. Nishad Fathima, Chief Scientist & Head, Inorganic and Physical Chemistry Laboratory, Professor, AcSIR, CSIR-Central Leather Research Institute (CLRI)

Right: Dr. Buddhadeb Chattopadhyay Left: Dr. N. Nishad Fathima

Chair and Co-Chair of Technical session-IV

Technical Session – V on **"Innovative Process Technology (TI)"** was chaired by **Dr. Buddhadeb Chattopadhyay, Former Principal, GCELT, Kolkata and Member, AICLST Scientific Committee**, and co-chaired by **Dr. N. Nishad Fathima, Chief Scientist & Head, Inorganic and Physical Chemistry Laboratory, Professor, AcSIR, CSIR-CLRI**.

Before the commencement of the session, both dignitaries were welcomed to the dais and presented with mementoes by **Dr. B. Chandrasekaran, Former Director, CSIR-CLRI, Chennai**.

Online Paper Presentation By Dr. Carmen Gaidau

The session continued the deliberations on the theme **"Innovative Process Technology"**, which had emerged as one of the most prominent and widely represented themes of AICLST 2026. The presentations reflected the industry's growing commitment towards sustainable manufacturing, cleaner production technologies, circular economy principles, resource conservation, advanced materials, and environmentally responsible leather processing practices.

The session brought together researchers and technologists from India and abroad who presented innovative approaches for addressing contemporary challenges in leather manufacturing while simultaneously enhancing environmental sustainability, product performance, and process efficiency.

The following papers were presented during the session:

1. **Dr. Carmen Gaidau** – *Leather Finishing Using Nanomaterials for Advanced Properties*
2. **Dr. Dmitry Shalbuev** – *Recycling of Organic Waste Generated During the Processing of Kamus Skins of Reindeer*

Online Paper Presentation by Dr. Dmitry Shalbuev

3. **Dr. S. V. Srinivasan** – *Tannery Wastewater Treatment Towards Sustainability in India*

4. **Dr. Pankaj Kumar Tyagi** – *Strategic Prioritisation of Environmental Sustainability Practices in Leather Industries: An Integrated Delphi–AHP–TOPSIS Analysis*

5. **Dr. Sandip Das** – *Green and Clean Deliming Technology with Acetic Acid–Sodium Acetate Buffer for Removal of Ammonia-Nitrogen from Leather Manufacturing Process*

6. **Dr. P. K. Chattopadhyay** – *Merits and Demerits of Titanium-Based Ingredients in Leather Processing: Benefits and Challenges*

7. **Ms. V. Ramadevi Pabbineedi** – *Spent Turmeric Oleoresin in Leather Processing*

8. **Presentation by Silver Sponsor – M/s Balmer Lawrie & Co. Ltd.**

The presentations highlighted several important areas of innovation aimed at improving environmental performance and operational sustainability within the leather sector.

Dr. Carmen Gaidau showcased advanced leather finishing technologies utilizing nanomaterials to impart enhanced functional properties to leather products. The research demonstrated the growing role of nanotechnology in developing high-performance leathers with improved durability, protection, and specialized characteristics suitable for advanced applications.

Dr. S. V. Srinivasan receiving Citations by Dr. Buddhadeb Chattopadhyay and Dr. N. Nishad Fathima

The presentation by **Dr. Dmitry Shalbuev** focused on the recycling and utilization of organic waste generated during the processing of reindeer Kamus skins. The study highlighted opportunities for converting waste materials into useful products while supporting circular economy objectives and reducing environmental burdens.

The paper presented by **Dr. S. V. Srinivasan** addressed one of the most critical issues confronting the leather industry, namely tannery wastewater management. The study focused on sustainable treatment approaches capable of improving effluent quality, reducing environmental impact, and supporting compliance with increasingly stringent environmental regulations.

A noteworthy contribution was made by **Dr. Pankaj Kumar Tyagi**, who presented a systematic and analytical framework for prioritizing environmental sustainability practices in leather industries using integrated decision-making methodologies such as Delphi, AHP, and TOPSIS. The study provided valuable insights into strategic planning and sustainability management within industrial operations.

Dr. Pankaj Kumar Tyagi, receiving Citations from Dr. Buddhadeb Chattopadhyay and Dr. N. Nishad Fathima

Environmental innovation was further emphasized through the work of **Dr. Sandip Das**, who introduced a green deliming technology based on an acetic acid–sodium acetate buffering system. The research demonstrated effective removal of ammonia-nitrogen from leather manufacturing processes and offered a cleaner alternative to conventional deliming methods.

Paper Presentation by Dr. Sandip Das

Dr. P. K. Chattopadhyay presented a comprehensive analysis of titanium-based ingredients used in leather processing. The presentation examined both the advantages and limitations of these materials and provided valuable perspectives on their potential applications, benefits, and associated challenges within modern leather manufacturing.

The session also featured an innovative study by **Ms. V. Ramadevi Pabbineedi**, who explored the utilization of spent turmeric oleoresin in leather processing. The work demonstrated the potential of utilizing natural and industrial by-products as sustainable processing inputs, thereby contributing to waste minimization and resource efficiency.

The presentations collectively demonstrated how innovative process technologies are increasingly focused on environmental sustainability, cleaner production systems, waste valorization, bio-based materials, advanced functional finishes, and resource-efficient manufacturing approaches. The session generated significant interest among delegates and stimulated productive discussions on the future direction of sustainable leather processing technologies.

