



ILTA
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JILTA

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Our Activities

- An Association with over 600 members from India and abroad working since last 68 years for the growth and development of Leather and its allied industries.
- Organize seminars, symposiums, workshops in order to share information, knowledge & latest development and interactions for the benefit of all concerned.
- Organize Human Resource Development programmes on regular basis.
- Publish for over 60 years, a technical monthly journal namely "Journal of Indian Leather Technologists' Association" (JILTA), widely circulated through out the World.
- Publish books for the benefit of the students at various levels of study, for the Research Scholar and the Industry.
- Work as interface between Industry and the Government.
- Assist Planning Commission, various Government Institutions, Ministry and autonomous bodies to formulate appropriate policies for the growth of the Industry.
- Assist small and tiny leather goods manufacturers in marketing their products by organizing LEXPOs in Kolkata and different parts of India.

Indian Leather Technologists' Association

[A Member Society of International Union of Leather Technologists' and Chemists Societies (IULTCS)]

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JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION (JILTA)

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JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION (JILTA)

Indian Leather Technologists' Association is a premier organisation of its kind in India was established in 1950 by Late Prof. B.M.Das. It is a Member Society of International Union of Leather Technologists & Chemists Societies (IULTCS).

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

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International Leather Fraternity 72 years of service to the

Impact of Global Humanitarian Crisis on Indian Economy



The Russian invasion of Ukraine in February was the largest conventional military attack seen since World War II and has caused a global economic catastrophe. India had taken a neutral stance, born of its historic strategic partnership with Russia. This alliance, harking back to Cold War times, spans several fronts—diplomacy, defence, nuclear energy, and technology—making Russia a pivotal part of India's nation-building process, especially during its infancy. Taking ahead the memory of US action in 1971 against India and supportive role of USSR for India, the nation has taken the right stand against US. Even, Ukraine is also feeling the same heat as Afghanistan by retreat of the so called most powerful nation of the world. Yet, this is unlikely to shield India from the ravages of a war of such scale. Especially since, in the global geopolitical context, both India and Russia today find themselves ever more closely linked to two others powers, China and the US.

The Russia-Ukraine crisis has stoked uncertainty in global trade and will impact oil and other commodities, according to Sunil Sinha, research director, and principal economist at India Ratings. India may not have a significant merchandise trade with Russia, nevertheless, it stands to lose economically due to supply disruptions caused by Western sanctions. "Despite India's limited direct exposure, the combination of supply disruptions and the ongoing terms of trade shock will likely weigh on growth, result in a sharper rise in inflation, and (lead to) a wider current account deficit," said Sonal Varma, chief economist at Nomura Holdings in a report.

Here are the ways India could suffer due to a Russia-Ukraine war even without being part of it.

In reaction to the US's ban on all oil and gas imports from Russia, Brent crude prices surged to nearly \$130 per barrel last week, up 43% from the beginning of February. This is a major

setback for global economic growth as Russia is one of the largest exporters of crude oil globally. India's trade, however, comprises only 1% oil imports from Russia, but there could be a spill over impact in the form of high inflation and sluggish growth. But, Indian oil companies have defied the embargo by beginning to import cheaper crude oil from Russia, though of inferior grade than supplied by OPEC countries.

On March 13, Morgan Stanley lowered India's GDP forecast for the fiscal year 2023 by 50 basis points to 7.9%, citing risks to macro stability due to high crude oil prices. "Even as we expect the cyclical recovery trend to continue, we expect it to be softer than we previously projected," it said in a report. "We believe that the ongoing geopolitical tensions exacerbate external risks and impart a stagflationary impulse to the economy." It was noted that more risks could arise if global growth conditions weaken further, which would hamper India's export and capital expenditure cycle.

India depends on imports to meet up to 85% of its crude oil needs. The surge in international oil prices to a 14-year high will now result in broader price pressures. Analysts conclude that the impact on India's economy will be felt mostly through higher cost-push inflation weighing in on all economic agents—households, businesses, and government.

Every 10% rise in crude oil prices leads to a 0.4 percentage point-rise in consumer inflation, Nomura has stated. Morgan Stanley pegs retail inflation at 6% for the fiscal year 2023, much higher than the RBI's 4.5%. This has increased the risks of a higher import bill and, in turn, a widening of India's current account deficit (CAD).

The CAD is expected to widen to 2.6% of the GDP in the financial year 2023, up from 1.7% last year, according to a report by

Nomura Research. This is likely to dent the rupee, which recently plunged to its record low of 76.98 a dollar.

Apart from that, Ukrainian situation has deprived India of major import of edible Sunflower oil, thereby causing unprecedented hike in edible oil market and promoting black marketing trend.

It is believed that the multiple abstentions from a vote in the United Nations from India since the Ukraine invasion were driven by the country's need to secure its supply of defence equipment, most of which comes from Russia. Between 2016 and 2020, India accounted for nearly 25% of Russia's total arms exports, according to trends by a defence think tank Stockholm International Peace Research Institute.

This explains that the share of defence expenditure in India's budget every year is not little. In its union budget for 2022-23, India allocated \$70.2 billion on military spending, up almost 10% over the initial allocation in the previous fiscal. A key defence contract in question is the delivery of the Russia-developed S-400 air missile system worth \$5 billion, which was signed in October 2018. A congressional research service report (pdf) from October 2021 said the Indian military cannot

operate effectively without Russian-supplied equipment. The Indian Army's main battle tank force is composed predominantly of Russian T-72M1 and T-90S, accounting for 66% and 30% of all units respectively, it said. India will continue to rely on Russian weapons systems in the middle term, analysts say, despite the US's threat of sanctions over the S-400 purchase looms large over India.

But, India has learnt a lesson for rapid indigenisation of its defence equipment, electronic components and other necessary after Galwan clash and recent Eukrain crisis. This is the silver lining of the global crisis for India. India would the global saviour in coming days if the Government continues to adopt prudent decisions and can defy embargo from so many self-proclaimed global paper tigers. India would stride fat to get Indianized at a rapid pace and realise her potential.

Goutam Mukherjee
Dr. Goutam Mukherjee
Hony. Editor, JILTA

Read and Let Read :-

JILTA

Tell me and I forget, teach
me and I may remember,
involve me and I learn

Stahl Campus®



As an active proponent of responsible chemistry, Stahl has established the Stahl Campus® training institute in its Center of Excellence for sustainable leather technologies in Kanpur. With our Stahl Campus® Leather Modules, we can offer training and information, such as responsible chemistry and sustainability in leather production. We believe that in this way, we facilitate transparency that inevitably will lead to a better supply chain with responsible chemistry.

Our approach is modular, making it easy to tailor learning programs to specific needs. Stahl Campus® has at its core the drive to unlock human potential and make that new

competitive advantage. By providing the possibility of sharing knowledge, we embrace our role in the dynamic leather and chemical industry. Stahl Campus® is a great opportunity to strengthen skills and capabilities in order to make working methods more efficient by sharing experiences and studying products and procedures.

If you're interested to receive more information on Stahl Campus®, please contact Prasanna Maduri (Prasanna.maduri@stahl.com).

If it can be imagined, it can be created.

Seize the opportunities of renewable chemistry



Today's leather tanneries not only have to deliver high-quality durable products – they must also deliver them with minimal environmental impact and without compromising on the health and safety of people. At Stahl, we see this as an opportunity to support our customers and the wider leather industry in driving responsible products and sustainable living. In close

cooperation with our partners, we recently launched Stahl Ympact®, a family of leather chemical solutions made with renewable feedstocks. Stahl Ympact® will help tanneries to reduce their environmental footprint without compromising on the quality and performance of their products since these ZDHC-compliant solutions deliver the same or improved

function performance to conventional alternatives. After the introduction of 7 product solutions of renewable carbon polyurethanes for base- and topcoats in leather finishing, we've now also introduced 15 specific solutions of renewable carbon wet-end products for leather processing.

If you would like more information about Stahl Ympact® or how we can support you to embrace the opportunities of an evolving leather industry, visit stahl.com or get in touch with us at communications@stahl.com.

If it can be imagined, it can be created.





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NATIONAL SAFETY COUNCIL

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NSC/TN/OHSE AWARDS/2022

March 9th, 2022

Mr. J. Ravi
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Dear Sir,

Sub: National Safety Council – Tamilnadu chapter's Occupational Health, Safety and Environment Awards 2020

National Safety Council – Tamil Nadu chapter pleased to convey our Appreciation for your continued patronage towards the council activities. We thankfully record your participation in "Occupational Health, Safety and Environment Awards 2020" and highly commend your efforts in highlighting the EHS performance and achievements.

The committee of experts duly constituted by the Chairman, National Safety Council – Tamil Nadu Chapter has evaluated the applications in stages, site visit to the shortlisted industries and arrived at the final recommendations.

The recommendations of the committee along with the process of methodology submitted to the Chairman of National Safety council – Tamil Nadu Chapter after a detailed scrutiny, approval accorded.

On behalf of Chairman and National Safety Council – Tamil Nadu Chapter, I am pleased to inform you that your organization has been adjudged for the

"Occupational Health, Safety and Environment Awards 2020" – "APPRECIATION AWARD"

We would like to Congratulate you and your team for bagging this Prestigious Award.

The Occupational Health, Safety and Environment Awards 2020 & Safety Competitions-2020, date of Award Ceremony will be intimate Soon.

Thanks and Regards

P. Rajmohan

(Dr. P. Rajmohan)
Chairman – Occupational Health, Safety and Environment Awards 2020

Secretary, National Safety Council-Tamil Nadu Chapter



STAHL EXPLAINS: THE BIO-NIPU PROJECT

As part of Stahl's ambition to transition toward more responsible chemistry based on renewable feedstocks, our Open Innovation Team is participating in an Interregional (Interreg Vlaanderen-Nederland) project known as "BioNIPU". The project brings together a consortium of research and innovation institutions (Maastricht University, Thomas More, Centexbel) as well as industrial partners (Stahl, LUC Group) from the Belgium/Netherlands border region.



The aim of the consortium is to strengthen the position of the region in the development and use of bio-based materials. As its name suggests, the project focuses on the development of innovative, 100% bio-based polyurethanes.

With isocyanates coming under increasing scrutiny due to their hazardous nature and toxicity, the need to remove them from the polyurethane production process is becoming increasingly evident. Unlike traditional polyurethanes, which are produced via the reaction of isocyanates with polyols, Non-Isocyanate Polyurethanes (NIPUs) remove the need for isocyanates altogether. Additionally, they offer several advantages when compared with regular polyurethanes. For instance, NIPUs can be made with up to 100% renewable raw materials, which is currently unfeasible for conventional polyurethanes due to the scarcity of bio-based isocyanates. This new development could lead to a significant reduction in the total carbon footprint of our polyurethane production. Furthermore, NIPUs potentially possess additional chemical functionalities with the potential to provide new properties and enhanced performance to differentiate and grow Stahl's future product portfolio.

In close collaboration with its consortium partners, Stahl uses its unique expertise in the polyurethane chemistry to determine the best synthetic approach for obtaining bio-NIPU dispersions. The properties of the resulting bio-NIPUs will then be screened and compared to reference

products for relevant applications. To ensure the sustainability of the bio-NIPUs under development, a lifecycle assessment (LCA) will be performed to identify the best candidates for the industrial-scale production of renewable, non-toxic, and high-performance end products.

The consortium was initiated in 2019 and has already resulted in the synthesis of NIPUs with a renewable carbon content of up to 97%. These NIPUs are currently being screened to determine their properties and performance. The most promising will be scaled up to pilot level for further investigation into their value in applications such as coatings, adhesives, and elastomers.

At Stahl, we believe that sharing knowledge and expertise is an essential part of creating a sustainable future powered by responsible chemistry. We are proud to be part of this and other open innovation projects that are leading the way in the development of low-impact, futureproof solutions for our industry.

For more information on the Bio-NIPU project, please visit: <https://www.bionipu.eu/>

To read more about the development of NIPUs, you can refer to the following scientific review: Recent Advances in Fabrication of Non-Isocyanate Polyurethane-Based Composite Materials

(STAHL Press release – 14/03/2022)



From the desk of General Secretary



WEBINAR ON “11th PROF. MONI BANERJEE MEMORIAL LECTURE”



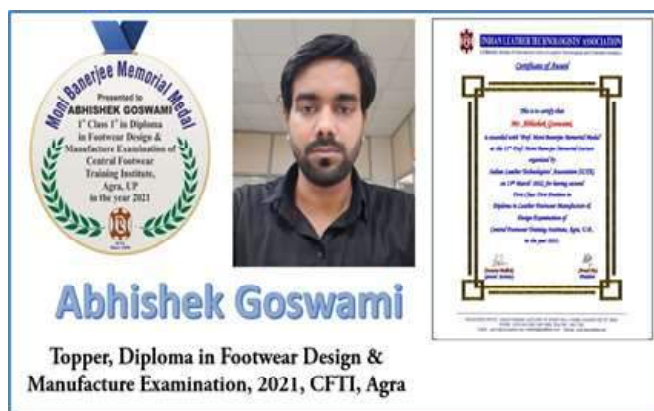
Like previous year, this year also “Prof. Moni Banerjee Memorial Lecture” was organized by our association on digital platform at 7.00 pm on Tuesday, 15th March’ 2022.

The program resumed with the introductory speech delivered by Mr. Susanta Mallick, General Secretary, ILTA. Mr. Mallick briefed the biography of Prof. Moni Banerjee and called on Mr. Arnab Jha, President, ILTA to deliver the Welcome Address. In his address Mr. Jha recalled late Prof. Banerjee as a national stalwart in leather industry and also the days he had passed with Prof. Banerjee during Banerjee’s principalship in GCELT Kolkata.



On conclusion of the Welcome Address, Mr. Mallick announced the name of the following students who have stand topper in different Diploma Examinations in 2021 from different institutes and winner of Prof. Moni Banerjee Memorial Award - 2021:-

a) **Mr. Abhishek Goswami**, being topper in the Diploma in Footwear Technology Examination’ 2021 from Central Footwear Training Institute, Agra.



b) **Mr. Srikanth U.**, being topper in the Diploma in Leather Technology Examination’ 2021 from Govt. Institute of Leather Technology, Hyderabad.



- c) **Mr. Eddula Nishanth Reddy**, being topper in the Diploma in Leather Goods Technology Examination' 2021 from Govt. Institute of Leather Technology, Hyderabad.



- d) **Ms. Sutithi Santra**, being topper in the Diploma in Leather Goods Technology Examination' 2021 from Central Footwear Training Centre, Budge Budge.

