



ILTA
Since 1950

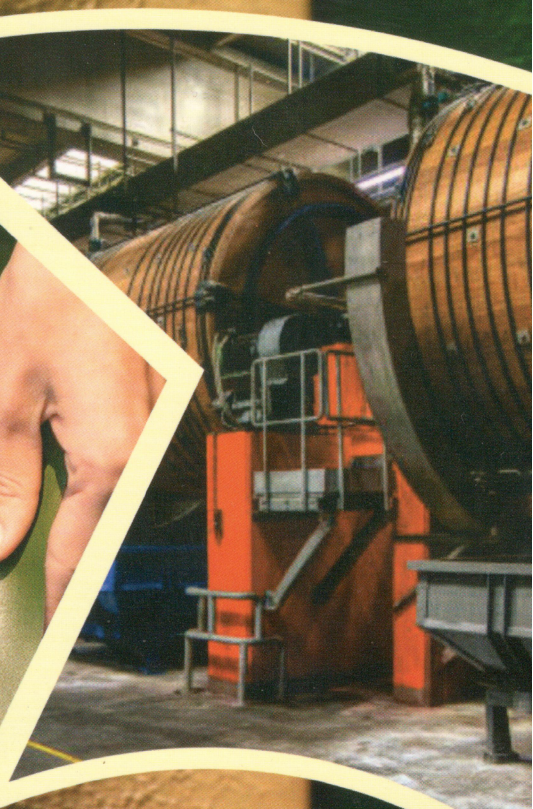
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Synopsis of Objectives

- An Association with over 550 members from India and abroad working since last 72 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 72 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



ILTA
Since 1950

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Indian Leather Technologists' Association

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

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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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(Member Society of International Union of Leather Technologists and Chemists Societies)

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Definition of Green Hydrogen by India



Marking a significant stride towards the advancement of the National Green Hydrogen Mission, a pivotal development has occurred as the Indian government has officially introduced the Green Hydrogen Standard for India. This standard, issued by the Ministry of New and Renewable Energy (MNRE), Government of India, delineates the emission benchmarks that must be met to classify hydrogen production as 'Green,' originating from renewable sources. The parameters encompass hydrogen derived from both electrolysis-based and biomass-based production methods. Following consultations with diverse stakeholders, the Ministry of New & Renewable Energy has defined Green Hydrogen as hydrogen with well-to-gate emissions (including water treatment, electrolysis, gas purification, hydrogen drying, and compression) not exceeding 2 kg CO₂ equivalent per kg H₂.

The notification stipulates that the Ministry of New & Renewable Energy will define an elaborate methodology for measuring, reporting, monitoring, on-site verification, and certifying green hydrogen and its derivatives. Additionally, the Bureau of Energy Efficiency (BEE), under the Ministry of Power, will serve as the Nodal Authority responsible for accrediting agencies for monitoring, verifying, and certifying Green Hydrogen production projects. The introduction of the Green Hydrogen Standard through this notification brings a much-needed clarity to India's Green Hydrogen community and have been anticipated since long. With this, India joins the ranks of the world's first few countries to establish a definitive definition for Green Hydrogen.

This announcement follows closely after statements by Power and New and Renewable Energy Minister R K Singh, who projected India's imminent emergence as a major global producer of green hydrogen. In detailing the nation's journey in infrastructure expansion, Singh attributed India's competitive advantage in green hydrogen production to its rapidly advancing renewable energy sector. Sri Singh asserted, "We have already emerged as one of the larger manufacturers of green hydrogen and green ammonia," underlining that India's renewable energy cost is the most economical worldwide. The

minister underscored India's inherent advantages and swift transition to non-fossil fuels as pivotal factors in its potential dominance within the realm of green hydrogen manufacturing. With a non-fossil fuel-powered capacity of 185,000 MW, constituting 43% of the total capacity, and an additional 88,000 MW under installation, India's renewable energy sector is forging ahead with remarkable momentum.

The Green Hydrogen Policy in India 2023 marks a significant milestone in the country's pursuit of sustainable energy solutions. With a growing emphasis on decarbonization and renewable energy, green hydrogen has emerged as a game-changer. This policy sets forth a comprehensive framework to accelerate the production, adoption, and utilization of green hydrogen in India. By leveraging renewable energy sources and innovative technologies, India aims to harness the potential of green hydrogen to reduce carbon emissions, enhance energy security, and pave the way for a cleaner and more sustainable future. The significance of green hydrogen lies in its potential to address critical challenges in the transition to a sustainable energy future. As countries worldwide seek to reduce their carbon footprint and combat climate change, green hydrogen offers a versatile and zero-emission energy carrier.

Firstly, green hydrogen can play a crucial role in decarbonizing sectors that are challenging to electrify directly, such as heavy industries, shipping, and aviation. By utilizing green hydrogen as a clean fuel, these sectors can significantly reduce their reliance on fossil fuels and contribute to emissions reduction.

Secondly, green hydrogen can enable energy storage and grid flexibility. Excess renewable energy, which often goes to waste due to the intermittent nature of wind and solar power can be converted into hydrogen through electrolysis. This hydrogen can then be stored and used later to generate electricity or provide heat, ensuring a stable and reliable energy supply.

Moreover, green hydrogen has the potential to enhance energy security by diversifying the energy mix. Countries heavily

dependent on imported fossil fuels can produce their green hydrogen, reducing their reliance on volatile global energy markets. Overall, green hydrogen holds immense promise in the context of sustainable energy. Its production, utilization, and integration into existing energy systems can contribute to achieving carbon neutrality, fostering energy security, and catalyzing economic development while paving the way for a cleaner and greener future.

The Green Hydrogen Policy in India 2023 is a visionary initiative by the Indian government aimed at accelerating the adoption and production of green hydrogen in the country. With a strong commitment to sustainable development and reducing carbon emissions, India recognizes the immense potential of green hydrogen in transforming its energy landscape.

The policy sets forth several key objectives tailored to the Indian context. Firstly, it aims to establish a robust ecosystem for the production, storage, and utilization of green hydrogen. This involves creating a favorable regulatory framework, providing financial incentives, and promoting research and development in green hydrogen technologies.