Paper Presentation by Dr. P. K. Chattopadhyay

The session also included a presentation by the **Silver Sponsor, M/s Balmer Lawrie & Co. Ltd.**, highlighting the

company's contributions, technological capabilities, and continued commitment towards innovation and sustainability within the leather and allied industries.

	
Paper Presentation by Ms. V. Ramadevi Pabbineedi	**Dr. Buddhadeb Chattopadhyay and Dr. N. Nishad Fathima were presented with Citations**

Following the technical presentations, all the above-mentioned paper presenters were presented with **Citations** by **Dr. Buddhadeb Chattopadhyay** and **Dr. N. Nishad Fathima** in recognition of their valuable scientific contributions and participation in the conference.

Thereafter, both the Chair and Co-Chair were felicitated with **plants and citations** by **Mr. Susanta Mallick, General Secretary, ILTA**, as a token of appreciation for their guidance, leadership, and successful conduct of the technical session.

Cultural Evening

Rhythmic Instrumental Performance

Following the conclusion of the technical sessions, delegates were treated to a vibrant cultural programme showcasing the rich artistic traditions of different regions of India.

The evening commenced with a captivating

rhythmic instrumental performance by a talented team from Chennai, which beautifully

reflected the essence of South Indian musical traditions. The performance was highly appreciated by the audience for its energy, precision, and cultural richness.

This was followed by an elegant **Bharatanatyam dance recital by Ms. Deedhita Singha**, whose graceful performance mesmerized the audience and highlighted the beauty, discipline, and expressive storytelling traditions of classical Indian dance.

The cultural programme continued with another spectacular rhythmic instrumental presentation by **"Team Trephony"**, which celebrated the vibrant cultural heritage of

Bengal. The group's dynamic performance, infused with traditional Bengali musical elements and contemporary presentation styles, created an

electrifying atmosphere and captivated the audience throughout.

Ms. Deedhita Singha,

The cultural evening provided an excellent opportunity for delegates from different countries and regions to experience India's rich cultural diversity and artistic heritage. The performances were warmly received and added a memorable dimension to the conference, complementing the scientific and technical deliberations of the day.

Team Trephony

Day – 3: Sunday, 8th March, 2026

Technical Session – VI (09:30 AM – 11:30 AM) Footwear – Future & Roadmap (TF)

Chair: Dr. K. Krishnaraj, Scientist-in-Charge, CSIR-CLRI Regional Centre, Ahmedabad

Co-Chair: Mr. Arun Kumar Chattoraj, Former General Manager, Bata India Ltd.

The third and final day of the 13th Asian International Conference on Leather Science and Technology (AICLST 2026) commenced with **Technical Session – VI** on the theme **"Footwear – Future & Roadmap (TF)"**. The session was chaired by **Dr. K. Krishnaraj, Scientist-in-Charge, CSIR-CLRI Regional Centre, Ahmedabad**, and co-chaired by **Mr. Arun Kumar Chattoraj, Former General Manager, Bata India Ltd.**

Right: Dr. K. Krishnaraj Left: Mr. Arun Kumar Chattoraj

Chair and Co-Chair of Technical session -VI

Prior to the commencement of the session, both dignitaries were welcomed to the dais and presented with mementoes by **Dr. Buddhadeb Chattopadhyay, Former Principal, Government College of Engineering & Leather Technology (GCELT), Kolkata, and Member, AICLST Scientific Committee.**

The session focused on the future direction of the global footwear sector and addressed key challenges and opportunities associated with raw material availability, sustainable manufacturing, material innovations, automation, Artificial Intelligence, and emerging

technologies. The discussions revolved around the evolving relationship between leather and non-leather materials in footwear manufacturing, environmentally responsible production practices, recycling and upcycling initiatives, cost optimization, and the growing role of digital technologies in footwear design and manufacturing.

The thematic areas covered during the session included:

- Raw material availability and matching leather footwear consumption with supply;
- Innovations in footwear manufacturing and sustainability;
- Upcycled, recycled, and environmentally friendly processes for footwear materials;
- Leather and non-leather combinations in footwear manufacturing;
- Matching leather processing costs with footwear industry requirements – challenges and opportunities;
- Automation and Artificial Intelligence in footwear production.

Keynote Address by Dr. Bhabendra Nath Das presented by Dr. Buddhadeb Chattopadhyay

In his opening remarks, **Dr. K. Krishnaraj** welcomed the delegates and dignitaries and extended his greetings

on the occasion of **International Women's Day**, acknowledging the valuable contributions of women professionals, researchers, and industry leaders present at the conference.

Introducing the theme of the session, he observed that discussions on the future of footwear can no longer be confined exclusively to leather. Referring to several presentations and discussions held during the conference, he noted that the global availability of leather has remained relatively stagnant while the demand for footwear continues to increase worldwide. This imbalance has led to the growing adoption of alternative materials and has transformed the landscape of the footwear industry.

Dr. Krishnaraj emphasized that while leather footwear continues to occupy an important position in premium and specialized market segments, the future footwear industry will increasingly involve a combination of leather and non-leather materials. He highlighted three critical pillars that will shape the future of footwear manufacturing: **materials, machinery, and manufacturing technologies**.

Dr. Sujata Mondal receiving Citations by Dr. K. Krishnaraj and Mr. Arun Kumar Chattoraj

According to him, India has already achieved considerable expertise in footwear manufacturing technologies and possesses the capability to produce footwear that meets both domestic and international quality standards. He also noted significant progress in machinery development and modernization. However, he emphasized that the development of innovative materials, particularly for non-leather footwear, remains an area requiring greater research and investment despite India being one of the world's largest footwear producers.