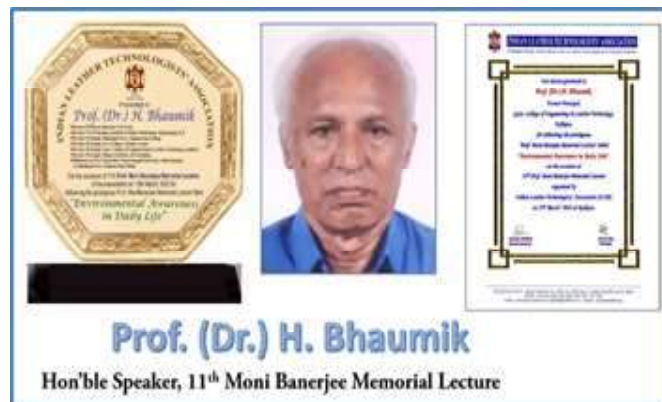


- e) **Ms. Bidisha Dutta**, being topper in the Diploma in Footwear Technology Examination' 2021 from Central Footwear Training Centre, Budge Budge.



Mr. Mallick thereafter requested Mr. Jha to introduce Prof. (Dr.) H. Bhaumik, the hon'ble speaker of the "Prof. Moni Banerjee Memorial Lecture"

Mr. Jha then gave a brief introduction of Prof. (Dr.) Bhaumik, former Principal, Govt. College of Engineering & Leather Technology (GCELT), Kolkata and invited him to deliver his presentation.



Prof. Bhaumik paid his respect and homage to his predecessor Prof. Moni Banerjee and delivered the Prestigious Prof. Moni Banerjee Memorial Lecture titled "**Environmental Awareness in Daily Life**". This was an interesting lecture. Dr. Bhaumik explained the relation and role of nature with human life from inception of the civilization. He mentioned the slokas and quotes from *Vedas* to explain the sense of realization about the necessity of preserving the nature for the sake of better life of human beings from the ancient period. He also explained the source of the term "Greener Technology" used in modern civilization. The audience was enriched by the highly informative deliberation of Prof. Bhaumik.



However, the program came to end with offering Vote of Thanks by Mr. Susanta Mallick, Genl. Secretary ILTA.

There were around 80 – 90 participants over Zoom platform.



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This video recording of the entire program is available on the official YouTube channel of ILTA (ILTA Online), FaceBook page of ILTA (Indian Leather Technologists Association) and the official website of the Association – www.iltaonline.org.

ELECTION SCHEDULE FOR RECONSTITUTION OF EXECUTIVE COMMITTEE OF ILTA AND THE REGIONAL COMMITTEES FOR THE TERM 2022 - 2024

The Executive Committee of ILTA at its 548th Meeting held on 24/02/2022 approved the following schedule for Election of Executive Committee of ILTA and the Regional Committees for the term 2022-2024.

Schedule of Election for 2022 - 2024

Sl. No.	Events	Important Dates	Day
01	Mailing of Nomination papers & Voters' List on or before	02.05.2022	Monday
02	Last date for receipt of Nomination Papers	24.05.2022	Tuesday
03	Last date for receipt of Consent	13.06.2022	Monday

Sl. No.	Events	Important Dates	Day
04	Last date for withdrawal of candidature	17.06.2022	Friday
05	Mailing of ballot papers on or before	06.07.2022	Wednesday
06	Last date for receipt of ballot papers From voters residing outside KMDA area & 24-Pgs (N & S)	03.08.2022	Wednesday
07	Casting of votes by voters residing in KMDA & 24-Pgs (N & S) Area at ILTA Administrative Office 10-00 to 17-00 hrs. (LUNCH BREAK : 1-30 to 2-30 PM)	02.08.2022 & 03.08.2022	Tuesday & Wednesday
08	Counting of votes at ILTA Administrative Office from 11-00 hrs. onwards	05.08.2022	Friday

(Susanta Mallick)
General Secretary

— X —

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YOUTUBE CHANNEL & FACEBOOK PAGE OF ILTA

An official **YouTube Channel** namely **ILTA Online** and a **Face Book Page** namely **Indian Leather Technologists' Association** has been launched for sharing the activities of our Association since November' 2020 and July' 2021 respectively.

You may find all the Lives / Video recordings of different Seminar, Symposiums & Webinars on both of these social medias along with our website **www.iltaonleather.org** time to time.

You are requested to kindly do **Like & Subscribe** the YouTube Channel and "**Follow**" the FaceBook Page to get regular updates on the activities of our Association.

RECEIVING HARD COPY OF JILTA EVERY MONTH

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In case we do not receive any communication from you for a hard copy, we will continue sending e-copy of the same to your email id available with us. You may please verify your email id with our office at the earliest.

PUBLISH YOUR TECHNICAL ARTICLE

Faculties, Research Scholars and students of various Leather Institutes may wish to publish their Research / Project papers in an Article form in this monthly technical journal, JILTA.

Interested author may sent their paper (in MS Word format) along with a PP Photograph and Contact details like Email, Mobile etc. to our email IDs : admin@iltaonleather.org / jiltaeditor@gmail.com

Members are requested to :-

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

General Secretary and the Members of the Executive Committee are available to interact with members at 19.30 hrs, over Phone / Conference call on every Thursday



ILTA
Since 1950

Solidaridad

With over 50 years of experience in developing sustainable solutions to make communities more resilient, Solidaridad has been working on many different issues, from supporting marginalized communities to fostering a more sustainable supply chain.



Castor



Tea



Sugarcane



Leather



Textile



Palm Oil



Aquaculture



Dairy



Fruits &
Vegetables



Gold



Soy



Cocoa



Coffee



Livestock



Medicinal Plant

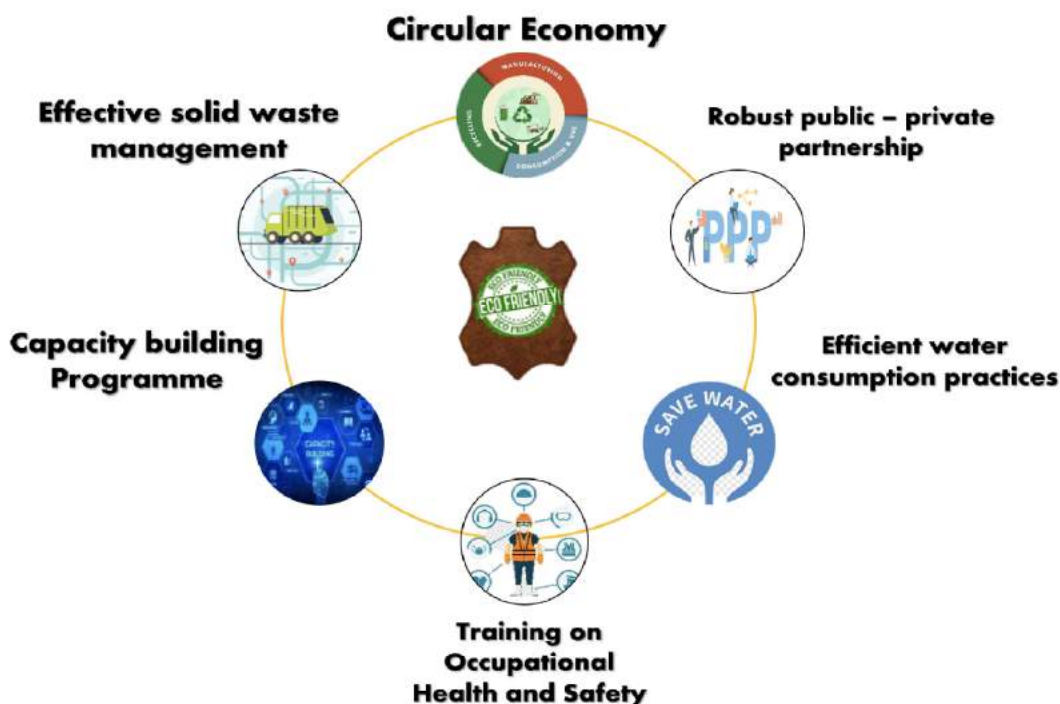


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GRANTS PROGRAMME



**EFFECTIVE WASTE MANAGEMENT AND SUSTAINABLE
DEVELOPMENT OF MSME TANNING COMPANIES IN KOLKATA
LEATHER CLUSTER (BANTALA)
2022-2023**



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INTERACTIVE SESSION WITH THE KOLKATA LEATHER INDUSTRY ON GREEN TANNING PRACTICES

Enhancing Competitiveness of Kolkata Leather CLUSTER through cost-effective and eco-friendly initiatives



switchasia
GRANTS PROGRAMME

Interactive Session with Leather Industry on Green Tanning Practices
24th March, 2022

"EFFECTIVE WASTE MANAGEMENT AND SUSTAINABLE DEVELOPMENT OF MSME TANNING COMPANIES IN KOLKATA LEATHER CLUSTER"

Solidaridad **PISIE** **CLC TANNERS ASSOCIATION**
(We Care for the Environment) **stahl** **dugros**

On 24th March 2022, Solidaridad Regional Expertise Centre organized an Interactive Session with Kolkata Leather Industry on Green Tanning Practices. Representatives of project partners: Politecnico Internazionale per lo Sviluppo Industriale ed Economico (PISIE), the Calcutta Leather Complex Tanners Association (CLCTA), Stahl and Dugros participated in the event. This session was organized under the ambit of the European Union SWITCH Asia funded project 'Effective Waste Management and Sustainable Development of MSME tanning companies in Kolkata Leather Cluster (Bantala)'.

The objective of the session was to gather feedbacks from the industries on the green tanning technologies introduced under the project and also provide a platform for the industries to share their experiences and learnings on sustainable and commercially viable practices. The event witnessed a participation of around 80 people.

About the Kolkata leather project

Project Title: Effective waste management and sustainable development of the MSME tanning companies in the Kolkata Leather Cluster (Bantala)

The overall objective of the project is to reduce environmental footprint of the Kolkata leather tanneries through introduction of eco-friendly and commercially viable practices that supports Kolkata leather cluster to adopt cleaner and sustainable production processes. The project will enable the tanneries to meet the increasingly high international quality and environmental standards and thus enhances the Indian leather industry's competitiveness. This project has been inaugurated by the Hon'ble Chief Minister of West Bengal-Madam Mamata Banerjee in the presence of 4 Ambassadors-European Union, Netherlands, Italy and Germany on 23rd September 2020.

Salient Features of the Project:

- Demonstration of SME green tanning technologies and effective solid waste management practices in tanneries Cluster level solid waste recycling solutions applied at scale
- Effective public-private coordination and planning of waste management improvements at cluster level
- Operational waste management and occupational health and safety (OHS) framework adopted by the industry association (CLCTA) members
- Developing and implementation of training-of-trainers programmes for CLCTA members, centered around the SME demonstration companies

Project Partners: Solidaridad has collaborated with:

- PISIE (Italian Partner): NGO specialized in the technical assistance, training and cooperation project within the leather and leather products sector
- Calcutta Leather Complex Tanners Association (Local partner): An umbrella organization representing MSME tanneries of the Bantala Cluster
- Stahl (Dutch partner): Premier global supplier of environmentally-friendly chemicals to the leather industry
- Dugros (Dutch partner): Leading Dutch leather company involved in production, design and wholesale of various (luxury) leather products

Duration : July 2020 - December 2023



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The event witnessed an eminent panel of speakers, dignitaries from the Kolkata Leather Cluster and technical experts along with project partners who discussed the key topic of green tanning practices introduced under the project.

Mr. Ramesh Juneja, Chairman, CLE Eastern Region & President, CLCTA was the Chief Guest at the event. He encouraged the industry to adopt the cleaner technologies which help in abatement of the pollution. He appreciated Solidaridad for introducing green technologies that are proving to be boon for the Kolkata Leather cluster. Additionally, he requested our partner Stahl to introduce eco-friendly and affordable chemicals that can be the game changer in the industry. Mr. Juneja requested all the tanneries to dump the solid waste at the designated area that has been built for the industry. He advised the industry to take care of their treatment plant properly to run the cluster responsibly. He highlighted that this eco-friendly project defines a great future for the tanneries in Bantala and will enhance their responsibility towards the environment, thereby increasing their efficiency and making them globally competitive.



Mr. Imran Ahmed Khan, Honorary General Secretary- CLCTA was the Special Guest of the event. He thanked all the project partners and stakeholders for and emphasized that without their support it was not possible to come further. He appreciated the proven technologies introduced under the project such as Desalting Machine, Solenoid valve, Enzymatic de-hairing process. Mr. Khan also thanked Hon'ble Chief Minister of West Bengal, Mamata Banerjee for always extending her support to CLCTA. Additionally, he is very hopeful for future endeavors. He assured on behalf of CLCTA that they have been and will be supporting Solidaridad in establishing and adaptation of Green Tanning Practices in the Kolkata Leather Cluster. Mr. Imran advised the industry to keep supporting and adopting the green tanning practices to abort the pollution factors which he sees as future threat. Simultaneously he has taken initiative to build a common waste collection site where all the solid waste from the tanneries and the goods units will be collected. Further this will be used in manufacturing bonded leather which will be used to make value added products thus following the REDUCE-REUSE-RECYCLE process.

Ms. Delphine Brissonneau, Senior Programme Manager- Delegation of the European Union to India and Bhutan, special guest to the event mentioned that connecting people for a good cause is the mission of Switch Asia programme. Between Europe and India, the main goal is preserving the planet and to generate sustainable and decent jobs for the people. She expressed her satisfaction that the common goals are being met by the project "Effective waste management and sustainable development of the MSME tanning companies in Leather". She emphasized that the collaboration of civil society, research institute, government bodies and the industry people will achieve the common goal of Sustainable Development in the Kolkata Leather Cluster. She concluded by congratulating the association of public and private collaboration and she hopes that this project will bring positive changes in the industry and will make the Kolkata Leather Cluster a model for Leather sectors as a whole. Ms. Delphine is based in EU Delhi office and travelled Kolkata as part of the ongoing project.



Mr. Zia Nafis, Joint Secretary- Calcutta Leather Complex Tanners Association) welcomed the respected speakers and the industry for participating in the Seminar. He thanked Mr. Tatheer Raza Zaidi and the team for the tireless efforts on and off the field for bringing the Sustainable development to reality. He mentioned about the new industry pollution control norms laid by the Central Pollution Control Board and West Bengal Control Board, for which it is very important for the tanneries to be vigilant and adopt the GREEN TANNING PRACTICES to meet the control norms. He emphasized that the industry should follow the green practices to abide the new regulation and be a Greener Industry. He discussed about the advantages of Enzyme assisted dehairing, Solenoid valve for reducing water consumption, Desalting machine to dust off the excess salt to reduce TDS in effluent, manufacturing of Paver Blocks from tannery sludge and producing Value-Added products from bonded leather. He personally requested the industry to adopt the dynamic interventions for a better environment.