Secondly, the policy focuses on fostering domestic manufacturing capabilities for green hydrogen production equipment and infrastructure. By promoting indigenous manufacturing, India seeks to enhance self-sufficiency, create jobs, and drive economic growth in the clean energy sector.

Another crucial objective is the development of a comprehensive hydrogen roadmap that aligns with India's broader energy transition goals. The policy outlines a strategic approach to scale up green hydrogen production and consumption across various sectors, including transportation, power generation, industry, and domestic applications.

Furthermore, the policy emphasizes the importance of international collaboration and partnerships. India aims to engage with global stakeholders to exchange knowledge, technology, and best practices in green hydrogen production, ensuring accelerated deployment and optimal utilization of resources.

The policy also aims to create a framework for enhancing capabilities and developing skills in the green hydrogen industry. To successfully construct and run green hydrogen projects, it plans to develop a qualified workforce with the

necessary knowledge. The Green Hydrogen Policy in India 2023, as a whole, lays forth a thorough path for maximizing the potential of green hydrogen in the Indian context. The strategy seeks to hasten India's transition to a cleaner and more sustainable energy future while promoting economic growth and energy security. It does this by emphasizing production, infrastructure, technology, partnerships, and capacity building.

The National Hydrogen Mission was established by the Indian government on August 15, 2021, to achieve its climate goals and turn India into a hub for green hydrogen. As a first step, the government set an ambitious goal of producing 5 MMTPA (million metric tonnes per annum) of green hydrogen by 2030. The mission aids in laying the foundation for accomplishing the main goal of the "1-1-1" target, which is to achieve \$1 per kilogram in 10 years. The Union Cabinet approved the National Green Hydrogen Mission on January 4, 2022, with the stated goals of making India a major producer and supplier of green hydrogen globally, opening up export opportunities for green hydrogen and its derivatives, and reducing reliance on imported fossil fuels and feedstock. India wants to increase its use of renewable energy and lessen its reliance on fossil fuels.

- India has entered into collaborations with its energy partners in Gulf Cooperation Council (GCC) countries.
- India and Italy will develop partnerships in sectors such as green hydrogen, biofuels, and energy storage.
- India has strengthened its collaboration with the International Renewable Energy Agency (IRENA), including in green hydrogen.
- Green hydrogen company Ohmium International and oil & gas player Shell India have inked an agreement to evaluate hydrogen applications, markets, and project opportunities in the country and globally.

These collaborations are expected to help India achieve its ambitious target of producing 5 MMTPA of green hydrogen by 2030. The implementation strategies and mechanisms, including regulatory frameworks, funding mechanisms, and public-private partnerships.

Green Hydrogen Policy of India aims to facilitate green hydrogen production in India. It will be materialized by easing the process through time-bound single-window clearances allowing power



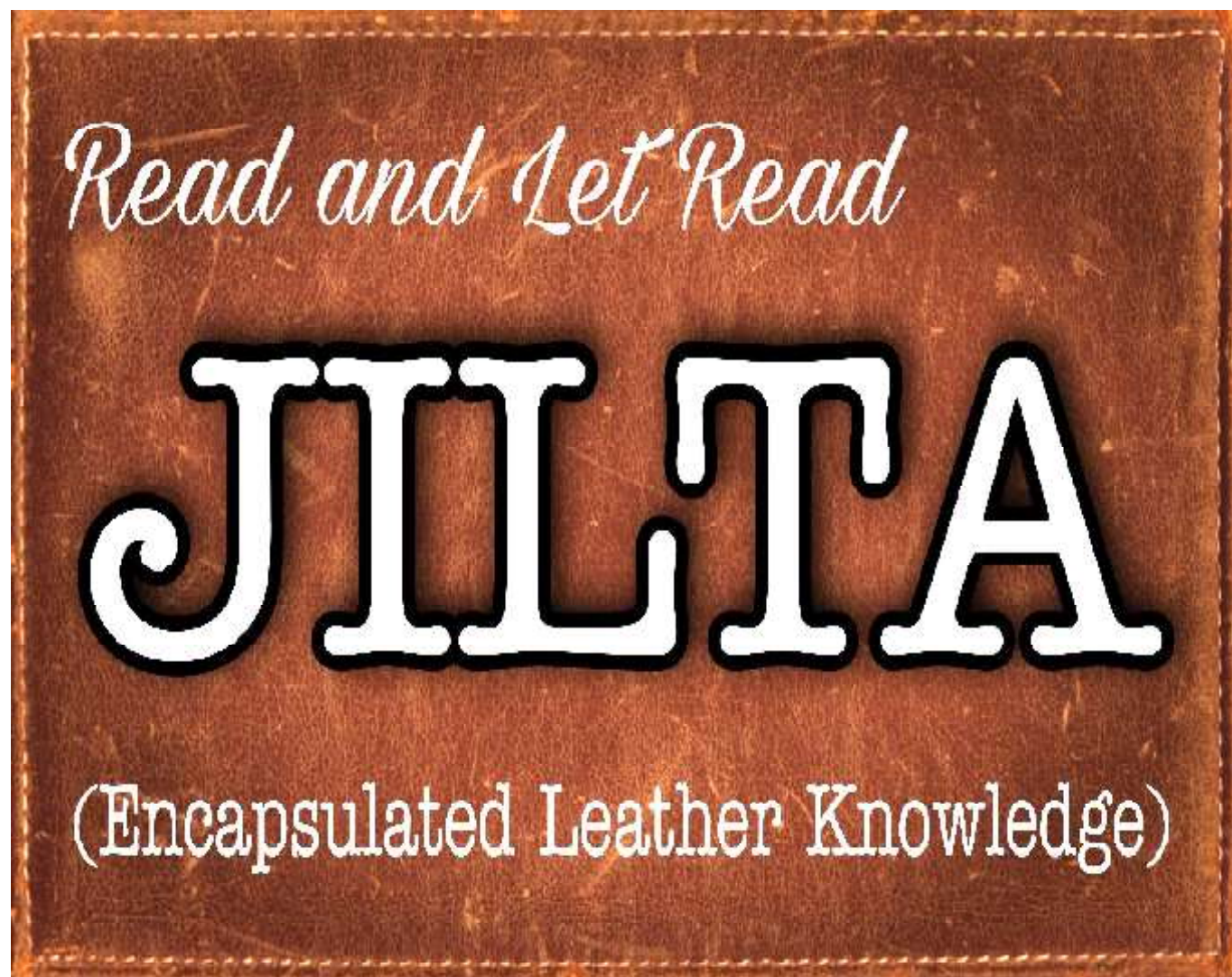
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banking of surplus unconsumed renewable power for 30 days providing access to power markets and interstate grids and long-term (25 years) interstate power transmission charge waivers, and easing port storage set-ups for hydrogen or ammonia export and use by the shipping sector. The policy framework has outlined a roadmap for achieving the goals and targets set.