Paper Presentation by Dr. Suresh Kumar

He expressed confidence that the keynote address and technical presentations would provide valuable insights into addressing these challenges and help define future directions for the footwear sector.

In his remarks, **Mr. Arun Kumar Chattoraj** reflected upon the changing relationship between leather and footwear over the decades. He observed that footwear manufacturing historically originated with leather as its primary material; however, contemporary consumer preferences and changing fashion trends have significantly altered the composition of the global footwear market.

Paper Presentation by Dr. Sadhanandham J

He noted that a substantial proportion of footwear products available today are manufactured using synthetic and non-leather materials such as nylon, PVC, and other advanced polymers. The growing popularity of athletic, casual, and leisure footwear has accelerated this transition. Nevertheless, he emphasized that leather continues to occupy a strong position in premium, luxury, and high-quality footwear segments, where durability, comfort, craftsmanship, and aesthetics remain highly valued.

Mr. Chattoraj further remarked that future growth in the footwear sector will depend upon the successful integration of both leather and alternative materials, supported by innovation, sustainability, and consumer-driven design approaches. He expressed hope that the technical presentations would provide valuable perspectives on how the industry can effectively address these evolving market dynamics.

The session featured the following presentations:

1. **Keynote Address by Dr. Bhabendra Nath Das presented by Dr. Buddhadeb Chattopadhyay** – *Shoe Manufacturing Technology: Today and Tomorrow*

2. **Dr. Sujata Mondal** – *Migration of Chemicals and Colorants in Footwear and Its Effects: Precautions and Prevention for Sustainability*

3. **Dr. Suresh Kumar** – *Development of Virtual Environment with Dynamic Simulation of Color, Texture and Design for Footwear*

4. **Dr. Sadhanandham J.** – *Design & Development of Smart Analytic Footwear for Ergonomics and Safe Fatigue Tracking for Employee Protection (SAFE-STEP)*

5. **Dr. Brijesh Kumar Sriwastava** – *Application of Biclustering Algorithm in Bioinformatics and High-Quality Leather Products*

6. **Dr. Rajesh C. M.** – *Sustainable Material Innovations in Footwear Design: Natural Fibre and Waste Rubber Reinforced Bio-Enriched Soles for Footwear Applications*

7. **Dr. Karthikeyan K.** – *A Futuristic Paradigm Shift in Footwear Manufacturing: An Approach to Innovation and Sustainability through Additive Manufacturing (3D Printing)*

8. **Dr. R. Sathiyaraj** – *Development of Smart and Modular Electrical Hazard (EH)-Rated Boots for Enhanced Protection, Monitoring, and Sustainability*

Paper presentation by Dr. Brijesh Kumar Sriwastava

The keynote address on **"Shoe Manufacturing Technology – Today and Tomorrow"** was originally scheduled to be delivered by **Dr. Bhabendra Nath Das**, former Head of the Shoe and Product Design Centre. Due to serious illness, Dr. Das was unable to attend the conference in person. However, demonstrating his commitment to the scientific community, **Dr. Buddhadeb Chattopadhyay** delivered his keynote address.

The keynote presentation provided a comprehensive overview of the evolution of shoe manufacturing technologies and examined the transformative developments shaping the future of the footwear industry. Dr. Chattopadhyay discussed the transition from traditional manufacturing systems to modern digitally integrated production environments characterized by automation, intelligent manufacturing, computer-aided design, advanced materials, and sustainability-driven innovations.

Paper presentation by Dr. Rajesh C. M

Particular emphasis was placed on the growing influence of digital technologies, simulation tools, smart manufacturing systems, and additive manufacturing processes in enhancing product quality, reducing development cycles, and improving manufacturing efficiency. The keynote also highlighted the increasing

importance of customization, consumer-centric design, sustainable materials, and environmentally responsible production methods in defining the future roadmap of the footwear sector.

The subsequent technical presentations reflected many of these emerging trends. Several speakers showcased innovations in smart footwear systems, digital design environments, virtual product development, advanced protective footwear, sustainable materials, and data-driven manufacturing approaches.

Dr. Karthikeyan K receiving Citations by Dr. K. Krishnaraj and Mr. Arun Kumar Chattoraj

Research on smart footwear technologies demonstrated how wearable electronics, sensors, and monitoring systems can improve worker safety, ergonomics, and health tracking. Other presentations explored the use of advanced computational tools, simulation environments, and artificial intelligence to optimize footwear design, material selection, and manufacturing processes.

The session also highlighted the growing significance of sustainability within footwear manufacturing. Presentations on waste rubber utilization, natural fibre-reinforced composites, chemical migration prevention, and environmentally friendly materials demonstrated the industry's increasing commitment to circular economy principles and responsible production practices.

Particular interest was generated by the presentation on **3D printing and additive manufacturing**, which showcased how emerging manufacturing technologies are expected to revolutionize footwear production through customization, material efficiency, rapid prototyping, and reduced environmental impact.

Following the technical presentations, **Dr. Bhabendra Nath Das** was presented with a **Memento and Citation** in recognition of his keynote address. Since Dr. Das was unable to attend the conference physically, the memento and citation were received on his behalf by **Dr. Buddhadeb Chattopadhyay**.