Mr. Tatheer Raza Zaidi, General Manager-Solidaridad briefed about the organization, Solidaridad. He enlightened the audience about the primary work that Solidaridad has been doing since past 52 years, which is strengthening the supply chain across the globe in more than 45 countries for commodities like tea, coffee, cocoa, fruits & vegetable, dairies, soya, sugarcane etc. The Leather project first started in Kanpur 4 years back. He mentioned that with the support and guidance of industry leaders such as Mr. Ramesh Juneja, Mr. Imran Ahmed Khan and senior technical experts of Solidaridad, a project for the Kolkata Leather Cluster was conceptualized. Solidaridad launched the project “Effective waste management and sustainable development of the MSME tanning companies in Leather” in 2020. The objective of the project has been sustainable development and effective waste management. Team Solidaridad is continuously working towards achieving the Sustainability in practice for the Kolkata Leather Cluster. He emphasized the need to prove the techno-economic viability of the interventions than only all such efforts can sustain in the long run. He also thanked European Union for the support and Ms. Delphine Brissonneau for her valuable time to visit the project. Mr. Zaidi acknowledged the continuous support from Kolkata Industry stakeholders including CLCTA, ILTA, ILPA, Government College of Engineering and Leather Technology etc.

Mr. Pradipta Konar, Project Manager-Leather, Solidaridad thanked the Kolkata industry stalwarts and the industry participants for gracing the seminar. He elaborated the project objectives which is an EU Switch Asia funded project which was inaugurated by Hon’ble Chief Minister of West Bengal, Mamata Banerjee in the presence of national and international dignitaries in 2020. He mentioned that the project has a multi-pronged approach: one is to control the process to reduce pollution load and second is recycle or reutilize the wet and solid waste generated in the processes to establish a circular economy. Mr. Konar, spoke about the pilot projects that have taken place to establish a viable process and parallel R&D trials to bring new interventions which will be beneficial for the Kolkata Leather Cluster. He also mentioned that the solutions will be commercially viable keeping the environmental factors in lieu. The Green Tanning Practices presented to the industry will be economically viable and beneficial. Later, he made a small presentation to provide insight and progress of the project. He concluded the speech with a positive note to work closely with the industry to bring great changes for the betterment of the industry.





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Mr. Shahid Parwez, Owner of Aslam Tanning Industries Pvt Ltd and Joint Secretary-CLCTA: He thanked the industry and Solidaridad for bringing the best practices in the industry. He appreciated the Desalting machine. He further explained the importance that the intervention is proving to be instrumental in reducing the TDS by 33% which is a great achievement. Mr. Parwez appreciated Mr. Tapas Ranjan Biswas for effectively bringing the change through Solenoid valve for reducing 50% of water in fleshing process, Enzymatic dehairing is helping to reduce Amount of Sulphide by 95%, and significant reduction in the emission of Hydrogen Sulphide Gas. He emphasized in increased recycling of wastes to reduce the cost of transportation to safe zone outside CLCTA. He lastly mentioned that in coming days he is expecting better tanning practices which will result into Green Leather cluster.



Ms. Alice Vago, Project Coordinator-PISIE started the address giving a brief profile of PISIE and their expertise in the leather sector. PISIE's main focus is the sustainable development of countries from a social and environmental point of view. There are two specific themes, one best practices and available techniques on environmental impact reduction, which helps in reducing the production of waste over the leather productive chain and secondly, raw-material utilisation, promoting the circularity of tanning auxiliaries already implemented in the Italian industrial cluster.

Mr. Prasanna Maduri, Campus Manager-Stahl mentioned about 17 key Sustainability Development Goals (SDGs) that have been laid by United Nations. He emphasized on, clean water and sanitization and reduction of pollution. He feels that Sustainability in leather sector is of utmost goal the industry should work towards attaining it. Mr. Maduri discussed about Pickle free tanning technology to bring Sustainable development. He mentioned that Leather Industry should be follow the Green Tanning Practices to achieve Socially and Environmentally balanced supply chain. On behalf of Stahl, he assured continuous support to the project and to the purpose at large.



Mr. Khurshid Alam, (Owner of Trident tannery & Hony. Treasurer-CLCTA) Started his speech by bringing up the current problem in the industry. He pointed few problems like the pollution, skilled labors, education and tanning practices. He felt thankful to Solidaridad for stepping forward and help the industry to solve the problems which is actually a hurdle in the way of development of the Kolkata Leather Cluster. Mr. Alam emphasized that adopting Green Tanning Practices will make the Kolkata Leather Cluster competitive globally. He believes in selling quality leather for the market. To make quality leather, the industry need to support Solidaridad for better tanning practices.

Mr. Sameer Khan, Director-Dugros Leather (India) Pvt. Ltd. emphasized that Dugros BV. and Dugros India are very much focused on sustainable development since last 3 years. They as a company is very happy to see the positive changes that Solidaridad is bring in the industry for the overall growth of the Kolkata Leather Industry. He, on behalf of Dugros assured full cooperation and support in bring the change and Sustainable development along with preservation of the environment.





Mr. Prabhaskar Sadhukan, Ah-Tiam Tannery-Technical Head He started his speech thanking Mr. Tapas Ranjan Biswas who approached the tannery for adopting the green interventions. Ah-Tiam tannery adopted almost all the interventions and they have seen remarkable changes which is leading to saving in all ways. The efficiency of the tanning process has increased for the tannery. He mostly appreciated the thought process of saving ground water which is slowly depleting. He concluded by thanking Solidaridad for taking the efforts to save the environment.



Mr. Subir Datta, Technical Head-Crescent tannery expressed that the interventions from Solidaridad have positive impact in reducing the pollution factors in the Kolkata leather Cluster. Crescent Tannery and Dugros Leather (India) Pvt Ltd have installed desalting machine in both the tanneries and practicing the process which is showing great decrease in TDS in effluents. He also spoke about the waste usage reduction with the help of Solenoid valve and appreciated the efforts Solidaridad to introduce such effective interventions in the industry.

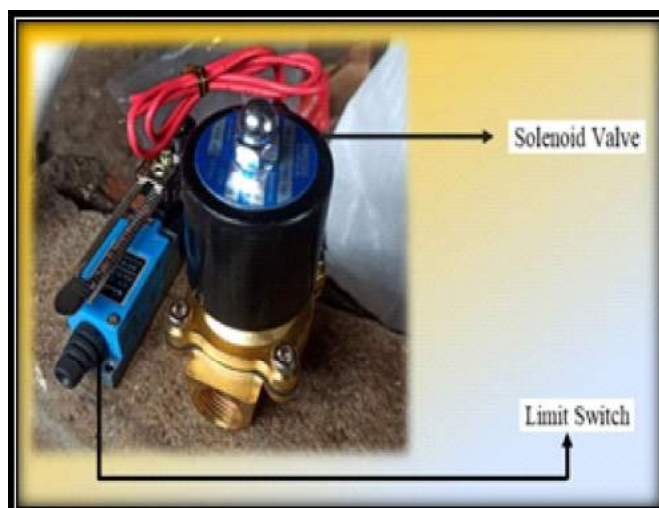
GREEN TANNING PRACTICES INTRODUCED IN THE KOLKATA LEATHER CLUSTER

Desalting Machine to reduce Total Dissolved Solids (TDS) in the effluent wastewater



- Reduction 33% TDS at the soaking stage
- Omit one to two washing before soaking
- Re-utilization of collected salt

Retrofitting of the fleshing machine by installing a solenoid valve and a micro-processor to the conventional machine



- Saves water up to 50% in a single sub process
- Saves approx. 5,67,000 liters /Year
- Easy availability in the market



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Desalting Machine to reduce Total Dissolved Solids (TDS) in the effluent wastewater



- Amount of Sulphide used will be reduced by around 95%, and significant reduction in the emission of Hydrogen Sulphide Gas
- Significant reduction in TDS, TSS & COD in the waste water.

Pickle free-low salt tanning to reduce Total Dissolved Solids (TDS) in the effluent wastewater



- Reduction of TDS in the Chrome Bath
- High Chrome exhaustion in the float
- Increased % of Chrome (CR₂O₃) in the wet blue
- Elimination of hazardous and corrosive Sulphuric acid
- Faster tanning process
- Flatness of the wet blue is increased
- Less load of the chrome recovery plant

Paver Blocks are made out of the solid waste like PTP & CETP sludge generated in the tanneries



- Usage of the PTP and CETP sludge which is a waste, thus demonstrating recycling process
- Creating green jobs for the community

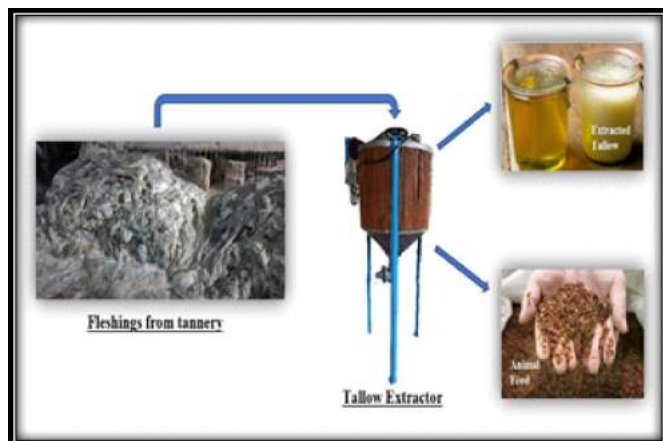
Value added products made of the solid waste that are dumped and are of no use



- Waste to value added products made from solid waste like bags, wallets, accessories etc.
- Demonstrate Reduce-Reuse-Recycle methodology
- Creating green jobs for the community

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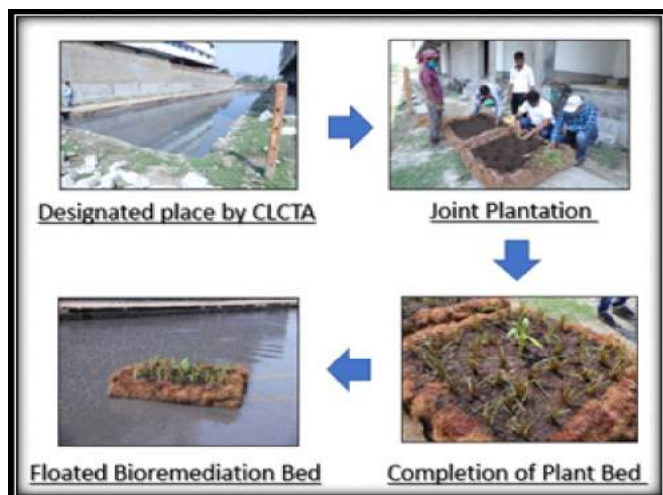
Extraction of tallow from the fleshing and using the residual as protein rich animal feed



- Waste to value added products made from fleshing which is a tannery waste.
- Demonstrate Reduce-Reuse-Recycle methodology

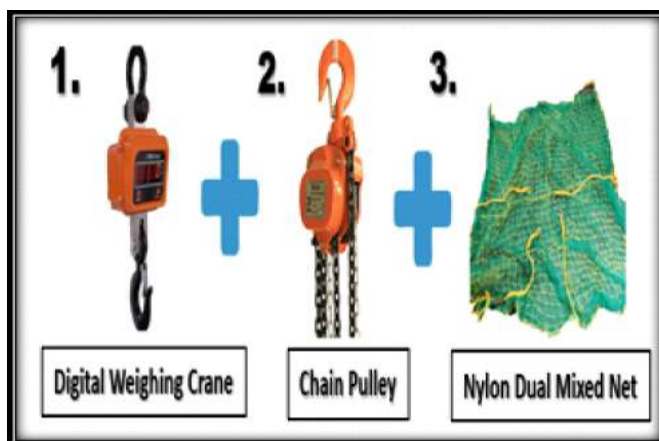
GREEN TANNING PRACTICES FORTHCOMING IN THE KOLKATA LEATHER CLUSTER

CLC Waste water channel Rejuvenation



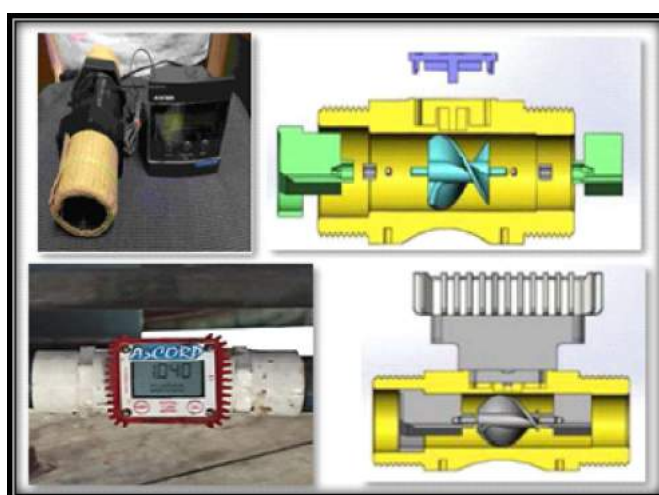
- An eco-friendly and sustainable approach that can destroy a pollutant or convert harmful contaminants into harmless substances
- Help to clean the soil and water bodies from noxious pollutants

Reduction of Pollutational load by Weighing Machine



- Weighing system improves the quality of the processed leather
- Accurate weight will reduce the pollutational load by omitting excess used Ammonium sulphate, Bates, Salts, Acids and BCS,
- It will help to take control on the TDS, TSS, Sulphide content, Lime content and the chrome percentage in the effluent,

Water Optimizing Mechanism by Digital Water Flow Meter



- Water supplies in the drum can be monitored
- Enable tanneries to regulate the flow of water and manage their water consumption
- Identifying consumption patterns and over consumption which can help is measure water usage in the processes

AN AUTOMATIC QUALITY SYSTEM FOR EVA SHOP PRODUCTION

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Abstract

The material hanging on moulds after EVA shoe removal, is to be removed before next batch to be prepared otherwise the left hanging material will disrupt the fineness and smoothness of the prepared shoe of the incoming new batch. The human error is evident in inspection & detection. So, automation in shoe industry for defect inspection and analysis is must, resulting in quality in production and also time saving methodology in mass production. The purpose of this work is to design the system which monitors whether the moulds are cleaned properly after to obtained good quality shoes as end result. In this work the identification of clean and unclean moulds is focused on the methods using MATLAB. First, we extract certain features from the input mould image, later using different method like thresholding, segmentation, k-means clustering and thus obtain related databases. From the proposed method able to identify the cleaned and uncleaned moulds with accuracy successfully using image processing.