The policy also aims to create a conducive environment for private sector investment in green hydrogen projects. The government has proposed to provide financial incentives such as capital subsidies, interest subvention, and tax exemptions to promote private sector participation in green hydrogen projects. The government is also planning to set up a National Hydrogen Energy Mission (NHEM) to promote research and

development in the field of hydrogen energy. The policy aims to make India an export hub for green hydrogen and green ammonia². It will help add 150 GW of renewable capacity and avert nearly 50 million metric tonnes of greenhouse gas emissions per year by 2030. Oil refineries will be required to replace 30% of their fuel usage with green hydrogen by 2035, starting from 3% in 2025.

Goutam Mukherjee
Dr. Goutam Mukherjee
Hony. Editor, 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.





Stahl

We imagine sustainable pickle-free leather tanning

If it can be imagined,
it can be created.

Tanners benefit from higher process efficiency, reduced water, chemical and salt consumption and a reduced environmental impact. This makes it possible for tanners to have an efficient process that is also sustainable and yields ecofriendly premium leathers.

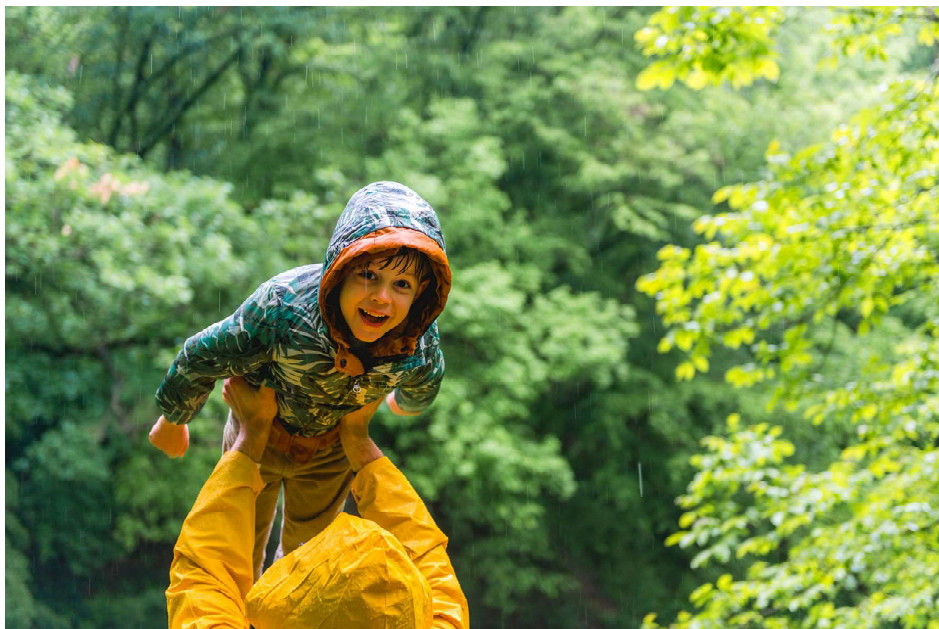
High-quality leather no longer forces a choice between responsible processes and efficiency. The main benefits of a pickle-free system that avoids salt addition during pickling are:

- Reduction of water consumption by up to 40%
- Shorter process time on cow, sheep and goat
- Cleaner effluent, TDS reduction by up to 40%

STAHL OUTLINES PROGRESS ON ENVIRONMENTAL, SOCIAL, GOVERNANCE AMBITIONS IN 2022 ESG REPORT

Stahl, a leading provider of coating technologies, has published its 2022 Environmental, Social, and Governance (ESG) Report. The report, which shares its title with Stahl's new purpose –Touching lives, for a better world– details the company's recent progress against its mid-term ESG 2030 targets and broader ESG ambitions. The report is available to view as a fully digital version.

Stahl's 2022 ESG Report is the 10th edition of the publication, which aims to provide stakeholders with a clear understanding of the



company's ESG strategy, goals, and activities. In 2022, Stahl took steps to strengthen its non-financial reporting, including preliminary efforts to address the requirements of the Corporate Sustainability Reporting Directive (CSRD), a forthcoming EU regulation. Stahl has established a project team to gain a better understanding of double materiality, governance elements, and other ESG disclosures related to the CSRD.

Demonstrable progress against Stahl's ESG targets

A key focus of the report is Stahl's ESG Roadmap to 2030, a list of ESG-related commitments and targets aligned with the UN Sustainable Development Goals (SDGs). The roadmap uses metrics to track Stahl's progress against its targets, which are based on a set of clearly defined environmental, social, and governance topics.

These targets include reducing greenhouse gas (GHG) emissions. In 2022, the CO₂e intensity of Stahl's Scope 1 and Scope 2 GHG emissions fell by 3%. This followed a decrease of more than 30% in the company's Scope 1 and 2 emissions in absolute terms between 2015 and 2020. During the year, Stahl also submitted a new Scope 3 target to the Science Based Targets initiative (SBTi), with the aim of reducing its upstream emissions by at least 25% by 2030 (2021 baseline). Scope 3 GHG emissions cover all the additional indirect emissions that may occur in the value chain, including those associated with purchased raw materials, packaging, business travel, logistics and transportation, and dealing with end-of-life products. Stahl's Scope 3 emissions currently represent over 90% of its carbon footprint.