Dr. Sujata Mondal discussed the migration of chemicals and colorants from footwear materials and their potential impact on consumer health and the environment. The presentation highlighted preventive measures, regulatory considerations, and sustainable manufacturing practices aimed at minimizing chemical risks and enhancing product safety.

Dr. Suresh Kumar presented the development of a virtual design environment capable of dynamically simulating footwear colour, texture, and design variations. The technology enables faster product development, reduces material wastage, and supports more efficient decision-making during the design process.

Paper Presentation by Dr. R. Sathiyaraj

Dr. Sadhanandham J. showcased SAFE-STEP, an innovative smart footwear system designed to monitor user fatigue and ergonomic parameters in real time. The technology has significant potential for improving workplace safety, employee well-being, and occupational health management.

Dr. Brijesh Kumar Sriwastava explored the application of advanced biclustering algorithms for analysing complex datasets in bioinformatics and leather production. The presentation demonstrated how data analytics can support process optimization, quality improvement, and informed decision-making in the manufacture of high-quality leather products.

Dr. Rajesh C. M. presented sustainable footwear sole materials developed using natural fibres and recycled waste rubber. The study highlighted the potential of bio-enriched composites to enhance product performance while reducing environmental impact and promoting circular economy principles.

The Chair and Co-Chair were felicitated with plants and citations by Dr. Buddhadeb Chattopadhyay

Dr. Karthikeyan K. discussed the transformative role of additive manufacturing in the footwear sector. The presentation demonstrated how 3D printing technologies can enable customized production, reduce material wastage, shorten development cycles, and contribute to more sustainable manufacturing practices.

Dr. R. Sathiyaraj presented the development of smart modular electrical hazard-rated safety boots designed to provide enhanced protection in high-risk work environments. Equipped with monitoring capabilities and sustainable design features, the footwear offers improved safety, durability, and operational efficiency.

All other paper presenters were also presented with **Citations** by **Dr. K. Krishnaraj** and **Mr. Arun Kumar Chattoraj** in appreciation of their valuable scientific contributions and participation in the conference.

Thereafter, both the Chair and Co-Chair were felicitated with **plants and citations** by **Dr. Buddhadeb Chattopadhyay** as a token of appreciation for their guidance, leadership, and successful conduct of the technical session.

The session concluded with an optimistic outlook on the future of the footwear industry and reinforced the importance of innovation, sustainability, advanced manufacturing technologies, and interdisciplinary collaboration in shaping the next generation of footwear products and manufacturing systems.

(to be contd….)

Back to School Column

Dr N K Chandra Babu

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SYSTEM DEVELOPMENT IN TANNERIES

(Contd. from August issue)

Energy Management

- Energy - electrical and thermal - is a critical input for the tanneries.
- Tanning and finishing of leather is fairly energy intensive and continuous uninterrupted availability of electric power is a major requirement of tanneries.
- With the improvement in the living standards of the people the demand for electric power is increasing and will continue to increase.
- As the generation of hydro electric power is not unlimited and the overall demand is increasing continually the availability of electric power will become restricted over time.
- The availability of petroleum based fuels – furnace oil and diesel will become more restricted and the prices will increase.
- In addition to using electricity from the public grid, the tanneries use diesel for running generators and furnace oil / diesel for steam generation in boilers.
- The tanneries must record the units of electric power, diesl and furnace oil used and calculate the total energy consumption.
    - litre of diesel / furnace oil = 11.67 kwh = 42 MJ.

- The details of energy consumption per day must be recorded on a daily basis without fail.
- All the possible ways and means of reducing energy consumption - electricity, diesel and furnace oil must be explored by the tanneries.
- In view of these developments the tanneries must focus on improving the efficiency of energy utilisation .
- Some of the big international ‘’brands’’ of leather products are members of Leather Working Group, and they insist on auditing the energy consumption of the tannery per square meter of leather produced by them before placing orders with them.
- They categorise the energy consumption efficiency of the tanneries into – good – average – poor – very poor ‘’ as per the guidelines given below .
- They lay also emphasis on using renewable sources of energy such as solar and wind wherever possible to reduce carbon footprint and the way weightage for this in the overall rating

ENERGY CONSUMPTION IN LEATHER PRODUCTION - UNITS - MJ / SQ.MTR						
LWG RATING	**RAW TO TANNED**	**TANNED TO CRUST**	**RAW TO CRUST**	**TANNED TO FINISH**	**CRUST TO FINISH**	**RAW TO FINISH**
VERY GOOD	9	5	15	20	14	30
GOOD	10 - 27	6 - 16	16 - 43	21 - 57	15 - 40	31 - 84
AVERAGE	28 - 32	17 - 19	44 - 52	58 - 68	41 - 48	85 - 101
POOR	33 PLUS	20 PLUS	53 PLUS	69 PLUS	49 PLUS	102 PLUS
1 KWH = 3.6 MJ 1 MJ = 0.2775 KWH						

ENERGY CONSUMPTION IN LEATHER PRODUCTION - UNITS - KWH / SQ.MTR						
LWG RATING	**RAW TO TANNED**	**TANNED TO CRUST**	**RAW TO CRUST**	**TANNED TO FINISH**	**CRUST TO FINISH**	**RAW TO FINISH**
VERY GOOD	2.5	1.4	4.2	5.6	3.9	8.3
GOOD	2.8 - 7.5	1.7 - 4.4	4.4 - 11.9	5.8 - 15.8	4.2 - 11.1	8.6 - 23.3
AVERAGE	7.8 - 8.9	4.7 - 5.3	12.2 - 14.4	16.1 - 18.9	11.4 - 13.3	23.6 - 28
POOR	9.2 PLUS	5.6 PLUS	14.7 PLUS	19.1 PLUS	13.6 PLUS	28.3 PLUS
1 KWH = 3.6 MJ 1 MJ = 0.2775 KWH						