Keywords: EVA; Matlab; thresholding; segmentation; k-means clustering

1. INTRODUCTION

The top five common quality defects that are unique to shoes are due to glue in excess or cementing weak or some marks like abrasion in leather or due to symmetry in shoes improper and also incorrect sizing of shoes. This research work based on Image processing in Matlab with Gabor filtering, k-means clustering and segmentation to detect left EVA material which remains hanging on mould after removal of prepared shoe.

Gabor filtering is a technique for texture analysis. Gabor showing a strong dependence on a certain parameter which affect the

outcome of the classification significantly. The correlation between the number of frequencies and orientations used to define a filter bank and the percentage of correct classification affect the smoothing parameter of the Gabor filters directly. Clustering technique is active research field in machine learning & is one of the most famous, simple and easy to implement technique. The K-Mean clustering is the process of grouping samples so that the samples are similar within each group. It is an unsupervised algorithm segmenting the interest area from background, in which the algorithm is not provided with any pre-assigned labels or scores for the training data. It first self-discovers any naturally occurring patterns in the training data set.

Image segmentation is most of judging or analyzing function in image processing and analysis. Image segmentation refers to partition of an image into different regions that are homogenous or similar and in homogenous in some characteristics. Image segmentation results have an effect on image analysis and follows higher order tasks. Image analysis includes object description and representation, feature measurement. Higher order task follows classification of object. Hence characterization, visualization of region of interest in any image, delineation plays an important role in image segmentation.



Fig. 1 EVA COMPRESS MOULDING MACHINE FOR SHOE PREPARATION

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MATERIAL :- EVA material grade 900(Ethyl Vinyl Acetate)

MELT :- Lower plate(soul) - Thick more - (134+7) degree centigrade

Upper plate (upper portion) - Thick less - 134 degree centigrade

PRESSURE - 1500 to 2000 pound square inch(less than 1 tonne square inch) Hydraulic

GRANULES - Black& White

TIMER - 15 minutes for big size & 8-10 minutes for small size

MOULDS SIZE AVAILABLE - 6,7,8,9,10 no. moulds.

2. MATLAB ENABLING TEXTURE SEGMENTATION USING GABOR FILTERS

Texture segmentation is done to identify regions based on their texture. The goal is to segment the different or irregular pattern from the background or required pattern. The segmentation is visually obvious because of the difference in texture between the two and is a useful model to use when designing algorithms to recognize texture.

K-means iterative clustering algorithm applied to image texture segmentation

The K-means algorithm is a robust, unsupervised clustering algorithm applied to the problem of image texture segmentation. The K-Means algorithm involves two steps. First, K-means is applied. Second, the K-means class assignments are used to estimate parameters required to improve the solution. Gabor filters and co-occurrence probabilities are used as texture features.

Image segmentation

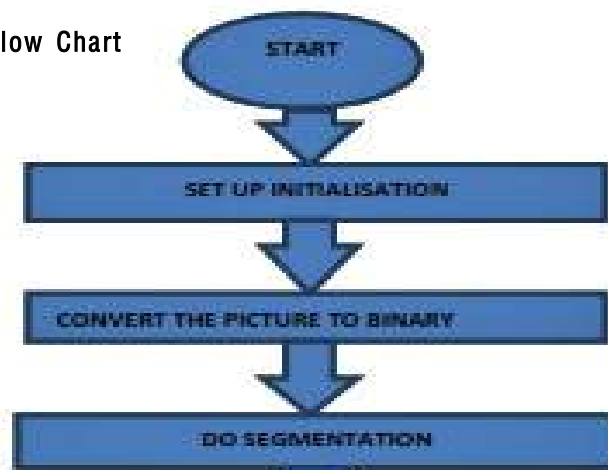
In digital image processing and computer vision, image segmentation is the process of partitioning a digital image into multiple segments (sets of pixels, also known as image objects). The goal of segmentation is to simplify and/or change the representation of an image into something that is more meaningful and easier to analyze. Image segmentation is typically used to locate objects and boundaries (lines, curves, etc.) in images. More precisely, image segmentation is the process of assigning a label to every pixel in an image such that pixels with the same label share certain characteristics. The result of image segmentation is a set of segments that collectively cover the entire image, or a set of contours extracted from the image. Each of the pixels in a region are similar with respect to some characteristic or

computed property, such as color, intensity, or texture. Adjacent regions are significantly different color respect to the same characteristic(s).

3. PROCEDURE

First the image is read from graph & then Returns a row vector whose elements are the lengths of the corresponding dimensions of image. Then resizing image & converting RGB image to gray scale. An RGB image is a three-dimensional byte array that explicitly stores a color value for each pixel. RGB images are made up of width, height & three channels of color information. Scanned photographs are commonly stored as RGB images. Then Start image segmentation row wise & column wise . After it Sample wavelength in increasing powers of two starting from 4/sqrt up to the hypotenuse length of the input image & then Rounding it towards the negative infinity of the value. Then using Gabor filters which Provide Gabor magnitude in terms of wavelength & energy. Then choosing sigma wavelength which is matched to Gabor filter, extracting each feature. A smoothing term K equal to 3 is introduced whose value determining how much smoothing is applied to the Gabor magnitude response. Then creating a mesh plot which is a three-dimensional surface having solid edge colors & no face colors & then extracting high level feature from data of concatenate arrays. Then applying element wise operation to two arrays with implicit expansion enabled and does principle component analysis of raw data. By K-Means clustering, portioning n-by-p matrix into K clusters obtaining n-by-1 vector containing cluster indices of each observation. After its piecewise distribution segmentation over copies of arrays is done. After doing K-Means clustering based image segmentation and overlaying label matrix region on 2-d image & obtaining labeled image with additional pixel information.

Flow Chart



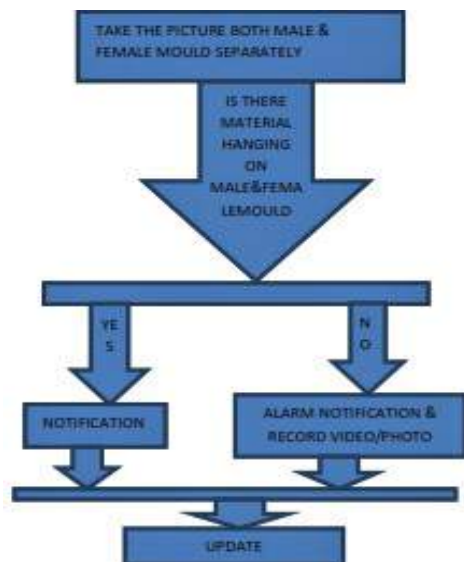


Fig. 2 FLOW CHART FOR IMAGE PROCESSING

4. RESULTS

Fig. 3 shows the photograph with simple camera of dye fixed in upper portion. Then it is converted into grey image, so that hanging EVA material can clearly be visible as shown in Fig. 4. Image is segmented using k-mean clustering as shown in Fig. 4-6. Once the hanging material is identified then software will indicate and give warning to clean it. This helps in improving the product quality.



Fig. 3 DYE FIXED IN UPPER PORTION



Fig. 4 GREY PICTURE OF SECTION OF A MOULD WHERE EVA MATERIAL IS HANGING AFTER REMOVAL OF PREPARED SHOE FROM MOULD

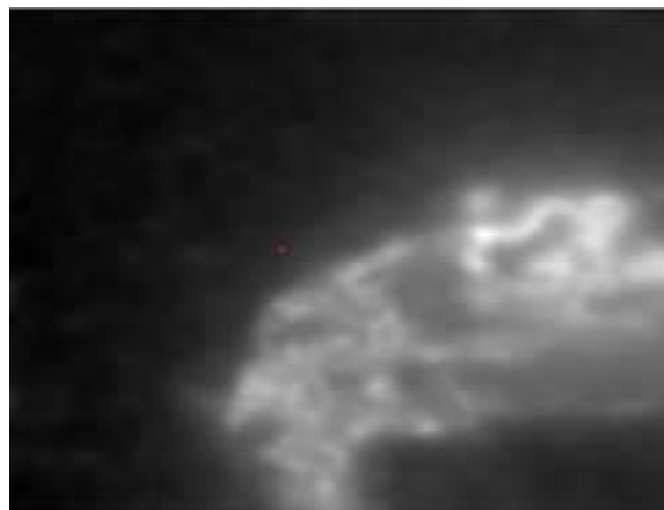


Fig. 5 k-MEAN OUTPUT OF THE PICTURE



Fig. 6 k-MEAN CLUSTERING BASED IMAGE SEGMENTATION

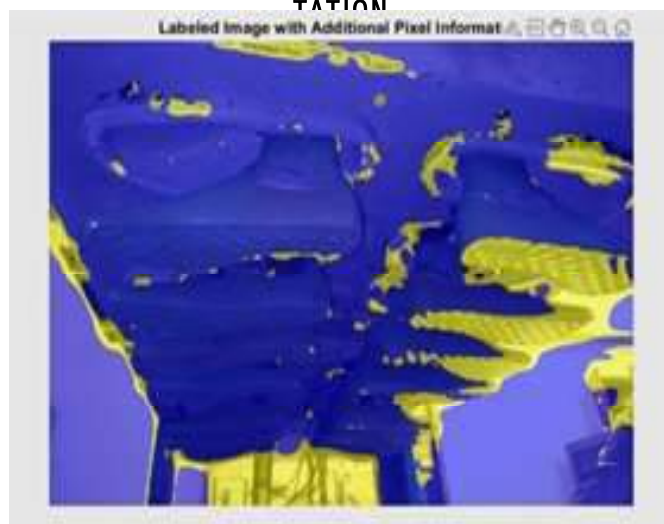


Fig. 7 LABELED IMAGE WITH ADDITIONAL PIXEL INFORMATION

CONCLUSION

In this paper, the identification of cleaned and uncleaned moulds based on quality in image processing using MATLAB is successfully done with 99.09% accuracy. The use of image processing for identifying the quality can be applied not only to any particular mould. We can also apply this method to identify Excessive Glue, Weak Bonds, Scuff Marks, Asymmetry, Size, Metal Contamination and Sharp Points. Thus, this will enable the technology to be applied for automation in defect identification & analysis for quality control in mass production.

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AUTHOR BIOGRAPHY

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Mehar Kumar is M.Tech. Student and working in the area of Quality control of Footwear.

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Our Industry
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Why Start a *Green Business*?



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It is with great pleasure, that we invite you to participate in the 12th Asia International Conference of Leather Science and Technology (AICLST), hosted and organised by the New Zealand Leather & Shoe Research Association in the beautiful and picturesque city of Queenstown in New Zealand's South Island on 18-20 Oct. 2022.

Queenstown sits on the shores of the South Island's Lake Wakatipu, set against the dramatic Southern Alps. Renowned for adventure sports, it's also a base for exploring the region's vineyards and historic mining towns. There's bungee jumping off Kawarau Gorge Suspension Bridge and jet-boating on the Shotover and Dart rivers. There is also the possibility of skiing on the slopes of The Remarkables and Coronet Peak.

The three-day programme promises excellence in science, along with practical examples of science impact and the drive to sustainable leather production. We seek to foster strong and lasting bonds between leather scientists across the international community with companies engaged in leather production and chemical companies who deliver the products used to manufacture leather.

Main Topic Areas:

- ❖ Advances in Basic Science of leather
- ❖ Benign chemical developments
- ❖ Cleaner leather production and closed-loop processing
- ❖ High value uses for leather manufacturing by-products and wastes
- ❖ Technologies to advance protection of the environment in the leather industry
- ❖ Advances in detection technologies applied to leather manufacture and quantification
- ❖ Intelligent leather technologies – Industry 4.0
- ❖ Design innovation for fashion leathers



III IULTCS EuroCongress Vicenza 2022

Rinascimento: The Next Leather Generation
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will be held October 2023 in Chengdu, China.

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DR. BUDDHADEB CHATTOPADHYAY AND DR. J. RAGHAVA RAO ACCOMPLISHED WITH ALFA AWARDS 2022



Dr. Buddhadeb Chattopadhyay, former Principal, Govt. College of Engineering & Leather Technology (GCELT), Kolkata and a Senior Life Member of Indian Leather Technologists 'Association (ILTA) has been selected by the A. C. Tech Leather & Footwear Alumni Association (ALFA) as the owner of **Best Teacher Award for the year 2020** for his important contributions to Under-Graduate Education in Leather Science & Technology Practices.



Dr. J. Raghava Rao, former Chief Scientist, Chemical Laboratory, CSIR-Central Leather Research Institute, Chennai and a Senior Life Member of Indian Leather Technologists 'Association (ILTA) has been selected by the A. C. Tech Leather & Footwear Alumni Association (ALFA) as the owner of **Best Teacher Award for the year 2022** for his defining contributions in Mentioning of Research Students in Leather Science & Leading Technology.

WORLD LEATHER DAY ANNOUNCED FOR MARCH 30



Leather Working Group (LWG) and Leather Naturally (LN) have joined forces to introduce World Leather Day, a new initiative to encourage organisations within the industry to positively promote leather.

World Leather Day 2022 will take place on March 30 with the aim of getting everyone talking about leather, raising awareness about the positive attributes of leather.

The organisations have put together a visually engaging social media toolkit to convey the core messages of World Leather

Day 2022 and you can request a copy by contacting Sonja van der Wiel at Leather Naturally at sonja@leathernaturally.org.

"Leather Working Group is centered around positive collaboration, and we are proud to be one of the initiating partners of World Leather Day. It is an exciting communications event that aims to raise awareness and give the industry a well-deserved moment of positive press," said Christina Trautmann, Head of Leather Working Group.

Already looking forward to opportunities in 2023, LWG and LN plan to have a wider-reaching campaign for World Leather Day 2023 involving multiple partners and signatories. To get involved, contact Debbie Burton of Leather Naturally at info@leathernaturally.org.

"Leather Naturally is pleased to be involved in organising the World Leather Day to inspire brands, designers, and consumers about the sustainability of leather and the important role it plays in a circular society where nothing is wasted, everything can be reused, and ultimately is biodegradable," said Egbert Dijkers, Chair of the Leather Naturally Management Board.