EcoVadis Platinum rating

In 2022, Stahl received an EcoVadis Platinum rating, placing it in the top 1% of companies assessed by the globally renowned EcoVadis sustainability rating platform. By achieving the highest possible rating, Stahl has surpassed its ESG Roadmap goal of achieving a Gold rating by 2023. Stahl's commitment to the EcoVadis process also extends to its supply chain. 83% of the company's raw material spend came from EcoVadis-rated suppliers, and Stahl aims to ensure that all EcoVadis-rated suppliers in its network achieve a minimum rating of 47/100 by 2030.

Safe and supportive work environment

Stahl's 2022 ESG report also details the company's efforts to support the physical and mental well-being of its employees, forming a core pillar of its ESG approach. For instance, Stahl's Roadmap to 2030 includes a target to have all Stahl manufacturing sites ISO 45001-certified¹ by 2030 (59% of Stahl's products were produced at ISO 45001-certified sites in 2022).

In addition, Stahl has taken steps to increase employee engagement and strengthen its diversity, equity, and inclusion (DEI) culture and vision. This has included defining and implementing local DEI plans in each of Stahl's legal entities worldwide and appointing local DEI committees for each entity. As part of this effort, Stahl is committed to improving gender equality and the representation of women throughout the organization. To this end, it has set a target to achieve 30-60% female representation across the company's Leadership Team, Extended Leadership Team, and heads of function.

Maarten Heijbroek, CEO of Stahl: "2022 was my first full year as CEO, and I am proud to say that it was a year of progress, as we continued to build momentum toward the goals set out in our ESG Roadmap to 2030. It was a year of significant milestones, including the announcement of our new Scope 3 greenhouse gas emissions target and our EcoVadis Platinum rating, to name a few. While we still have a long way to go to become the responsible organization we aspire to be, each year we touch more lives, as we work with our partners to create a better world."

(Stahl News – 22/03/2023)

STAHL COMPLETES ACQUISITION OF ICP INDUSTRIAL SOLUTIONS GROUP

Stahl, a provider of coatings technologies headquartered in the Netherlands, has completed the acquisition of ICP Industrial Solutions Group (ISG), a leader in high-performance coatings for packaging and labeling applications. The acquisition reinforces Stahl's position as the global leader in the field of specialty coatings for flexible substrates.

ICP Industrial offers a comprehensive portfolio of high-performance coatings used primarily in packaging and labeling applications, notably in the food and pharmaceutical sectors. ICP



Industrial is primarily active in North America (close to 70% of sales), where it is a recognized technical leader. It also operates in Europe, under the "Hi-Tech Coatings" brand name.

In addition to enhancing Stahl's product offering and manufacturing capabilities, the acquisition stands to strengthen the company's environmental, social, and governance (ESG) leadership position. The integration of ICP Industrial coating technologies (water-based and energy-cured^[1]) will enable Stahl to support customers in their transition to more sustainable packaging. With ICP Industrial reporting sales of approximately USD 140 million in 2022, the acquisition will bring Stahl's annual sales beyond the EUR 1 billion mark, with an EBITDA margin above 20%.

Maarten Heijbroek, CEO of Stahl: *"Completing this important strategic acquisition is an important milestone for our organization. Stahl and ICP Industrial's product focus and technologies are highly complementary, and the acquisition will enhance our growth profile, diversify our target markets, and broaden our technology base. Moreover, integrating ICP Industrial's expertise and range of innovative low-impact solutions into our portfolio will add further value to our stakeholders as we work to create a more sustainable coatings value chain."*

(Stahl News – 16/03/2023)

BEAUTIFUL SCRATCH-RESISTANT MATTE COATINGS WITH POLYMATTE® FOR SYNTHETICS AND LEATHER

With matte coatings trending hard, product, fashion and interior designers need to be confident that the matting agents they choose to create a luxurious appearance will stay looking wonderful for a long time. Stahl PolyMatte® scratch-resistant coating prevents scuffing and polishing to extend the lifespan of matte sofas, matte car, boat and airplane interiors, matte accessories and matte interior surfaces. Our industry is always pushing for more – more performance, easier application, better environmental footprint – and PolyMatte® checks all the boxes.



Full matting solution for long-lasting finishes

PolyMatte® is a proprietary Stahl polyurethane dispersion technology that works with water-based, custom-made coatings that meet the most stringent requirements in terms of aesthetics, performance and sustainability. PolyMatte® forms a smooth, matte surface structure during the film forming and drying stage so that no fillers are needed. Being a polyurethane, PolyMatte® makes every article feel more luxurious, while its flexibility and scratch and abrasion resistance ensures it maintains its character for longer. Stahl PolyMatte® is a wide-ranging product line that exceeds other matting agent technologies. Stahl PolyMatte® comprises a wide portfolio of top coats and duller concentrates.

Choice of bio-based matting for leather

Stahl promotes environmentally responsible practices. Because of this, we have begun using natural and renewable resources in the development of new finishing technologies. Our bio-based PolyMatte®, developed for leather finishing, is made with rapeseed oil instead of crude oil intermediates. So it's better for the environment. And the solid part of the rapeseed becomes animal feed or fertilizer as it contains fiber, carbohydrates and proteins. The result is a bio-based technology with no waste.

Key benefits of PolyMatte® matte coating technology

Our PolyMatte® portfolio, including Bio-based PolyMatte®, is resistant to solvents, oil, UV, oxidation, scratches, high temperature and hydrolysis. With PolyMatte®, we can help you ensure the durability of your products with no esthetic compromises, and the choice to improve your environmental footprint. Perfect for tomorrow's iconic products.