- The drive transmission efficiency of v – belt drives, gear drives, chain drives and belt drives - must be maintained at high levels by proper checking and adjusting the drive tensions / components.
- Proper lubrication of bearings and moving parts plays a very important role in maintaining the drive efficiency at high levels.
- Correct insulation of boilers , steam pipelines and thermic fluid pipelines is of critical importance in preventing heat losses.
- Energy efficient lighting will certainly help.
- Every unit of energy saved is valuable and an awareness must be created in this regard among all the workers and staff.

Productivity & Performance Efficiency Improvement

Productivity may be considered as the quantity of production out-put per one unit of input.

Productivity in tanneries can be assessed as given below .

- Sq.Ft / Man Hour or Sq.Ft / Man Day
- Sq.Ft / Kg OF Raw Material In-Put
- Sq.Ft / Energy Unit
- Sq.Ft / Unit Of Capital Deployed

The measurement of the current productivity levels is the first step in the mission to improve productivity.

Once the current productivity levels are measured and documented the teams have to set their own goals with regard to the improvements they want to achieve.

Sq . Ft / Man Day

- This is the most easy parameter to measure and monitor .
- The final out-put of finished leather delivered by the production department to the finished leather warehouse is the quantity to be taken into consideration for the calculation of productivity index.
- In order to achieve an increase in the finished leather out-put for each and every day all the departments must work in tandem in a synchronized manner.

Work Loading of Machines

- Idle time of machines and operators has to be completely eliminated by proper planning and coordination between the various departments / sections and by proper preventive and routine maintenance of the machines and equipment.

- The work loading of each machine has to be planned in detail in advance in synchronization with the delivery date oriented production plan.

Area Yield Enhancement

- The finished leathers are sold on the basis of area and the increase in the area of individual piece of finished leather must be the focus of the production team.
- Critical areas and parameters to be measured and monitored to achieve the enhancement of area yield of each skin / side are :
    - Level of sammying to reduce the moisture content to the correct level
    - Pressure level in setting out to achieve maximum flattening and stretching of the skins/sides
    - Temperature, duration and vacuum level in vacuum drying
    - The moisture level at the beginning and end of overhead drying
    - Moisture level during staking and toggling
    - Temperature during toggling
- Toggling is a ''must'' operation as it enhances the area yield to the maximum extent possible.
- If the tannery does not carry out toggling it is equivalent to creating a cash loss unless the tannery has carried out a cost / benefit analysis with regard to toggling and confirmed that is profitable not to toggle.
- Toggling can help to create additional employment opportunities in addition to increasing the area yield and thus the profits.
- Temperature and pressure in plating and ironing operations.

- The processing chemicals – Chromium content in wet blue has to be recorded for each lot and the distribution of chrome has to be also uniform or otherwise there will be area reduction during splitting and shaving. Some buyers of wet blue especially hides insist that the leather should stand boil test for 3 min to ensure this. Wet blue measurement has to be also carried out carefully. Retanning is also critical. Syntans and vegetable tanning extracts - both type and offer levels impact strongly on the area yield of the leathers treated.
- The effects of these products have to be studied and modified using special auxiliaries and controlling other processing parameters – temperature, float, drum rpm.
- The required level of fullness and substance has to be achieved without increasing the thickness much as the increase in thickness will automatically lead to a reduction in the area of the leather.
- Measuring of the finished leathers is a critical area, as improper measuring methods and inadequate measuring machines can lead to a reduction in the area recorded as compared to the actual area.
- For very soft and thin leathers ‘‘roller type’’ measuring machines with suitable spreading mechanisms are advantageous .

Sq .Ft / Kg of Hide / Skin

- The area yield per kg of hides / skins is less obvious as a parameter for monitoring and enhancing the productivity. But this is a very important parameter to be measured and enhanced .
- Major focus in this regard has to be on the beam house and tanyard processing methods and controls.
- The right level of swelling and plumping in liming has to be achieved without excessive plumping or swelling ,as this will result in the reduction of area.

- Lime splitting of hides helps to enhance the area yield considerably.
- The process chemicals and the processing parameters have a major impact on the flatness and area of the hides and skins.
- Any damage during the machine operations creates the necessity to trim out the damaged portions leading to a substantial reduction in the area yield of individual hides and skins.
- The measurement and monitoring of the quantities of leather trimmed out at different stages during the production sequence forms the basis for implementing the control and initiating the awareness about the necessity to minimise the trimming levels continuously and improve the area yield / piece.

Sq .Ft / Unit of (1) Water and (2) Energy - Consumed

- These parameters in general are the least obvious as measurable indicators of productivity.
- Water and energy will become critical in-puts which need to be consumed or utilised with minimum wastage as the availability of these in-puts will become scarcer with time.
- The costs of water and energy in-puts will increase in the future and the improvement of productivity with regard to these inputs will lead to the enhancement of the profitability of the tanneries.
- Some of the major international brands of leather products – shoes, leather goods, accessories – insist on assessing the amounts of water and energy used by the tanneries in an attempt to meet the expectations of their customers, who insist on purchasing products which have been produced with minimum impact on the environment in which the tannery is located.