(www.Leathermag.com – 29/03/2022)

THE LARGEST LEATHER EXHIBITION MOVES FROM HONG KONG TO DUBAI



Due to Covid-19 and the quarantine policy in Hong Kong, APLF, the world's leading trade fair - recognised by the leather industry, has been moved from Hong Kong to Dubai. It was held at the Dubai World Trade Centre (DWTC) from March 30 to April 1, 2022.

When it became clear some six months before APLF was due to be held for the 2022 edition that the Hong Kong authorities had extended Covid-19 restrictions until the end of March, APLF decided to look for an alternative location for the 2022 APLF event. Several alternative cities were considered including Bangkok and Singapore, but the only candidate that met the specific criteria necessary to hold an international event was Dubai, because of its first-class exhibition halls, tourist infrastructure and the geographical advantage for the visit's fashion buyers and manufacturers from Europe, the Indian subcontinent, Africa and the Middle East.

Halls one to five of the Dubai World Trade Centre hosted the event, covering the supply chain of the leather, tanning and fashion manufacturing industry. The three-day exhibition brought to Dubai more than 460 exhibitors from 30 countries where leather is produced and exported, such as Brazil, Egypt, France, India, Italy, Korea, Pakistan, Spain, Taiwan, Turkey and the USA. Around 5,000 international travellers were gathered in Dubai for the exhibition.

Apart from the exhibitions, industry conferences such as the global footwear executive summit and future trends in a post-Covid leather industry were two major conferences being organised, during which the impact of Covid-19 was extensively discussed among global industry leaders.

Impact of the pandemic on the leather industry

The global economy has been impacted by the pandemic in the last three years and this includes the leather footwear, leather goods and fashion sectors. Many tanneries and footwear manufacturers have continued operations but at a much lower capacity when compared to pre pandemic levels. Some companies may have even ceased trading, but the full effects are yet to be confirmed.

During the pandemic, many businesses were affected by various lockdowns, so consumers were limited to online retailers such as Amazon, Alibaba and UPS. Therefore, certain industries such as logistics and warehousing benefited from the pandemic. However, the negative impact on manufacturers and raw material suppliers were undisputed and might well be a prolonged recovery from record low levels.

As scientists began to understand more about the pandemic and mass vaccinations became available in 2021, green shoots of the economy became apparent. The trillions of dollars injected into the economy, combined with almost zero interest rates, manifested themselves primarily in asset price inflation. Stock markets, especially in the US, reached levels never seen before and big ticket luxury items such as cars, private jets and yachts all enjoyed the bonanza of the deluge of almost free dollars. Luxury brands also benefited, increased their prices and the results have been evident from the end of year results, published by leading luxury conglomerates such as LVMH, Kering and Richemont.

During this period, the leather sector started a steady recovery as consumer demand picked up. Sustainability and environmental care, which had become more important in the last decade, took centre stage as leading tanners launched branded sustainable leathers and introduced social responsibility into their corporate business model.

One global factor that is yet to be resolved is the cost of logistics and shipping. Spiraling freight charges are fueling inflation and disrupting supply chains in many industries, and not just in the leather sector.

APLF is a recognized as the barometer of the leather industry, and the Dubai edition, the first since 2019, would be the occasion for the national bodies to discuss the price in the post-Covid era.

For more information : <https://www.aplf.com/>

(www.aplf.com – 30/03/2022)

HOW CAN WE ACHIEVE AND PROVE SUSTAINABILITY IN CHEMICALS?



Every fabric used in the production of shoes, leather goods, furniture, car interior, garments, or other areas which use flexible material uses chemicals to make the final material. Even natural materials such as organic textile or leather use chemicals to give the final material a performance.

Proven adaption of chemicals and processes

To attain more sustainable production of leather, the chemicals and processes also need to be adapted or redesigned. How do we do this and, just as important, how can we prove this?

LCA as the preferred tool

Nice words and empty promises are less and less accepted ("greenwashing"). Brands and their suppliers expect that sustainability improvements in processes and chemical usage are proven with numbers and certifications. **Life Cycle Assessment (LCA)** is a preferred tool.

An LCA is complex and costly to use for every chemical company, individual tannery, product and article. For chemical suppliers, there are more ways to prove sustainability and renewability, such as:

- ZDHC certification of chemicals
- The mass balance method, the so-called C14 method or LCA. This method gives an indication of renewability.

Eco-design for eco-leather

How to achieve eco-leather? It comes down to performing eco-design with the right chemicals while improving water management and energy management. As Arnaud Backbier, Global Commercial Director Royal Smit & Zoon, says in his article **Renewability and Sustainability in the leather industry**, the data is collected beforehand and then matched with the redesign process and even with data per batch made.

It is not quick and easy, but each improved process and article will add up. A drop makes a difference. Eco-design is a new factor that drives quality and sustainable efficiency, already performed at the end of the 19th century by entrepreneur and industrial-like Andrew Carnegie.

(www.ilm.com – 30/03/2022)

NOTHING TO HIDE: CHROME IN LEATHER MANUFACTURE



Why tanners use chrome

Tanning agents based on chromium have been in widespread use in the leather industry for more than 160 years and, because the chromium in the compounds tanners use is in the trivalent state, this is not considered harmful to workers or wearers of leather. As Dr Dietrich Tegtmeier, a former vice-president of the International Union of Leather Technologists and Chemists Societies (IULTCS), made clear in the original version of this essay in the Nothing to Hide series, the presence of harmful hexavalent chromium can be avoided if tanners and leather chemicals manufacturers treat the materials they use with due care and attention. The same author covered in detail the specific issues surrounding hexavalent chromium in a follow-up essay in the series.

Approximately 85% of all leather that is produced is tanned with a chromium-based process technology. Chrome-tanning was created in 1858, is very flexible, and is one of the best inventions in the history of making leather. It was the basis for the development of the leather business on an industrial scale. If this process is not operated correctly there is a potential risk in terms of toxicity relating to hexavalent chrome, Cr(VI). Since leather is a component in many consumer articles, and because some by-products and waste is generated in the leather manufacturing process, it is an important responsibility on the part of the leather industry to manage and fully control this potential risk. In order to be compliant with today's sustainability and regulatory standards, it is necessary to ensure 100% safety for people involved in making leather, for the environment, and for the end users of the leather articles.

Huge progress has been made, especially in the last decades, and the vast majority of tanners take this potential risk very seriously. The research and development community is also continuously working on methods to avoid the formation of Cr(VI) so that it will have no negative impact on the environment or people, and to make it possible for tanners to recycle as much chromium as possible.

Unfortunately, a great deal of false or misleading information about the use of chromium in leather is appearing in the media. In these situations, the occasional case of a poorly operated tannery, which is not representative of the standard technologies in our industry, is taken and generalised. An impression is created that chrome-tanning in general is a process that has to be stopped and immediately forbidden.

A balanced view of the concerns, risks and results of scientific studies needs to be taken and placed in relation to the potential risks from using chrome-tanned leather. It is important not to belittle or even hide risks and dangers. However, if a risk is manageable, then correct and accurate information should be provided, to avoid the generation of false information, and leather manufacturers should focus on the application of procedures to address any potential risk.

Chromium, the element

Chromium is a special element, which is used in various applications. More than 95% of chromium is used outside the leather industry, and only a small portion of all mined chrome ore ends up in leather. The vast majority finds its application in premium stainless steel and chromium-plated articles. This is the reason why the overall recycling rate of chromium is very

high. Chromium may even be the element with the highest recycling rate. There are different forms of chromium. The elementary and trivalent or Cr(III) forms are important basic components for many consumer goods as indicated in Panel 1.

Panel 1: The element Chromium is neither good or bad

Elementary Chromium Cr(0)	Trivalent Chromium Cr(III)	Hexavalent Chromium Cr(VI)
chromium plated articles & stainless steel → corrosion resistant → food contact cleared → surgical implants	Pigment Green → insoluble, not bioavailable → CLP 'not hazardous'	Intermediate in metallurgy & chemical synthesis → high solubility, bioavailable → acute toxic, CMR → strong sensitiser

Cr(III) is also important in human nutrition. The natural average content of Cr(III) in many woods and in soil is about 3-5 ppm. This is an entirely natural occurrence and not the result of any industrial contamination or application. Cr(III) oxide pigments are also used widely as green colour for tattoos without any harm or hypersensitive reaction to the skin or body.

Chromium as Cr(VI) is an important chemical intermediate to purify chromium for use in the manufacturing of all these applications. In this hexavalent form, chromium is known to be toxic to animals and humans so it needs to be handled with extremely high safety precautions by professional chemical companies only. In this situation, the in-house systems that are used are similar to those for many other hazardous chemical intermediates. This is a typical risk assessment process for a chemical company and it is completely manageable.

The fact that Cr(III) can be oxidised under certain condition to a hazardous hexavalent form is a similar risk to that found with many other organic chemicals that are used in multiple applications. For this reason there is a need for a scientific risk assessment of the use of chromium for tanning leather in order to exclude these oxidations during normal conditions of use. This has been done in many scientific studies and these studies are the basis of legal requirements to protect consumers.

Starting mainly in the 1990s, studies have been carried out to fully understand the chemistry of chrome tanning, to evaluate the potential risk and to ensure a 100% safe use of chromium for tanning leather. Moreover, the United Nations Industrial Development Organization (UNIDO) has given clear recommendations on how to run a process to avoid any Cr(VI) contamination of the environment.

In particular, the leather manufacturing process was the basis of a thorough scientific study initiated by the European Commission and given the name “chrome6less”. The full results of this study are available on the internet, but the overall outcome could be summarised in one sentence: “The formation of chromium (VI) in finished leather can be prevented”. The leather industry has to make sure that these requirements are standard in the entire leather industry without any exception and without any disclaimer.

The chemistry of trivalent and hexavalent chromium

In order to manage any risk it is a precondition to understand the chemistry involved. In particular for leather, the trivalent and the hexavalent states of chromium are important.

In a dissolved form there is an equilibrium between the trivalent and the hexavalent form. This equilibrium is influenced by several factors, such as pH or concentrations. Cr(VI) is an extremely strong oxidising chemical, and this is one of the reasons for its hazard potential. Under the “normal” conditions of a leather matrix with pH values of between pH 3.5 and 5.0, concentration of extractable Cr(III) of between 50 and 500 ppm, and temperature below 100°C, the equilibrium between chromium in Cr(VI) and Cr(III) forms is almost completely on the side of the safe Cr(III) form, as illustrated in Panel 2. Estimations regarding this equilibrium refer to a factor of significantly higher than 10,000:1.

Panel 2: Chromium VI formation can be avoided with the correct process conditions

Theory about Chromium Cr(III) <-> Cr (VI) equilibrium	
In dissolved form there exists an equilibrium between Cr III and CrVI. The RedOx potential depends on many factors such as pH, anions, etc.	$\text{Cr III} \xrightleftharpoons[f(\text{pH, conc, etc})]{>10.000^{**}:1} \text{Cr VI} + 3\text{e}$
Fixed chromium (Cr - collagen complex) makes significantly less Cr available for the RedOx equilibrium.	$\text{Fixed 3-4\%} \xrightleftharpoons{\text{extractable 200 ppm}^{**}} \text{Cr (III)} \xrightleftharpoons{<3\text{ppm}^{**}} \text{Cr (VI)} + 3\text{e}$
Solid Cr ₂ O ₃ starts oxidising directly to Cr VI under extreme conditions only.	$\text{Cr (III)} \xrightarrow{>500^{\circ}\text{C}^{**}} \text{Cr (VI)} + 3\text{e}$
A radical mechanism* can significantly lower the reaction enthalpy and speed for the oxidation.	$\text{Cr (III)} + 3 \text{R-O} \xrightarrow{>50^{\circ}\text{C}^{**}} \text{Cr (VI)} + 3 \text{R-O}^{**}$

* Reactive Oxygen Species (ROS)

**all values are rough estimates for illustration and typical leather conditions

During the tanning process, most of the chromium in the hide is strongly fixed to the protein collagen. This phenomenon was the reason chromium was selected for this purpose in the first place and the reason chrome-tanning came to be the dominant method for making leather around the world. Once the hide is tanned and the chromium fixed to the leather fibre, the

availability of chromium for the equilibrium between Cr(III) and Cr(VI) is dramatically reduced. Only chromium that can be extracted from this leather by washing with water (extractable chrome) is fully available for this equilibrium. In standard chrome-tanned leather there is a chromium content of between 3% and 4% fixed to the fibre and the standard value for extractable Cr(III) will be in a range of between 50 and 500 ppm, although it depends very much upon the recipe and the process conditions. These details are summarised in Panel 2.

This 50 to 500 ppm is the amount that is available for the equilibrium, and accordingly this leads to a safe Cr(VI) concentration in the leather, one that is far below the detection limit of 3 ppm. Concentrations that have been shown to cause a risk for the consumer are higher by some orders of magnitude.

Oxidation of Cr(III) to Cr(VI)

A direct oxidation of fixed Cr(III) to the hexavalent form under standard conditions is very unlikely because the reaction speed is extremely slow. Only at temperatures greater than 800°C would the oxidation reaction start shifting towards Cr(VI). This means that for normal leather and under consumer conditions there is no risk at all.

However, there is one important fact to consider where there is a potential risk: an indirect oxidation route via an intermediate of a reactive organic species (ROS). Within the leather industry, chemicals and conditions can be found that generate these free radicals, such as by ultraviolet light exposure or bleaching and cleaning procedures. These radicals can oxidise trivalent chromium into the hexavalent form, even under “normal” conditions.

These radicals could be generated by unsaturated chemical groups, which can be found in cheap or low-quality fatliquors, waxes and oils. In order to avoid such an oxidation reaction, either these troublesome chemicals should be avoided, or a certain amount of scavengers and antioxidant auxiliaries have to be built into the leather matrix. If these scavengers are available, then any radicals will be caught immediately after generation and irreversibly eliminated as they are transformed into stable components. These scavengers are a “built-in insurance” to avoid the formation of Cr(VI) through the indirect oxidation route. If these radicals are not present due to the avoidance of these chemicals, the much slower and more difficult oxidation process of trivalent chromium does not occur at all.

Chromium in the environment

If chromium is released into the environment, the same rules for an equilibrium will apply as with leather. Due to their strong oxidising power small amounts of any Cr(VI) will immediately react oxidatively with many of the organic components present in the environment.