- A film forming matting agent
- Low- to extreme-low gloss (<1% at 60° angle)
- Long-lasting with a pleasant feel
- Durable, non-porous surface
- Damage and scratch resistant
- No squeaking
- Low-VOC

(Source: www.stahl.com/portfolios/polymatte)

RESPONSIBLE CHEMISTRY INVOLVES RETHINKING PRIORITIES

Stahl's road to responsible chemistry started in 1978 with the launch of our first water-based leather finishing product. Since then, and over the last 20 years in particular, we have defined Responsible Chemistry and ushered it into our industry. Using our expertise to improve the performance of existing materials and productionize breakout ones, like fruit textiles, for example, that are even more sustainable. But we recognize there are more opportunities to do more. And that starts with our supply chain and the journey our products undergo from raw material to end of life.



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Our vision on responsible chemistry

As a company, we are actively trying to replace petrochemicals with renewable resources. But our road to responsible chemistry doesn't end there. From a sustainability viewpoint, it is equally important to look at what happens when the products we help to make reach the end of their respective roads. We focus on three priorities to improve our environmental footprint and that of our customers:

1. Using low-impact manufacturing chemicals
2. Using biotechnology to replace non-renewable resources
3. Using waste and recycled content contributing to circularity

Using the Life Cycle Assessment methodology, we measure the impact of a product on the environment over the course of its life.

(Source: <https://www.stahl.com/responsible-chemistry/vision>)





From the desk of General Secretary

73RD FOUNDATION DAY CELEBRATION & PROF. B. M. DAS MEMORIAL LECTURE

Above was organized at the Seminar Hall, Science City, JBS Haldane Avenue, Kolkata – 700 046 on Monday the 14th August, 2023 at 02.30 PM onwards.

The program commenced with the introductory speech by Mr. Susanta Mallick, General Secretary, ILTA and the following dignitaries were invited on the dais.

- ◆ Mr. Arnab Jha, President, ILTA, and
- ◆ Prof. Subhamoy Moitra, Professor at Applied Statistics Unit, Indian Statistical Institute, Kolkata and Speaker of the Prof. B. M. Das Memorial Lecture.

Mr. Mallick requested Mr. Jha for delivering the Welcome Address.

After the Welcome Address Mr. Mallick invited Mr. Jha, Prof. Maitra, Speaker of the Memorial lecture, Senior Members of ILTA, Representatives of GCELT, Alumni members of GCELT, Representatives from CFTC and Award Winners for garlanding the portrait of Prof. B. M. Das.

Thereafter Mr. Mallick announced the names of the following award winners and invited them on the dais for receiving the felicitation with Prof. B. M. Das Memorial Medals and the Prof. J. M. Dey Memorial Medal and Certificates.

- a) **Mr. Debjit Sen** – Winner of both Prof. B. M. Das Memorial Gold Medal & J. M. Dey Memorial Silver Medal for securing 1st Class 1st Position in B. Tech, Leather Technology Examination of Moulana Abul Kalam Azad University of Technology, West Bengal in 2023. – both were presented by Mr. Arnab Jha.
- b) **Mr. Manikandan H** – Winner of Prof. B. M. Das Memorial Medal for securing 1st Class 1st Position in B. Tech, Leather

Technology Examination of Anna University, Chennai in 2023 – presented by Prof. Subhamoy Moitra.

- c) **Miss Kritika Vagmi** – Winner of Prof. B. M. Das Memorial Medal for securing 1st Class 1st Position in M. Tech, Leather Technology Examination of Moulana Abul Kalam Azad University of Technology, West Bengal in 2022 – presented by Prof. Subhamoy Moitra.
- d) **Mr. Venkatachalam T** – Winner of Prof. B. M. Das Memorial Medal for securing 1st Class 1st Position in M. Tech, Leather Technology Examination of Anna University, Chennai in 2023 – presented by Prof. Subhamoy Moitra.
- e) **Miss Sarika Kumari** – Winner of Prof. B. M. Das Memorial Medal for securing 1st Class 1st Position in M. Tech, Footwear Engineering & Management Examination of Anna University, Chennai in 2023 – presented by Mr. Arnab Jha.
- f) **Mr. Arjun Verma** – Winner of J. Sinha Roy Memorial Award for his article titled “**Design & Development of Low-Cost LDR Shoes**” published in August, 2022 issue of JILTA adjudged the Best of all articles published in JILTA in calendar year 2022 by a committee consisting of Prof. (Dr.) Sanjoy Chakraborty, OIC, GCELT and Dr. Dipankar Chaudhuri, former Scientist & Head, RCED, CLRI, Kolkata. As Mr. Verma couldn't attend the program due to his preoccupation, his award was declared to be forwarded to his address.

Prof. Subhamoy Moitra was then greeted with a flower bouquet and Mr. Jha introduced him to the participants on the audience and requested him to deliver the Prof. B. M. Das Memorial Lecture.

Mr. Moitra delivered his most contemporary lecture titled “**Application of Computation Methods in the MSME Sectors related to Leather Industry**”.



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After completion of the lecture, Mr. Jha offered heartiest gratitude to Prof. Subhamoy Moitra and requested Mr. Susanta Mallick, General Secretary, ILTA, to present a Memento, Shawl & Citation and a Leather Bag as to Prof. Moitra.

The following award winners thereafter invited to deliver few short speeches on their projects and achievements: -

- a. Ms. Sarika Kumari
- b. Mr. Manikandan H
- c. Mr. Venkatachalam T
- d. Ms. Kritika Vagmi

After the segment is over, Mr. Mallick invited Mr. A. B. Kanungo, Vice President, ILTA who introduced Mr. Supriyo Sinha, Executive Director, Peerless Group, to the participants on the audience and requested him to deliver the lecture titled **"Entrepreneurship and How Digital can help in Labor Productivity"**.

On completion of the highly informative and contemporary lecture, Mr. Kanungo offered heartiest gratitude to Mr. Sinha and requested Mr. Susanta Mallick, to present a Memento, Shawl, Citation and a Leather Bag to Mr. Sinha.

At the same time, Mr. Mallick offered the formal Vote of Thanks to the participants on the audience, ILTA office and Science City authority for their role played towards successful completion of the event and invited them for a High Tea at the Dining Hall downstairs.

There were about 180 - 200 participants in the event.

In the evening session of the Celebration program there was an awesome rendition of various cultural events.