Sq. Ft / Unit Of Energy

- Most of the latest tannery machines are ‘’energy intensive‘’ and are fitted with high H.P/K.W capacity motors.
- Some of them require compressed air and are coupled with ‘’energy intensive” air compressors.
- It is necessary to deploy the optimum number of workers for the work using these machines to ensure that the maximum out-put per hour is achieved .
- The out-put levels of setting – out machines have to be studied under the following worker deployment options .
    - One operator - without any helper
    - One operator - with one helper to receive the leathers after the setting-out and piling them properly - flat without any folds on a horse or trolley . This option will allow the operator more time to carry out the setting – out operation and to spend less time in piling the leather after setting out .
- A time study of the machine operations using the concepts of operations management is a useful method to arrive out the best possible options .

Product Quality Assurance

- ‘’Quality’’ may be defined as fitness for use and conformance to requirements.

- ‘’Quality’’ may also be defined as value for money and consistency in performance
- The focus of the tanneries has to be on ‘’ quality assurance system ‘’ and not just limited to ‘’quality control system ‘’.
- Quality assurance system - sequence
- ‘’Quality control ‘’ was the old concept of ‘’end of the pipe ‘’ checking of product specifications or performance parameters against a set of specifications and ‘’passing’’ the products which meet the specifications and ‘’rejecting ‘’the products which do not meet the specifications
- The fact that there was the ‘’scope’’ for the rejection of products which did not meet the ‘’required specifications’’ clearly implies that the production system did not have the inbuilt safe-guard mechanisms to exclude the forward movement of products that did not meet the ‘’quality’’ requirements
- What is the cost of rejections ?
- Who bears the cost of rejections ?

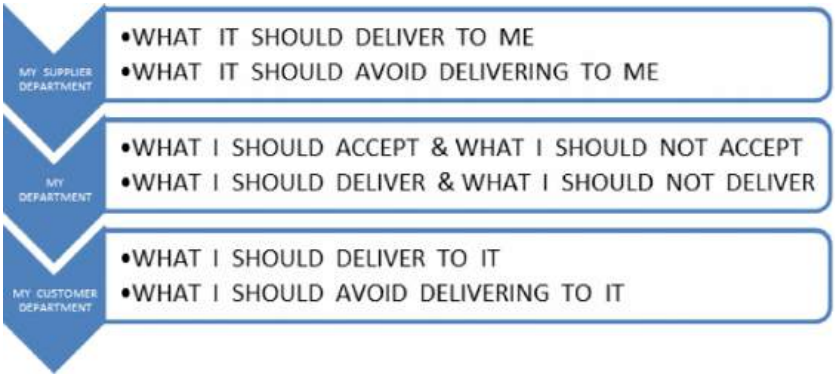
Obviously the organization carrying out the production process bears the cost of the rejections.

- Rejections mean a cash loss to the organisation as the material in puts and the production time and resources spent on the ‘’rejections’’ are losses .
- ‘’Quality assurance ‘’ implies that the quality is assured at each stage of production and only the components or products which conform to the specified ‘’quality assurance parameters ‘’ specified in the ‘’output norms ‘’ of that department / section / operation are allowed to progress to the next stage or operation .
- The components or products which do not conform to the specified ‘’quality assurance parameters’’ are taken up for

suitable re-work and are checked after the re-work for conformance .

- The reworked materials are allowed to progress to the next department / section only after checking their conformance to the required specifications.

Work – Station Concept



- Every department is an ‘’internal customer’’ and simultaneously is an ‘’internal supplier ‘’
- The ‘’output ‘’ norms of one department (supplier department) will be the ‘’input’’ norms of the next department (customer department).
- As a customer, it must check the in-coming materials and ensure that they conform to the ‘’input’’ norms / quality assurance parameters of their department
- It must be authorised to refuse to accept the in-coming materials if they do not conform to their required ‘’input norms’’
- As a supplier it must check the conformance of the quality assurance parameters of their output against the ‘’output norms ‘’ of their department and ensure that they conform to the specified norms ,before delivering the lot to the next department)

- A department must deliver only the items which meet the ''input '' norms of the receiving department.

Internal supplier	Internal customer
- Beam house	Tanyard
- Tanyard	Wet blue store
- Wet blue store	Dye house
- Dye house	Crust yard
- crust yard	Finishing yard
- Finishing yard	Finished leather warehouse
- Finished leather warehouse	Customer (external customer)

- The quality assurance parameters include both measurable ''objective '' parameters and non – measurable ''subjective '' parameters.

Measurable / Objective Parameters

Process Related Parameters

Float volume; Float temperature; Float pH; Leather pH (surface and cut section); Viscosity (^{o}Be); R.P.M (Drums and Paddles); Temperature (ironing machine, plating machine, vacuum drier, drying tunnel, drying chamber, toggling machine); Pressure (plating machine, embossing machine); Weight of chemicals; Moisture content of leather

Out Put - Leather Related Parameters

Tensile strength; Elongation at break; Maximum force; Tearing strength (stitch tear and slit tear); Grain cracking resistance; Flexing endurance; Dry rub and wet rub fastness; Abrasion resistance; Shrinkage temperature; Boil test; Light fastness; Elastic stretch - ''RUN''; Water proofness; Resistance to heat; Water vapour permeability; Washability; Perspiration resistance; Fastness to dry cleaning; Finish adhesion; Resistance to fungal growth; Absence of offensive smell.