This means the Cr(VI) will become reduced to the safe form of Cr(III) according to the distribution of the equilibrium. In these small concentrations of Cr(VI) the process works like a “self-cleaning” mechanism.

However, as Cr(VI) is soluble, it could also be taken up by plants. In this situation the plant reacts in the same way and converts Cr(VI) into the safe form of Cr(III).

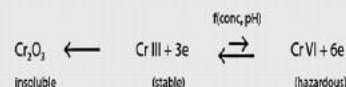
In the trivalent form in the environment, Cr(III) quickly ages to insoluble Cr(III) oxide. This is a final and fixed form of chromium under “normal” conditions, which, similar to the fixed form in leather, is no longer available for the equilibrium between Cr(III) and Cr(VI). In nature, the chemical system of different valency stages of chromium will automatically work against contamination from the hazardous form of Cr(VI).

There is a belief that similar effects can be found if leather comes into contact with human sweat. The acid pH of sweat and the many microorganisms in sweat are a perfect environment to reduce any minuscule amounts Cr(VI) directly to harmless Cr(III). The stable form of Cr(III) is favoured as indicated in Panel 3.

Panel 3: Chromium is omnipresent and environmentally persistent - “chrome free” does not exist

Chromium: the equilibrium background and its persistency for the environment

- Cr (VI) ions are soluble in water, Cr (III) ions have a very low solubility
- Chromium (VI) is a strong oxidising agent, especially under acidic conditions
- Cr (VI) is highly soluble and can be reduced to Cr (III) by a variety of organic compounds
- In the environment, the equilibrium ends up >99.9% on Cr (III), and <0.1% on Cr (VI); it depends very much on pH and concentration
- Cr (III) components quickly age to form e.g. Cr (III) oxide. Becoming insoluble and bound to soil, the chromium is no longer bio-available and removed from the equilibrium.



Panel 4: Practical ways to avoid Cr(VI) formation in leather

It is important for the tanner to produce leather without any detectable amount of Cr(VI). This is manageable: a tanner only has to follow certain well established rules and use the right chemicals. These process technology guidelines are not rocket science. Key points have been developed to avoid a Cr(VI) formation during the process and to create a leather matrix. This provides a built-in insurance to avoid the generation of Cr(VI) during storage and use. This is normal practice for most tanners; however, these details are set down here as a matter of record.

- Always use premium chrome tanning salts.
- No use of oxidation agents (bleaching) on leather after tanning.
- Finish the wet-end processing at low pH conditions (3.5 to 4).
- Carry out a final wash after tanning.
- Avoid the use of excess ammonia before the dyeing process.
- Use high-performance chemicals for softening; do not use any unsaturated lipids or waxes.
- Use between 1% and 3% vegetable tannin extract within the process as this provides antioxidant protection.
- Use synthetic antioxidants where it is not possible to apply vegetable agents.
- Avoid the use of any chromate pigments (yellow and orange inorganic pigments).

Read and Let Read :-

JILTA



MODERN LEATHER FINISHES*

T. BIRD

To offer some facts about leather finishing to those who are new to the subject and, I hope, some ideas to those with practical experience, I shall divide my paper into three sections. The first will be to deal briefly with the background to the present position in finishing; the second to outline what this position is now and to consider its advantages and disadvantages and the third to talk about new developments and the way in which new materials, new machines and new ideas can be used. Up to the time of the first World War leather was tanned and dyed only and there was no finishing of leather as we know it today. During the first World War the United States were cut off from supplies of European dyestuffs and, as leather had to be coloured with something, pigment dispersions were introduced and bound to the leather with casein solutions. Initially this was on full grain leather and it was not until later that the practice of sandpapering or buffing off some of the defects of the grain before applying pigment came into general use. Once it was realised that there were terrific advantages in making corrected grain leather and covering it with an opaque material which would give a uniform appearance to the leather, the use of pigment dispersions increased enormously. The "doped" finish had arrived. It was called "doped" because it had a heavy painted appearance.

The next step was the development of synthetic resins. The first one—a German product—was used as a base coat over which pigmented nitrocellulose lacquers could be sprayed. The thin film of resin acted as a barrier, preventing penetration of the nitrocellulose lacquer into the leather when it was sprayed and, most important, preventing migration into the leather of the plasticisers which made the nitrocellulose flexible. This was a considerable problem because when the plasticisers, which were materials such as DBP and raw oils, left the nitrocellulose film there remained a layer of material which was extremely brittle. Although the first use of synthetic resin emulsions was as undercoats of nitrocellulose lacquers, they gradually displaced casein as the binder for aqueous pigment dispersions and this is now their widest application. This leads us to the second part of this paper—the current positions of finishing corrected grain upper leather. Perhaps I should say at this stage that a leather finishing formulation is similar in its basic essentials to an emulsion paint system except that an emulsion paint film does not have to be very flexible.

The variations of leather finishing are enormous and there is no such thing as a standard method. The nearest thing to it is something like this: (see table, right).

*This paper was given to the Kettering Branch in October. The author is associated with Earnshaw Ltd., Northallerton.

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INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION

A. Pigment Dispersion.....	200 gms.
Water.....	600 „
Resin Binder.....	200 „
B. Pigment Dispersion.....	250 gms.
10% Casein Solution.....	50
Water.....	400
Resin Binder.....	300
C. Lacquer Emulsion.....	500 gms.
Water.....	500
1. Pad A.....	
2. Press.....	
3. Pad A.....	
4. Spray B.....	
5. Spray B.....	
6. Spray C.....	
7. Press.....	
8. Spray C.....	

Pigments

First of all, let us look at the products we are using. There are only four main types : pigments, synthetic resins, casein and nitrocellulose. It is easy to add waxes, oils and many other materials which, though extremely valuable in many cases, serve only to make a finishing formulation a great long recipe and increase the chances of the chap doing the weighing-out making mistakes. Today the leather finisher can use pigments dispersed in several ways. The commonest types are : pigments dispersed in water with a minimum of dispersing and suspending agents to prevent settling of the pigment. Secondly, pigments dispersed in a casein solution, thirdly, pigments dispersed in a nitrocellulose solution or nitrocellulose emulsion ; and finally pigments dispersed in a synthetic resin.

People expect two main things from pigments—cover and colour—and pigments might be classified as those coloured materials, organic or inorganic, which are opaque and insoluble in the liquid being used. Inorganic pigments are used mainly for whites and browns. The most widely used white is titanium dioxide which is the strongest known pigment as far as opacity and tinting power is concerned. It is found in three forms, anatase, rutile and brookite, the first two being the important ones for paint making.

The crystal structure of rutile titanium dioxide is such that it has a higher refractive index than the anatase. This gives it a greater covering power than the anatase grade. On the other hand the anatase gives a slightly better white

than the rutile. The differences between the two are being reduced by the manufacturers of titanium dioxide, but there is still a case to be made for using a rutile grade to obtain cover in the bottom coats when finishing white leather, and an anatase grade for the top coat or top two coats—and this is quite common practice.

White Leathers

There is a demand in some quarters for white leather to have a faint bluish tinge to give the “whiter white” of soap powder fame. Sometimes a little violet pigment is added to the finish formulation or even a little blue pigment may be added. Another method of obtaining a very white has been the use of optical bleaches of various kinds. However, unless they are chemically coupled with the substrate, optical bleaches are not fast to light and, while the initial effect of the finish is to produce a white which is overwhelmingly white, exposure to daylight and sunlight or even ageing will cause some yellowing.

For black finishes, carbon black dispersions are used mainly and there are very many different types of carbon black made, in general, by burning natural gas with insufficient oxygen for complete combustion. The carbon is then deposited on a metal surface in contact with the flame,

Browns and yellow browns are made from iron oxides, while good yellows are made from cadmium lithopones. Organic materials are used for other colour. Pigment dyestuffs are used for some reds while phthalocyanine is important in the manufacture of blue pigments.

Pigments may be dispersed in a variety of ways, but one of the best established and still most widely used is the ball-mill—a vessel whose capacity may vary from a laboratory size of a pound or up to several tons. The mill is half filled with pebbles and in the old days they used to be pebbles collected from the sea-shore. Now the pebbles are made from a special hard-wearing, non-chipping material. The pigments and dispersing materials are put in the mill and it is rotated for 12 hours or more. Inside, the pebbles are constantly being lifted up and then roll down on top of one another in a cascading motion, so grinding the pigment particles between them. Another type of mill called a sand-mill is being used more and more. In this, coarse sand acts as the grinding medium and it is possible to make a finer dispersion more quickly in a sand-mill than in a ball-mill. Of course there are other ways of dispersing pigments too, varying in complexity from a high speed agitator to the use of sound waves.

Synthetic Resins

Let us now consider the second group of products—the synthetic resins which are used in finishing. With the development of polymer chemistry it became possible to replace the naturally occurring long chain protein molecule of



casein with a synthesised long chain molecule. These chains are built up of small unit blocks, the building blocks being the lower esters of acrylic and methacrylic acid. The physical properties of these polymers are determined by the components and also by the method of synthesis. Unfortunately it is difficult to make a polymer with all the desirable properties without also incorporating some undesirable ones. For example, a very soft resin will be extremely flexible and its use will maintain an excellent "break". At the same time a soft resin will give a film which is weak and so its resistance to rubbing will be poor. On the other hand a hard resin will give a tough film which tends to produce poor "break". And so we come to compromise. The form this compromise takes depends upon the requirements of the shoe manufacturer.

It is true to say you can improve any one property considerably, but only at the expense of one or more of the others.

In finishing corrected grain leather today it is a generally accepted principle to use a soft resin for the base or pad coats and a tougher one for the spray coats. In this way one is certain of maintaining a good "break" from the pad coat and the bottom coat is the most important of them all—and you can obtain good resistance to rubbing by using a slightly harder resin in the upper coats. Most companies which make leather finishes offer a range of resins from those giving very soft films to those giving extremely hard films and customers can pick the one which suits them best or blend members of the range to give them exactly what they want.

Perhaps at this stage I should say something about the manufacture of resin emulsions. The raw materials, the acrylic and methacrylic esters, are compounds containing essentially two carbon atoms joined by a double bond. In polymerisation the double bonds are broken under the influence of light or the action of catalysts and a long chain may be formed. Now there are a large number of raw materials which may be used and they may be copolymerised in more or less any ratio. This alone gives a tremendous number of variables. But for each one of these variables, the chain length and so the molecular weight may also be varied, the particle size can be altered and the properties of the emulsion may be changed by type and amount of emulsifying agent used ; so the permutations possible are infinite.

There are several general methods of manufacturing emulsions. One is to heat the water, emulsifiers and initial charge of monomers in the reaction vessel and to add some catalyst to initiate the polymerisation. As the reaction proceeds more monomer is added, the heat produced from the reaction being removed by a water jacket. Another is to emulsify all the monomer first and polymerise this emulsified monomer in stages over a period of time.

In both these methods the monomers are added to the reaction vessel gradually. A third method is known as the "redox" method. In this all the ingredients



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are mixed in the cold, catalysts are added and the reaction is carried out quickly over a short period of time liberating considerable amounts of heat.

It is, of course, very important to remove this heat from the reaction otherwise the reagents will boil and the resin emulsion will coagulate. For example in the case of one of the emulsions my company manufactures, enough heat is liberated during the manufacture of each ton of resin to heat 120 gallons of water from 0—100°C and it can be liberated in a very short time. Needless to say this process requires careful control.

Before leaving the subject of acrylic resins I want to say something about the water soluble ones which are used as impregnating agents to bind the corium minor to the corium major and so improve "break". These can be made in several ways and modern techniques are making it possible to produce water soluble resins with much higher solids contents than before, which of course reduces the cost of packaging and transport.

Casein

The third of the four main materials is casein. It is well-known and had been used for over half a century. It is still an invaluable material for leather finishing and I do not think I can say much about it, except that recently it has become a lot more expensive. It is likely to increase in price still further as more is used in the manufacture of a wide variety of powdered milk drinks. So, you can help to keep down the price of leather finishes by sticking to whisky for your late night drink.

Lacquers

The fourth and last on the list are lacquers. Today, the use of lacquer emulsions to provide a top waterproof coat is widespread and of course bright or matt films may be obtained as required. The two great advantages of lacquer emulsions over nitrocellulose lacquer solutions are, first, that they may be diluted with water not with expensive solvents or diluents, and second, that they can be used in automatic machines which are also used for spraying pigment resin mixtures. It is not possible to spray nitrocellulose lacquer diluted with organic solvent through such a spraying machine without getting a lot of trouble from blocked guns caused by the solvents dissolving off little pieces of resin from the insides of the tubing and piping. Many people also hold the belief that lacquer emulsions are safer to use than lacquer solutions. Undoubtedly, they are safer to spray and there is less chance of the mixture catching fire, but it should be remembered that the dried residue left around the spray booth is nitrocellulose. This is what is left whether water has been evaporated or solvent has evaporated. And this is the danger which has caused so many dreadful fires in this country and throughout the world.



Now before we start discussing the future developments of finishing I would like to consider three further points to which not enough attention is given. If they were considered, it would make more obvious the lines which development work should take and would also help the leather industry as a whole.

First of all what improvements do people want in their shoes? I am talking about finishes only at the moment. Some would reply, "We want leather that looks like leather". But do the majority of people really care? I know we like to think they do, but I have my doubts. Is it not true that a woman, when setting out to buy a pair of shoes, is concerned first with colour, secondly, with style and if these two are right and the price range is right, the shoes will have to be of very poor quality to dissuade her from buying? Men on the other hand, I would think, are concerned mainly with colour and good wearing properties.

There are some things which shoemakers require which, I believe, shoe purchasers do not care about. I know I am on rather dangerous ground here. The most glaring example I think is "handle". You and I look at the "break" of a pair of shoes before we buy them and in fact I expect we are rather hard to please in shoe shops. Now most people try the shoes on and look at their feet in them. I do not think they bother about the handle of the leather. How many buyers have rejected leather because the handle is not quite right when everyone knows that the rigours the leather will undergo when being made into shoes will change its handle and probably its gloss to a considerable extent? Dare I say that a lot of this business of handle and gloss and face is to get the leather past the buyers, knowing full well that the appearance of the leather in the shoe box will be rather different from that of the leather as it went into the shoe factory?

Top Sprays

I should like to divide top sprays into two groups. The first I would call mechanical—that is a spray such as a nitrocellulose lacquer emulsion which will give good fastness properties to the finish and enable it to withstand modern shoemaking processes without being damaged. The second I would call 'character' top sprays—the waxy, oily drag and things of that kind. In my view the "mechanical" top spray should be applied in the tannery and the "character" spray in the shoe-room.