On beginning of the session, a group on behalf of ILTA consisting of Mr. Jiban Dasgupta & Mr. Alokesh Ray, Sr. Life Members of ILTA along with others presented a nice patriotic musical ballad titled **"O Amar Desher Mati"** on the occasion of the Independence Day eve.

The eminent orchestra group namely **"Samonnoy"** was welcomed and greeted by Mr. Kaushik Bhuiyan with a bouquet & memento and they presented a superb musical rendition to the audience.

After the musical program, the eminent drama group **"Nakshatra"** was welcomed and greeted with a bouquet & memento by Mr.

Kanak Kr. Mitra along with Mr. A. B. Kanungo and the group presented a one act play namely **"Bhalo Theko Burora"**.

The whole cultural program was anchored by Mr. Prabir Dasgupta, a Senior Life Member of our association.

Around 200 spectators were the witness of the colourful evening and participated in a gala dinner at the conclusion of the celebration.

Video recording of the entire program will shortly be available on the official YouTube Channel of ILTA (ILTA Online), Facebook Page of ILTA (*Indian Leather Technologists' Association*) & the Website of the Association – www.iltaonleather.org.

65TH ANNUAL GENERAL MEETING OF ILTA

The 65th Annual General Meeting of our association will be held at the Seminar Hall of Science City, Kolkata on 29th September, 2023, at 2.00 pm onwards. Printed and Complete Annual Report including Audited Statement of Accounts for the F.Y. 2022 – 2023 has been posted on 6th September' 2023.

Details of the event will be intimated in due course.

14TH ASIA INTERNATIONAL CONFERENCE ON LEATHER SCIENCE & TECHNOLOGY (AICLST)

ILTA is on the way to organize the 14th Asia International Conference on Leather Science & Technology (AICLST) in the year 2026 at Kolkata, India as endorsed by the IULTCS Secretariat.

It is proposed that this would be organized during the Platinum Jubilee Celebration year of ILTA from August, 2025 to July, 2026, preferably nearer the time Chennai Trade Fair in February, 2026.

Planning & Details of the program would be shared in due course.

(Susanta Mallick)
General Secretary

RECEIVING PRINTED COPY OF JILTA EVERY MONTH

We have started to post Printed copy of JILTA from April' 2022 to members and all concerned as it was before Covid period. Simultaneously we have been sending the e-copy of JILTA through email also to all the concerned receivers.

If you are not receiving JILTA by Post or through email, may please verify your Postal Address and/or 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 :-

- a) 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.
- b) Kindly mention your **Membership No.** (If any) against your each and every communication, so that we can locate you easily in our record.

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.

General Secretary and the Members of the Executive Committee are available to interact with members at 18.30 hrs, at our Registered Office on every Thursday



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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.



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Fruits &
Vegetables



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Soy



Cocoa



Coffee



Livestock



Medicinal Plant

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

2022-2023



PROJECT PARTNERS IN ASIA



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Adopting Eco-Friendly Practices : SWaSS (Smart Water-automated Saving System) Revolutionizes Water Efficiency in Leather

In today's fast-expanding industrial landscape, sustainability has become a critical part of every sector, including the leather business. With global awareness of environmental problems, innovative solutions that combine technology and environmental consciousness are gaining traction. The Smart Water-automated Saving System (SWaSS), for example, is revolutionizing the way the leather industry addresses water usage and conservation.

SWaSS: A Brief Overview

The leather industry, known for its sophisticated procedures and resource-intensive nature, has long struggled with inefficient water management. SWaSS is a game-changing technology that optimizes water use across the leather-manufacturing process by leveraging automation, data analytics, and smart technologies. It guarantees optimum use of water, while minimizing waste by monitoring usage at every stage — from soaking and tanning to finishing.

Benefits of SWaSS for the Leather Industry

- 1. Reduced Water Consumption:** SWaSS uses real-time data and predictive analytics to identify places where water is being consumed and squandered away. The technology streamlines water usage by identifying inefficiencies, resulting in considerable savings in consumption. This not only conserves a valuable resource; it also leads to cost savings.
- 2. Enhanced Operational Efficiency:** SWaSS's automated nature reduces the need for manual monitoring and intervention, allowing labor resources to be used for other useful activities. This improved operational efficiency leads to increased production and less downtime, which eventually benefits the bottom line.
- 3. Eco-Friendly Reputation:** Companies that implement sustainable practices enjoy a competitive advantage with consumers demanding environmentally responsible products. The implementation of SWaSS displays a commitment to responsible manufacturing, helping companies improve their brand perception and gain consumer loyalty.
- 4. Regulatory Compliance:** With global norms on sourcing emphasizing emission reduction and demanding efficiency in resource utilization, organizations failing to fulfil the requirements can suffer penalties as well as reputational harm. SWaSS assists businesses in staying compliant by adhering to water-use regulations and reducing their environmental imprint.

- 5. Cost Savings:** While the initial investment in SWaSS technology may appear steep, the long-term advantages compensate the cost and more. Reduced water use immediately correlates to decreased water bills, and increased efficiency contributes to labor- and energy-cost reductions.

A complete cost-benefit analysis, therefore, is required to analyze the genuine value proposition of SWaSS in the leather sector.

The ‘Cost’ Factor

- 1. Initial Investment:** Adopting SWaSS necessitates an initial investment in sensors, data-gathering equipment, and software. While this may require significant expenditure, it is important to see it as an investment towards long-term sustainability and efficiency improvements.
- 2. Training:** Workforce training is required to guarantee that the staff understand how to use and interpret SWaSS data efficiently. This cost can be reduced by implementing effective training programs.
- 3. Maintenance:** SWaSS, like any technical system, requires regular maintenance and upgrades to guarantee peak operation. Incorporating these expenses into the study gives a more realistic view of the investment’s long-term consequences.

The ‘Benefit’ Factor

The leather industry is at a crossroads. However, as the world adopts a greener way of life, SWaSS stands as an implementable advancement within the leather sector, demonstrating that technology and sustainability can work together to accomplish astonishing results.