Quality Specifications - Tolerance Bands/Limits

- For each parameter specified or required by the customers , the tannery must define and record the permitted levels of variation acceptable as a '' tolerance band'' with the target specification as the ''centre'' of the band
- Products with quality assurance parameters falling outside the ''tolerance bands'' will have to be withheld for possible rework and correction

Tolerance Bands - Band Widths

Wide Band - Width

Limit				Target				Limit

Medium Band - Width

Limit		Target		Limit

Narrow Band - Width

Limit	Target	Limit

- As far as possible the tannery must aim to achieve a narrow band-width which is practically possible.
- Reference swatches to illustrate the subjective assessment parameters must be kept to illustrate the target requirements and the limits of the tolerance band.
- Acceptable - colour range, softness range, fullness range, tightness range, shine level range–tolerance bands are best illustrated by reference leather samples.

Reference Leather Swatches Maintenance System

- The customer approved reference leather swatches must be recorded and maintained in a proper condition without any soiling or becoming dirty due to repeated handling

- The following details of the reference leather swatch have to be recorded in a centralised data-bank immediately on receipt of the swatch.

Customer name/code	Customer order details	Article name
Article type	Article description	Size range
Thickness range	Colour name	Colour code
Specific requirements	Date of receipt	Validation details

- Depending on the size of the swatch received one quarter each has to be given to dye house, finish yard, finished leather warehouse and production manager.
- These smaller swatches have to be authorised by the production manager by signing on the back of the swatches
- All the swatch samples have to be stapled on the inside of a ‘’swatch folder ‘’ wrapped on the top and bottom sides with a transparent cellophane paper to prevent any accidental soiling
- The swatches tend to get soiled very quickly with a marked change in the colour due to the pickup of dirt and sweat from handling
- The reference to soiled swatches during colour matching in finishing can lead to substantial shift in the colour ,which in extreme cases may lead to the customer refusing to accept the lot
- In case a swatch has been replaced with a new swatch by the customer this change must be communicated clearly in writing to all the departments and the old swatches must be withdrawn and cancelled with a marking ‘’ not valid ‘’ and ‘’replaced by swatch no.----- dated ------ .’’

This aspect has to be taken seriously and the procedures mentioned above have to be implemented.

(To be continued)

Strategy and Leather Industry Part – IV

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1. Advancements in Sustainable Leather Manufacturing[1]

Sustainably produced leather is becoming an important aspect of the fashion industry. There are many benefits to using sustainable leather, including improving the environment and contributing to ethical practices.

Leather has been used for centuries as a material for clothing and accessories. At its most basic, leather is a mixture of water, collagen, and other fibrous substances. The process of making leather requires a lot of energy and resources, which is why it's often considered to be environmentally harmful.

There are many different types of sustainable leather production methods available, each with its own set of benefits. In today's guide, we'll understand and discuss thoroughly about advancements in sustainable leather manufacturing.

- What is Sustainable Leather Manufacturing?
- Importance of Sustainability in Leather Manufacturing
- Advancements in Sustainable Leather Manufacturing
- Traditional Leather Manufacturing Process
- Alternative Materials
- Water-Intensive Process of Leather Tanning
- Chemical Reduction
- Circular Economy

- Frequently Asked Questions (FAQs) Associated with Advancements in Sustainable Leather Manufacturing

1.1 What is Sustainable Leather Manufacturing?

Sustainable leather manufacturing refers to the production of leather using methods that minimize negative impacts on the environment and prioritize ethical and social responsibility.

This can include reducing water consumption, minimizing the use of harmful chemicals, and recycling or repurposing waste. Sustainable leather manufacturing also emphasizes the humane treatment of animals, fair labor practices, and transparency in the supply chain.

The goal of sustainable leather manufacturing is to create a more responsible and environmentally friendly leather industry.

1.2 Importance of Sustainability in Leather Manufacturing

Sustainability in leather manufacturing is of great importance due to its significant impact on the environment and society. Leather production is a complex process that involves the use of various chemicals and resources, including water, energy, and raw materials.

The traditional leather manufacturing process is known to cause several environmental problems, such as air pollution, water pollution, and deforestation, which can have adverse effects on biodiversity and climate change.

Sustainable practices in leather manufacturing have reduced negative impacts on environment!

In recent years, there has been an increasing awareness of the need to adopt sustainable practices in the leather manufacturing industry to reduce its impact on the environment and promote social responsibility.

Furthermore, sustainable leather manufacturing involves adopting eco-friendly practices that minimize the use of chemicals, reduce energy consumption, and use fewer resources.

One of the key benefits of sustainable leather manufacturing is the reduction of pollution. Eco-friendly leather manufacturing processes involve using natural and biodegradable materials, such as vegetable tanning, which reduces the use of harmful chemicals that can pollute the environment. This

not only helps to protect the environment but also ensures that the leather produced is of high quality and safe for use.

Sustainable leather manufacturing also promotes social responsibility by ensuring that workers are treated fairly, and their working conditions are safe and healthy. It promotes the use of ethical practices that take into consideration the well-being of workers, animals, and the environment.

Consequently, the importance of sustainability in leather manufacturing cannot be overemphasized. By adopting sustainable practices, leather manufacturers can reduce their impact on the environment, promote social responsibility, and produce high-quality and safe leather products.