Having dealt with what people want, what do the tanners want? The answer to this is finishing with an economy of labour, time and materials. The job ought to be reasonably troublefree as well.

There is also one other group to be pleased and that is you, the shoemakers. We in the leather finishing business find out what shoemakers want fairly easily, because you tell us what you do not like and so what you do want.

is a matter of simple deduction ; better cutting areas, good “break” and fastness of the finish to enable it to go through the shoemaking process more easily. Presumably, you now expect me to tell you how to obtain all these wonderful things. However, I think some of the problems I have mentioned above can be solved and the main trends in leather finishing today are those which lead towards the development of four main points :

- (a) To make natural looking leather.
- (b) To give good wearing properties.
- (c) Reduction of production costs.
- (d) Quick response to fashion demands.

The first trend—to make leather which looks like leather—is due in part to the desire of the leather trade to protect itself against the competition from synthetics. It is also due to the aim of the tanners to upgrade their leather as much as they can. So, there is frequently a demand for leather with an aniline rather than a pigmented appearance. As it is impossible to produce sufficient full aniline leather to meet this demand, a compromise must be found. It is here that one of the newest developments in materials has made its appearance. I refer to the aniline pigments which have appeared recently which are being used quite widely. These transparent pigments can be used together with suitable acrylic resins even of heavily corrected leather and the final appearance is very attractive.

Another recent development is the appearance of dyed resins, where the dye-stuff forms an integral part of the resin film. In the production of aniline finishes the leather may be spray dyed first and then an aniline pigment chosen which is somewhat darker in shade than the dyestuff. The contrast between the two enhances the aniline appearance. Another method of giving an aniline appearance is by using a method generally called “semi-aniline finishing”. In this leather is padded and sprayed with conventional pigments and then oversprayed with a lacquer containing brilliant dyestuffs. Here again the colour of the dyestuff should contrast with the colour of the pigment underneath. A thin coat of the dyed lacquer brings up an aniline appearance and also acts as a sealer for the finish at the same time giving good resistance to wet and dry rubbing.

Aniline Finishes

The development of these “aniline” finishes is a good technical step forward but I think it will have its limitations. To start with there is a lot of leather about which is of poor quality and which will have to be covered with opaque pigments to make it saleable. Secondly, imperfections do still show up under these light aniline finishes and this makes things difficult for shoemakers who are equipped for big production and clicking from a uniform piece of leather. If some portions of the skin are better



than others it is not possible to do this. Another point is that, if these finishes are damaged during shoemaking, such as by serious scuffing, they are much more difficult to repair than those finished with the traditional opaque finishes.

This leads to the second point—"to give good wearing properties". This is tied up also with the "easy care" finishes which are one of the selling points of synthetic leather materials. However, as Dr. Pepper pointed out in his lecture last year called "The Challenge of Corfam", leathers finished with nitrocellulose are little inferior to Corfam as far as cleaning is concerned.

Shoes will always get dirty and they will always require some kind of cleaning up and this will never be the most popular of jobs. Whether you can rub the shoes with a damp sponge or have to use polish and a brush. I feel that a person who is too idle to do one is quite likely to be too idle to do the other.

Perhaps the biggest change in tanneries in recent years is the tendency towards increased mechanisation in order to reduce the labour charge involved in doing a lot of hand work. The finishing shop has seen many changes, but I still think that a lot of work goes into finishing which in the future we may find we can manage without. There is no general rule of course, but two pad coats and two spray coats of pigment resin mix followed by a coat of lacquer emulsion or protein season are very common, not to mention, one, two or more platings at various stages. Is this essential? The answer today seems to be "Yes". But I do not think it will always be so.

Many leather finishes are being applied now in one or two coats. The curtain coating machine has a great future, I believe, and another type of machine increasingly found in tanneries is the airless spray gun. In this the spray mixture is forced through a fine aperture by hydraulic pressure, not air pressure. Heavy coats may be applied if required and, as a finish with a higher viscosity than that applied by conventional spray equipment may be used, there is no danger of the finish sagging. It has been called the poor man's curtain coater and it undoubtedly has tremendous advantages. The use of curtain coating machines and the airless spray gun enables another development in leather finishing to progress more swiftly. That is to obtain colour and cover in a minimum of costs and with a minimum of film thickness to allow the use of thicker protection coats to facilitate shoe manufacture.

Automatic padding machines are now coming into use in tanneries while automatic spraying machines are becoming an essential part of a tanners' equipment. With these, it is easy to change from one colour to another; the spraying is perfectly even and there is no waste of finish as memory timers and photo-electric cells have been incorporated to ensure that machines only spray when leather is actually passing underneath the spray guns.

Impregnation Resins

In the same way that there have been striking developments in the machinery field, so have there been in products to put in the machines. One of the major developments in recent years has been the use of impregnation resins which are also called fillers. Fillers, I think, was the earlier name and still sticks as it is rather difficult to change a name, once it is established, but impregnating is I think, a better term. Especially as filling is now also used to mean that property of a pigment dispersion and resin system which result in the concealment of hair follicles and the production of a level—but not necessarily highly pigmented—finish. Anyway, impregnants or fillers whichever we call them, are of two main types—acrylics and polyurethanes. The acrylics are usually either solutions of resin in water or emulsions of a very fine particle size. Polyurethanes are applied from organic solvents and no water is used.

The function of both these materials is the same. They are applied to buffed leather and penetrate into the leather. The resin binds the corium minor to the corium major so that when the leather is flexed the two layers bend as one. It seems that poor “break” is caused when the two layers bend individually—an effect similar to that of bending a piece of cardboard.

Acrylics have an advantage in general of being cheaper as they are applied from water rather than from organic solvent. On the other hand polyurethane impregnants dry faster as the solvents evaporate much more quickly than water. A recent development though is the use of aqueous fillers at high concentration so that less water has to be evaporated. One of the more recent innovations is that it is now possible by use of penetrating agents, to fill even full grain leather. The resins by themselves will not go through unbuffed grain, but the addition of wetting agents and certain solvents enable the resin to overcome this barrier. Apart from their use in impregnating systems polyurethanes are now widely used for the production of patent finishes. The finishes obtained by this means have excellent resistance to abrasion and are very flexible. Although it is almost impossible to get a bright shiny film having a plastic appearance, the polyurethane patent is very popular and has a lot of fashion-appeal. Because of its excellent scuff-proof properties polyurethane is an ideal product for use as a top season. Its disadvantages at the moment are long curing time, toxicity, and short pot life, but it is quite likely that these will be overcome sufficiently for it to be used more widely in the years to come. In fact a range of pigment dispersions in polyurethane may come into use for the production of upholstery leathers where excellent resistance to scuffing is required.

I said earlier that one of the things shoemakers want, especially in the women's fashion trade, is speed of delivery of coloured leathers. Now this is a great problem for, if a shoemaker decides that he wants, say, 4,000 feet of a certain shade of pale blue, he may have to wait for the colour to be matched, the leather to be finished and then sent to him and even in the most efficient organisation this is



bound to take time. If the tanner is finishing a long run of dark colours he does not want have to switch to a short run of pastel shades and then go back to dark ones. It is also possible that he may have no stocks of the right kind of crust and finally when he does send the 4,000 feet, the shoemaker may ring him up the next day and say, "sorry to do this to you old boy, but could you possibly let me have another 1,500 feet of the same shade?" To counteract this state of affairs, some shoemakers are beginning to say—or rather have been saying for some time—"Let's finish leather for fashion shades ourselves." A lot of work has been done on this now over a considerable period of time and the results look promising. There is quick turnover, no waste of leather and no over- or under-ordering.

No Shortage of Ideas

In this paper I have covered quite a number of aspects of finishing. The main themes running through it are those of simple process, reduced labour requirements and the development of better fastness of finishes to scuff and wet and dry rub. I hope also it has been something of a guide to those of you who are not involved in leather finishing to a great extent. The developments of the last 30 years in this field, as in most other technical ones, have been outstanding. There is no shortage of ideas amongst tanners, shoemakers and suppliers for future development. We are all rather fortunate to deal with such a fascinating material as leather and what I would like most of all to see is closer collaboration between us all to achieve our main aim—the production of even better wearing and better looking shoes.

—[*Journal of the B. B. & S. I.*]

FDI INFLOW TO INDIA DECLINES TO \$74.01 BILLION IN 2021



Total foreign direct investment (FDI) inflow to India declined to \$74.01 billion in the calendar year 2021, which is 15 per cent lower from \$87.55 billion recorded in the previous year, the ministry of commerce & industry said on Wednesday.

The FDI inflow includes equity inflow, equity capital of unincorporated bodies, re-invested earnings and other capital. "FDI is largely a matter of commercial business decisions and FDI inflow depends on a host of factors such as availability of natural resource, market size, infrastructure, political and general investment climate as well as macro-economic stability and investment decision of foreign investors.

"In calendar year 2021, the FDI inflow decreased by 15 per cent as compared to calendar year 2020," Minister of State in the Ministry of Commerce and Industry Som Parkash said in a written reply in the Lok Sabha. To promote FDI, the Government has put in place an investor-friendly policy, wherein most sectors except certain strategically important sectors are open for 100 per cent FDI under the automatic route.

Further, the policy on FDI is reviewed on an ongoing basis, to ensure that India remains attractive and investor-friendly destination, the minister said. "Changes are made in the policy after having consultations with stakeholders including apex industry chambers, associations, representatives of industries/groups and other organizations.

"The government has recently undertaken a number of reforms across sectors. In the recent past, reforms in the FDI policy have been undertaken in sectors such as insurance, petroleum & natural gas, telecom etc," the minister added.

(ANI – 23/03/2022)

INDIA CROSSES \$400-BN MILESTONE IN EXPORTS



The country's exports for the first time crossed the \$400 billion mark in a fiscal on healthy performance by sectors such as petroleum products, engineering, gems and jewellery, and chemicals, according to the commerce ministry's data released on Wednesday. The merchandise exports rose by 37 per cent to \$400.8 billion in 2021-22 until March 21 against \$292 billion in 2020-21.

Previously, the outbound shipments had touched a record of \$330.07 billion in 2018-19. Imports during the period stood at \$589 billion, leaving a trade deficit of about \$189 billion. Hailing the country's success in achieving its goods export target, Prime Minister Narendra Modi said that this is a key milestone in India's 'Aatmanirbhar Bharat' journey.

The highest ever goods export target was achieved nine days ahead of the March 31 deadline. "India set an ambitious target of \$400 billion of goods exports and achieves this target for the first time ever. "I congratulate our farmers, weavers, MSMEs, manufacturers, exporters for this success. "This is a key milestone in our Aatmanirbhar Bharat journey. #LocalGoesGlobal," Modi tweeted.

Briefing media, Commerce and Industry Minister Piyush Goyal said that despite all adversities including Covid-19 pandemic, and Russia-Ukraine war, India has achieved this milestone. "First time in history, India has crossed \$400 billion in merchandise exports...if this was a movie like The Kashmir Files, it would be called a Make in India blockbuster," Goyal told reporters.

He added that closer interaction with states and districts; engagement with exporters; faster resolution of their issues; actively engaging with different export promotion councils,

industry associations and other stakeholders have helped in reaching this milestone. On average, goods worth about \$33 billion were shipped every month and about \$1 billion every day.

The key export sectors, which contributed to record healthy growth include petroleum products, engineering, gems and jewellery, chemicals and pharmaceuticals. The top five export destinations are the US, the UAE, China, Bangladesh, and the Netherlands. Director General of Foreign Trade (DGFT) Santosh Kumar Sarangi said that going by the trend, “we would be adding \$10-12 billion in the remaining nine days”, taking the exports by end of 2021-22 to over \$410 billion.

Commenting on the data, Federation of Indian Export Organisations (FIEO) Director General Ajay Sahai said crossing \$400 billion is a remarkable achievement as exporters have added over \$110 billion in one year to reach here despite huge logistics challenges, including container shortage, skyrocketing freight and liquidity constraints.

“What is more important is to build on it, as we will have benefits of new free trade agreements and the PLI scheme (production linked incentive) backing us,” he said. FIEO vice-president Khalid Khan termed the achievement as a “landmark” and said that despite the COVID-19 pandemic exports have “done so well”.

Apparel Export Promotion Council (AEPC) Chairman Narendra Goenka said that India crossing \$400 billion merchandise exports marks the beginning of an era of exponential growth and dominance in world trade. “From here, the growth rates are going to be exponential,” Goenka added.

(PTI – 23/03/2022)

IS THE WORST OVER FOR INDIAN BANKS?



The banking sector is much better placed to handhold India Inc, but it's still too early to sing “Happy days are here again!”
Abhijit Lele & Raghu Mohan report.

Is the worst over for Indian banks?

The past two years saw them ride on treasury trades as deposits soared and credit growth dipped sharply. Gross and net non-performing assets (NPAs) moved south, and the provision coverage ratio (PCR), capital buffers, and profitability indicators are back at pre-pandemic levels.

So, what's the plot ahead?

The Reserve Bank of India's (RBI's) Report on Trend and Progress of Banking in India 2020-21 (T&P: FY21) is nuanced: “A pick-up has started in Q2:2021-22, with the economy emerging out of the shadows of the second wave of Covid-19. “Going forward, revival in bank balance sheets hinges around overall economic growth, which is contingent on progress on the pandemic front.”

We are on that trajectory, but the report had added: “Banks would have to bolster their capital positions to absorb potential slippages as well as to sustain the credit flow, especially when monetary and fiscal measures unwind.” Last month, the second advance estimates of the National Statistical Office placed GDP growth at 8.9 per cent in FY22, lower than the earlier estimate of 9.2 per cent.

GDP growth for the October-December quarter is seen at 5.4 per cent, as against 0.7 per cent in the corresponding period a year ago. The RBI, in its February bi-monthly policy, had pegged growth in FY23 at 7.8 per cent, down from 9.2 per cent expected in FY22, in view of pandemic-induced uncertainties and elevated global commodity prices.

This is also lower than the 8-8.5 per cent projected by the Economic Survey. RBI Governor Shaktikanta Das had observed that “recovery in domestic economic activity is yet to be broad-based, as private consumption and contact-intensive services remain below pre-pandemic levels.” The GDP growth numbers may have to be revisited in light of the conflict in Ukraine.

Bankers, however, appear relatively optimistic; and the underlying mood is that various positive strands are coming together.