Environmental Impact and Leather-Process Benefits of SWaSS

The leather sector, which has historically been linked with resource-intensive practices, is experiencing a transformation in favour of sustainability. SWaSS marks a big step forward in reducing the environmental footprint of leather manufacturing while reaping considerable advantages in the processing stage. This cutting-edge technology not only tackles the industry’s water consumption issues, it also improves operational efficiency and promotes ethical production.

1. Reducing Water Consumption and Environmental Footprint

SWaSS’s capacity to revolutionize water management in the leather-production process is one of its most enticing features. The leather industry has long been chastised for its high-water use, which not only limits local water supplies but also adds to pollution through inappropriate waste-water disposal. SWaSS addresses these concerns by:



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- a. **Optimizing Water Usage:** SWaSS employs real-time data monitoring and predictive analytics to identify areas of water wastage and inefficiency. By pinpointing where excessive water is being used, the system enables manufacturers to adjust processes and reduce consumption.
- b. **Minimizing Wastewater:** Traditional leather production frequently creates large volumes of effluent-laden chemicals used in tanning and finishing. SWaSS's water-saving capabilities reduce wastewater output, easing the pressure on wastewater treatment facilities and lowering pollutant discharge into local ecosystems.
- c. **Conserving Resources:** SWaSS helps preserve freshwater resources by reducing water use. This is especially important in areas facing water shortage. SWaSS adds greatly to a company's sustainability goals as a responsible water-use solution. This positive environmental impact has the potential to boost brand reputation and consumer loyalty.

2. Benefits in Leather-production Process

SWaSS offers numerous benefits beyond its environmental impact, by enhancing various aspects of the leather-production process:

- a. **Operational Efficiency:** The automation and real-time monitoring capabilities of SWaSS streamline operations by eliminating the need for manual data collection and intervention. This results in reduced downtime, increased productivity, and a more efficient workflow.
- b. **Predictive Maintenance:** SWaSS's data-driven insights can predict potential issues or maintenance needs, allowing manufacturers to proactively address concerns before they escalate. This minimizes production disruptions and extends the lifespan of equipment.
- c. **Quality Enhancement:** Consistent water management provided by SWaSS leads to more uniform processing, resulting in higher-quality leather products. Uniform water distribution during the tanning and finishing stages contributes to improved texture, color, and overall appearance.
- d. **Regulatory Compliance:** Avoiding regulatory fines and penalties by adhering to water-use limitations and environmental requirements on a continuous basis is a clear financial gain.
- e. **Cost Savings:** Beyond the environmental benefits, SWaSS translates into tangible financial gains. Reduced water consumption leads to lower water bills, while operational efficiencies cut labor and energy costs. Over time, these savings can significantly impact a company's profitability.



Caption: A SWaSS Dashboard

Meeting Sustainable Development Goals (SDGs) and Consumer Demand

As global awareness of environmental issues increases, consumers are increasingly seeking products that align with such values. SWaSS enables leather manufacturers to position themselves as environmentally conscious and socially responsible brands. By adopting sustainable practices and promoting reduced water consumption, companies can attract eco-conscious consumers and foster long-term brand loyalty.

- SDG 6 (Clean Water and Sanitation):** SWaSS directly contributes to SDG 6 by promoting efficient water usage and reducing water wastage in the leather-production process. This aligns with the goal of ensuring availability and sustainable management of water and sanitation for all.
- SDG 9 (Industry, Innovation, and Infrastructure):** SWaSS embodies innovation in the context of industry and infrastructure. Its technology-driven approach enhances industrial efficiency, reduces resource consumption, and promotes sustainable practices within the leather-manufacturing sector.
- SDG 12 (Responsible Consumption and Production):** By optimizing water consumption and reducing waste generation, SWaSS supports SDG 12's call for responsible production and consumption patterns. It helps industries transition towards more sustainable practices that minimize environmental impact.



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4. **SDG 13 (Climate Action):** SWaSS indirectly meets SDG 13's objective by mitigating the environmental impact of leather production. By reducing water usage and minimizing pollution, it aids in reducing the leather industry's carbon footprint and overall environmental impact.
5. **SDG 14 (Life below Water):** While the leather industry's impact on aquatic ecosystems may not be the primary focus of SWaSS, its water-saving features contribute to minimizing the release of pollutants and chemicals into waterbodies, aligning with SDG 14's goal of conserving and sustainably using marine resources.
6. **SDG 15 (Life on Land):** Leather production often relies on resources sourced from land ecosystems. SWaSS's sustainable practices, including reduced water usage and pollution prevention, contribute to preserving terrestrial ecosystems, thereby aligning with SDG 15's objectives.
7. **SDG 17 (Partnerships for the Goals):** SWaSS's implementation encourages collaboration between industries, technology providers, and policymakers to achieve shared sustainability objectives. By fostering partnerships, SWaSS closely follows the essence of SDG 17, which aims to strengthen global cooperation for sustainable development.

While the primary focus of SWaSS is water conservation and efficiency within the leather industry, its impact extends beyond these specific SDGs. Its adoption sets a precedent for industries to integrate innovative technologies to address environmental challenges, promote responsible practices, and contribute to broader sustainability goals.

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Press Release from the IULTCS

XXXVII IULTCS Congress 2023 Heidemann Lecture Presenter Announcement



The XXXVII IULTCS Congress Organizing Committee is extremely pleased to announce that Professor Yujia Xu will be the Heidemann Lecture Presenter at the XXXVII IULTCS Congress that will be held from 17th to 20th October 2023 in Chengdu, China.

The Heidemann Lecture is a keynote presentation that is held in memory of Professor Dr. Eckhardt Heidemann (1925-1999). Heidemann made significant practical contributions to the science of leather manufacture and he held a lifelong interest in the structure and properties of the collagen molecule. It is typical for the Host Society to invite a high-profile guest lecturer to make this keynote presentation of 30 – 45 minutes, as the opening lecture of the Scientific Program.