1.3 . Advancements in Sustainable Leather Manufacturing Table – I A

In recent years, there have been significant advancements in sustainable leather manufacturing aimed at reducing the industry's impact on the environment and promoting social responsibility. Some of the notable advancements include:

1.3 . Advancements in Sustainable Leather Manufacturing Table – I A
Use of Eco-Friendly Materials:
The use of natural and biodegradable materials, such as vegetable tanning, reduces the use of harmful chemicals and promotes sustainable practices.
Adoption of Renewable Energy:
The use of renewable energy sources, such as solar and wind power, helps to reduce carbon emissions and promote sustainability.
Renewable energy helps to reduce carbon emission and also promotes sustainability!
Recycling and Waste Reduction:
The adoption of recycling and waste reduction techniques helps to minimize the amount of waste generated during the leather manufacturing process.
Traceability and Transparency:
The implementation of traceability systems helps to ensure that the raw materials used in the leather manufacturing process are sourced responsibly, and the products are manufactured ethically and sustainably.

1.3 . Advancements in Sustainable Leather Manufacturing Table – I A
Use of Alternative Leather Materials:
The development of alternative leather materials, such as pineapple leather, mushroom leather, and apple leather, offers sustainable options that reduce the environmental impact of traditional leather manufacturing.
Overall, these advancements in sustainable leather manufacturing are significant steps towards a more sustainable and responsible leather industry that benefits both the environment and society.

1.4 Frequently Asked Questions (FAQs) Associated with Advancements in Sustainable Leather Manufacturing

1.4.1 Que 1: How do these advancements benefit the environment?

Ans: These advancements benefit the environment in several ways:

Reduced water consumption: The use of closed-loop systems and alternative processes that require less water help to conserve water resources and reduce the amount of wastewater produced during leather production.

Reduced chemical use: Eco-friendly tanning methods and other chemical reduction technologies help to minimize the use of harmful chemicals that can pollute the environment.

Waste reduction and recycling: By finding ways to repurpose and recycle waste generated during the leather production process, sustainable leather manufacturers can help to reduce the amount of waste that ends up in landfills or pollutes the environment.

Reduced carbon footprint: By adopting sustainable practices throughout the supply chain, including using renewable energy sources and reducing the use of fossil fuels, sustainable leather manufacturing can help to reduce the industry's overall carbon footprint.

Overall, these advancements help to create a more responsible and environmentally friendly leather industry that is better equipped to address the environmental challenges of the future.

1.4.2 Que 2: Do sustainable leather manufacturing practices have any economic or social benefits?

Ans: Yes, sustainable leather manufacturing practices can have economic and social benefits as well.

Economically, sustainable leather manufacturing practices can:

Create new business opportunities: The development of innovative technologies and processes in sustainable leather manufacturing can create new business opportunities for manufacturers, suppliers, and other stakeholders in the industry.

Reduce costs: Some sustainable practices, such as reducing water and chemical use, can help to reduce the cost of production over time.

Improve marketability: As consumers become more environmentally and socially conscious, sustainable leather products may become more attractive to buyers, potentially leading to increased demand and higher prices.

Socially, sustainable leather manufacturing practices can:

Improve working conditions: By prioritizing fair labor practices, sustainable leather manufacturers can help to improve working conditions for workers in the industry.

Support local communities: Sustainable leather manufacturing can create economic opportunities and support local communities where leather production is a significant industry.

Promote animal welfare: Sustainable leather manufacturing can prioritize the humane treatment of animals, promoting responsible and ethical animal husbandry.

Overall, sustainable leather manufacturing practices can have a positive impact on both the economy and society, in addition to their environmental benefits.

1.4.3 Que 3: Is sustainable leather more expensive than traditionally produced leather?

Ans: Sustainable leather can be more expensive than traditionally produced leather because of the additional costs associated with using eco-friendly

technologies and responsible production practices. However, as sustainable leather production becomes more common, prices may become more competitive.

1.4.4 Que 4: Are there any drawbacks or limitations to sustainable leather manufacturing?

Ans: One limitation of sustainable leather manufacturing is that not all manufacturers may be willing or able to invest in the necessary technologies and practices to produce sustainable leather.

Additionally, some sustainable leather alternatives, such as vegan leather made from synthetic materials, may not be biodegradable or recyclable.

1.4.5 Que 5: What can consumers do to support sustainable leather manufacturing practices?

Ans: Consumers can support sustainable leather manufacturing practices by choosing products made from sustainably produced leather and asking companies about their production practices. They can also look for third-party certifications that indicate whether a product is sustainably produced.

1.4.6 Que 6: What role do government regulations play in promoting sustainable leather manufacturing?

Ans: Government regulations can play a role in promoting sustainable leather manufacturing by setting standards and guidelines for sustainable production practices. For example, some governments have implemented regulations around water usage and chemical waste in leather production.

1.4.7 Que 7: Are there any certifications or standards that indicate whether leather is sustainably produced?

Ans: Yes, there are several certifications and standards that indicate whether leather is sustainably produced. These include the Leather Working Group certification, which assesses the environmental compliance and performance of leather manufacturers, and the Global Recycled Standard, which certifies products made from recycled materials.

Source : 1. & Table – 1A. Advancements in Sustainable Leather Manufacturing, Deskera.

(to be continued)

High Quality Syntans for Fulfilling All Your Needs

Our Products
Lunatan PS2
Lunatan PTS
Lunatan S
Lunatan CX
Lunatan ART Liquid
Lunatan NSP

Our Pretanning and Tanning Syntans are free of BISPHENOL A, BISPHENOL F, BISPHENOL S, BISPHENOL AF, BISPHENOL B

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