Gearing up

Rajkiran Rai G, managing director (MD) and chief executive officer (CEO) of Union Bank of India, believes that “legacy issues are behind us and we have comfortable capital adequacy, high PCR, and a re-hauled risk management system” — as well as the ability to take on large exposures, far better human resources, and technology systems.

Rai adds: “The capital investment cycle has begun, which leads to good credit growth and our market share in incremental business will stabilise in FY23.” Amitabh Chaudhry, MD and CEO of Axis Bank, reckons that “capitalisation is much better, asset quality deterioration, adjusted even for regulatory forbearance, has surprised us in its moderation.

“It points to the robust risk management systems implemented in banks.” He takes comfort from the RBI’s projections of gross-NPAs in its Financial Stability Report of December 2021, which sees only a slight deterioration to 8.1 per cent under the “base scenario”, and 9.5 per cent under the “severe-stress scenario” in September 2022, from 6.9 per cent in September 2021.

“The regulatory and fiscal measures have been timely and effective. “The overall economy has recovered well from the earlier Covid waves, and looks set to maintain the recovery trend. “The Union Budget and recent monetary policy indicates a pro-growth focus and gradual withdrawal of support measures,” notes Sumant Kathpalia, MD and CEO of IndusInd Bank. He’s hopeful of “a seamless transition to a post-Covid economy. “The banking sector has coped well through stronger balance sheets and digital adoption. “We are poised to participate in the growth recovery.”

Niggling doubts

The material change in the equation is interest rates. Another way of putting it is that the repeal of RBI’s accommodative monetary policy stance is a variable in play now. Unlike the year gone by, it is clear that from here on, the money markets and yields on dated-securities will be watched keenly.

This should be seen in the context of the fact that credit demand is beginning to improve, with non-food credit growth rising to 8.3 per cent year-on-year in January 2022, from a low of 5.4 per cent in April 2021. Retail continues to be the major driver, accounting for around 37 per cent of the incremental off-take

until Q3 of FY22. Services, agriculture and MSMEs (micro, small and medium enterprises) are also witnessing healthy credit demand, including disbursement to non-banking financial companies (NBFCs) for on-lending.

“However, real pick-up in credit will be dependent on government spending and private capital expenditure going up. “While conversations have started, we are yet to see a real pick-up in activity on the ground,” Chaudhry qualifies.

But will higher interest rates trip the growth story from here on?

The macroeconomic setting is as follows: gross borrowing for FY23(BE) is at Rs 14.95 trillion, compared to Rs 10.47 trillion in FY22(RE); and repayments are likely to be higher at Rs 3.76 trillion, compared to Rs 2.7 trillion in FY22(RE). So, too, are the total liabilities of the Centre, at Rs 152 trillion in FY23 (Rs 136 trillion in FY22).

Interest costs are seen elevated at Rs 9.4 trillion in FY23(BE), compared to Rs 8.14 trillion in FY22(RE). The yield on the benchmark 10-year government paper is seen inching upward to 7 per cent. Banks have already adjusted their deposit rates higher; and it’s only a matter of time before this feeds into the pricing of loans.

Now, look at another data-set.

The credit-to-GDP ratio is at a five-year high, narrowing the credit-GDP gap (a caveat: this is also due to the fact that GDP growth has slowed down). That said, the credit-to-GDP ratio is still markedly lower than the G-20 average. The share of advances (in total assets) is down; that of investments is up, owing to banks’ risk aversion and limited profitable lending avenues.

This has led to a decline in the credit-deposit (CD) ratio and an elevation in the investment-deposit (ID) ratio, especially in incremental terms. The RBI may also have to be a bit realistic for banks to handhold India Inc, and improve the ease of doing business. For instance, the move to impose restrictions on opening of current accounts and cash-credit or overdraft facilities by banks (relaxed now by six months to October 29, 2022), has created an operational nightmare for banks. “It was intended to curb fund-diversion, but has ended up hurting the good borrowers as well,” says a senior banker.

Then, again, while sectoral buoyancy is back, it is unlikely that banks of all hues are able to service their needs, given the limitations on capital. The RBI's Report on Trend and Progress of Banking in India 2018-19 had flagged the sharp fall in both the incremental and outstanding credit of state-run banks.

(And this aspect has to be read along with the aforementioned fall in the CD ratio and the uptick in the ID ratio). In FY17, private banks' share in incremental credit was almost 100 per cent, as a dozen state-run banks which were under the RBI's prompt corrective action (PCA) framework had vacated their turf.

Will state-run banks be major lenders henceforth?

The Centre will not to capitalise them: no support has been earmarked in the Union Budget for FY23. Between 2015-16 and 2019-20, the Centre had pumped in Rs 3.56 trillion into these banks through both direct subscription to equity shares and recapitalisation bonds. With valuations low, the Centre's stake in state-run banks had shot up.

Will investors now supply them with capital, if it is felt that on full withdrawal of pandemic-related forbearance measures, bad loans are about to rear their head again? Karthik Srinivasan, group head, financial sector ratings, at ICRA, points out that "the story for state-run banks is changing for the better on improving core profitability and low provisioning requirements." For many of them, a good two years was taken in ensuring that the amalgamations were effective, even as they grappled with the effects of Covid-19. "They have the management bandwidth to scale up and are in a position to support 8-9 per cent growth in credit in FY23," he adds. As for NBFCs that have taken on the task of fuelling the economy over the last decade, there is still lingering pain.

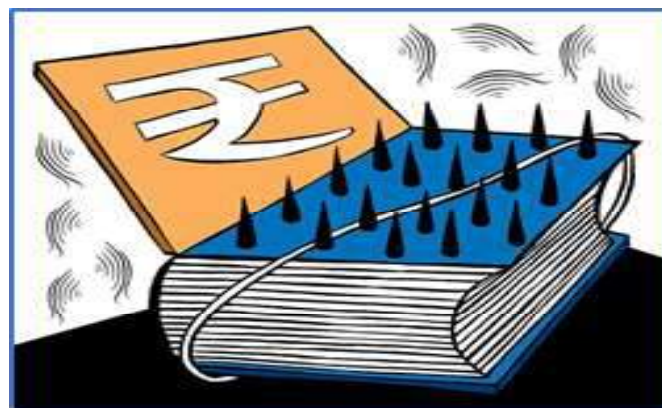
That's why the RBI has given an additional six months to comply with its circular which said that NPAs can be upgraded only after all arrears and principal dues are paid. "We believe it could have been helpful if the measures extending the revised asset classification and provisioning norms had come along with the RBI circular issued on 12th November, 2021.

"Most NBFCs have already absorbed the impact in their third-quarter FY22 results," says Y S Chakravarti, MD and CEO of Shriram City Union Finance. That's because the RBI clarification

only defers the adoption of the new norms. "Reversing the provisions already made (although now permitted), is unlikely to be the route that NBFCs may follow due to accounting complexities," he adds. Taken together, the banking sector is much better placed to handhold India Inc, but it's still too early to sing "Happy days are here again!"

(Business Standard – 24/03/2022)

FISCAL DEFICIT TOUCHED 82.7% OF FULL YEAR TARGET AT END OF FEB



The Centre's fiscal deficit at the end of February stood at 82.7 per cent of the full year budget target, mainly on account of higher expenditure, according to government data released on Thursday. In the last financial year, the fiscal deficit or gap between the expenditure and revenue was 76 per cent of the Revised Estimate (RE) of 2020-21.

In actual terms, the deficit stood at Rs 13,16,595 crore at the end of February this year, as per the data released by the Controller General of Accounts (CGA). The central government's total receipts stood at Rs 18.27 lakh crore or 83.9 per cent of the RE of Budget 2021-22. It was 88.2 per cent of the RE of 2020-21 in the corresponding period.

The government's total expenditure was at Rs 31.43 lakh crore or 83.4 per cent of the current year's RE. It was 81.7 per cent of RE in the corresponding period last financial year. The government expects the fiscal deficit to be at 6.9 per cent of the GDP or Rs 15.91 lakh crore in the current financial year ending March 31, 2022.

(PTI – 31/03/2022)

-: JILTA :-

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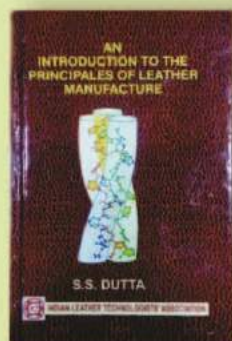
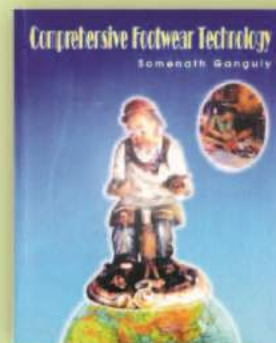
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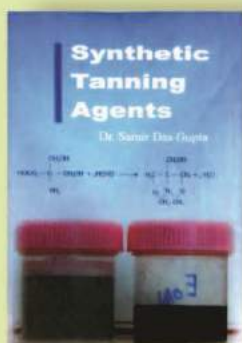
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History and Activities of Indian Leather Technologists' Association

The Indian Leather Technologists' Association (ILTA) was founded by Late Prof. B. M. Das, the originator of Das-Sassanay theory and father of Indian Leather Science on 14th August 1950.

The primary objectives of the oldest Leather Technologists' Association which celebrated its Diamond Jubilee year in the 2010, are :

- ◆ To bring all concerned with the broad spectrum of the leather industry under one umbrella.
- ◆ To organize seminar, symposium, workshop in order to create information, knowledge and latest development for the benefit of all concerned. To offer a common platform for all to interact with each other in order to understand each other's problems and prospects.
- ◆ To publish monthly journal as a supplement to those above objectives. The monthly journal of ILTA is known as journal of Indian Leather Technologists' Association and is the most widely circulated technical journal concerning leather technology.
- ◆ To publish textbooks for the benefit of students at various levels of study, for the researchers and industry.
- ◆ To have interface between urban and rural sector.
- ◆ To assist Planning Commission, various Government institutions, Ministry and autonomous bodies to formulate appropriate policies acceptable and adoptable to the industry.
- ◆ To organize practical training and to provide skilled manpower and to motivate good students for study.
- ◆ To conduct activities related to the growth of the export of leather and leather goods from India.
- ◆ As the part of many social activities ILTA has donated Rs. 1 lac to Consul General of Nepal towards relief of earthquake effected of Nepal on 15th Sept, 2015.

INTERNATIONAL & NATIONAL SEMINAR

- ◆ ILTA is the Member Society of International Union of Leather Technologists & Chemists Societies (IULTCS), a 115 years old organization and for the first time the IULTCS Congress was organized in January 1999 outside the developed countries in India jointly by ILTA and CLRI.
- ◆ 2017 IULTCS Congress is scheduled to be held in India again.
- ◆ 8th Asian International Conference on Leather Science & Technology (AICLST) was organized by ILTA in 2010 during its Diamond Jubilee Celebration year.

SEMINAR & SYMPOSIUM

ILTA organizes Seminar & Symposiums on regular basis to share information, knowledge & latest development and interactions for the benefit of all concerned. Few are as under :

- ◆ Prof. B. M. Das Memorial Lecture every year during the Foundation Day Celebrations on 14th August every year.
- ◆ Sanjoy Sen Memorial Lecture on 14th January every year, the birthday of our late President for several decades.
- ◆ Prof. Mont Banerjee Memorial Lecture on 15th March every year, the birthday of this local personality.
- ◆ Seminar on the occasion of India International Leather Fair (IILF) at Chennai in February every year.

It has also organized :

- ◆ Prof. Y. Nayakumma Memorial Lecture.
- ◆ Series of Lectures during "Programme on Implementing Emerging & Sustainable Technologies (PRIESTY)".
- ◆ Seminars in occasion of India International Leather Fair, 2014 and 2015 at Chennai etc. Many reputed scientists, industrialists and educationists have delivered these prestigious lectures. Foreign dignitaries during their visits to India have addressed the members of ILTA at various times.

PUBLICATION

ILTA have published the following books :

- ◆ An Introduction to the Principles of Physical Testing of Leather by Prof. S. S. Dutta
- ◆ Practical Aspects of Manufacture of Upper Leather by J. M. Dey
- ◆ An Introduction to the Principles of Leather Manufacture by Prof. S. S. Dutta
- ◆ Analytical Chemistry of Leather Manufacture by P. K. Sarkar
- ◆ Comprehensive Footwear Technology by Mr. Somnath Ganguly
- ◆ Treatise on Fatliquors and Fatliquoring of Leather by Dr. Samir Dasgupta
- ◆ Synthetic Tanning Agents by Dr. Samir Dasgupta
- ◆ Hand Book of Tanning by Prof. B. M. Das

ILTA has a good Library & Archive enriched with a few important Books, Periodicals, Journals etc.



AWARDS OF EXCELLENCE

- ◆ ILTA awards Prof. B. M. Das Memorial, Sanjoy Sen Memorial, J. M. Dey Memorial and Mont Banerjee Memorial Medals to the top rankers at the University / Technical Institute graduate and post graduate levels to encourage the brilliants to evolve with the industry.
- ◆ J. Sinha Roy Memorial Award for the author of the best contribution for the entire year published in the monthly journal of the Indian Leather Technologists' Association (JILTA).

LEXPOs

To promote and provide marketing facilities, to keep pace with the latest design and technology, to have better interaction with the domestic buyers, ILTA has been organizing LEXPO fairs at Kolkata from 1977, Siliguri from 1992 and Durgapur from 2010. To help the tiny, cottage and small-scale sectors industries in marketing, LEXPO fairs give the exposure for their products. Apart from Kolkata, Siliguri & Durgapur, ILTA has organized LEXPO at Bhubaneswar, Gangtok, Guwahati, Jamshedpur and Ranchi.

MEMBERS

The Association's present (as on 31.03.2018) strength of members is more than 600 from all over India and abroad. Primarily the members are leather technologists passed out from Govt. College of Engineering & Leather Technology, Anna University, Chennai, Harcourt Butler Technological Institute, Kanpur, B. R. Ambedkar National Institute of Technology, Jalandhar and Scientists from Central Leather Research Institute.

ESTABLISHMENTS

In order to strengthen its activities, ILTA have constructed its own storied building at 44, Shanti Pally, Kestia, Kolkata - 700 107 and have named it "Sanjoy Bhavan".

This Association is managed by an Executive Committee duly elected by the members of the Association. It is absolutely a voluntary organization working for the betterment of the Leather Industry. None of the Executive Committee members gets any remuneration for the services rendered but they get the satisfaction of being a part of this esteemed organization.



Indian Leather Technologists' Association

[A Member Society of International Union of Leather Technologists' and Chemists Societies]

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