Professor Yujia Xu received her doctorate degree in Biophysics from the University of Connecticut, and conducted her postdoctoral research in the field of protein folding in the School of Medicine at the University of Pennsylvania. She started her collagen related research as a research associate with Prof. Barbara Brodsky and Prof. Jean Baum in the University of Medicine and Dentistry of New Jersey, and Rutgers university. She is currently an Associate professor in the Department of Chemistry at Hunter college of the City University of New York.

Prof. Xu's main research interest has been the molecular mechanisms of the biological functions of collagen. Using protein design and recombinant technology her lab pioneered the strategy to develop triple helical peptides that can further self-assemble into collagen-like fibrils using modular amino acid sequences. These fibril-forming collagen mimetic peptides (FCMPs) are effective molecular tools for collagen research including the investigation of molecular interactions that stabilize collagen fibrils, which is among one of the fundamental research projects pioneered by Prof. Heidemann several decades ago. The FCMPs are also being used to develop novel biomaterials for biomedical applications.

The organizing committee are delighted that Professor Yujia has accepted the invitation to present the 2023 Heidemann Lecture.

IS AI BECOMING A FRIEND AS WELL AS A THREAT TO HUMAN POTENTIAL

DR. GOUTAM MUKHERJEE, WBGS(A)

Group A Officer, Govt. of West Bengal

Professor, Govt. College of Engineering & Leather Technology,
Salt Lake, Kolkata



Abstract :

The enhancing and collaborative potential that we envision stands in stark contrast to the zero-sum predictions of what AI will do to our society and organizations. Instead, we believe that greater productivity and the automation of cognitively routine work is a boon, not a threat. After all, new technology always has disruptive effects early on in the implementation and development phases and usually reveals its real value only after some time. This reality, however, does not mean that we have to wait patiently until when this value eventually reveals itself — very much the opposite! Our principal challenge as business people is to anticipate what artificial intelligence means in relation to how humans think and act, and work to integrate the new technologies ambitiously and strategically into our organizations.

Introduction :

AI is not a futuristic vision, but rather something that is here today and being integrated with and deployed into a variety of sectors. This includes fields such as finance, national security, health care, criminal justice, transportation, and smart cities. There are numerous examples where AI already is making an impact on the world and augmenting human capabilities in significant ways.

One of the reasons for the growing role of AI is the tremendous opportunities for economic development that it presents. A project undertaken by Price Waterhouse Coopers estimated that “artificial intelligence technologies could increase global GDP

by \$15.7 trillion, a full 14%, by 2030.” That includes advances of \$7 trillion in China, \$3.7 trillion in North America, \$1.8 trillion in Northern Europe, \$1.2 trillion for Africa and Oceania, \$0.9 trillion in the rest of Asia outside of China, \$0.7 trillion in Southern Europe, and \$0.5 trillion in Latin America. China is making rapid strides because it has set a national goal of investing \$150 billion in AI and becoming the global leader in this area by 2030.

Meanwhile, a McKinsey Global Institute study of China found that “AI-led automation can give the Chinese economy a productivity injection that would add 0.8 to 1.4 percentage points to GDP growth annually, depending on the speed of adoption.” Although its authors found that China currently lags behind the United States and the United Kingdom in AI deployment, the sheer size of its AI market gives that country tremendous opportunities for pilot testing and future development.

Discussion :

A group comprising leading AI researchers, engineers, and CEOs has expressed concerns about the existential threat posed by AI to humanity. In a concise statement, they have emphasized the need to prioritize global efforts in mitigating the risks associated with AI, comparable to addressing other major societal risks like pandemics and nuclear war. Mitigating the risk of extinction from AI should be a global priority alongside other societal-scale risks such as pandemics and nuclear war.

The statement, released by the Center for AI Safety, a non-profit based in San Francisco, has garnered support from

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influential figures including CEOs of Google DeepMind and OpenAI, Demis Hassabis and Sam Altman respectively, as well as Geoffrey Hinton and Yoshua Bengio, two of the three recipients of the 2018 Turing Award. Notably, the third recipient, Yann LeCun, the chief AI scientist at Meta, the parent company of Facebook, has yet to sign the statement. This declaration represents a notable contribution to the ongoing and contentious debate surrounding AI safety. Earlier this year, a group of signatories, including some of those who have now supported the concise warning, signed an open letter advocating for a six-month “pause” in AI development. However, this letter received criticism from various perspectives. While some experts believed it exaggerated the risks posed by AI, others agreed with the concerns but disagreed with the suggested solution.

Dan Hendrycks, the executive director of the Center for AI Safety, explained that the brevity of the recent statement, which did not propose specific measures to mitigate the AI threat, aimed to avoid such disagreements. He emphasized that the intention was not to present an extensive list of thirty potential interventions, as that would dilute the message. Hendrycks characterized the statement as a collective acknowledgement from industry insiders who worry about the risks associated with AI. He highlighted the misconception that only a few individuals express concerns about these matters within the AI community, while in reality, many privately share apprehensions. Although the fundamental aspects of this debate are well-known, the specifics can be lengthy and revolve around hypothetical scenarios in which AI systems rapidly advance in capabilities, potentially compromising safety.

Supporters of this viewpoint often cite the rapid progress observed in large language models as evidence of future gains in intelligence. They argue that once AI systems reach a certain level of sophistication, it might become impossible to control their actions. However, there are those who doubt these predictions. They point out the inability of AI systems to handle even relatively mundane tasks such as driving a car. Despite years of dedicated research and substantial investments, fully autonomous vehicles remain far from reality. Sceptics question the technology’s ability to match all other human accomplishments in the years to come if it struggles with this specific challenge.

In the present day, both proponents and sceptics of AI risk acknowledge that AI systems pose several threats, independent

of further advancements. These threats include enabling mass surveillance, powering flawed “predictive policing” algorithms, and facilitating the spread of misinformation and disinformation. The rise in popularity of OpenAI’s chatbot has raised concerns among critics who fear its potential to encourage student cheating, result in significant job losses, spread misinformation online, or even pose existential risks to humanity. Chegg’s business model, which centers around subscription-based homework help, textbook rentals, and test prep services, is particularly vulnerable to the threat posed by ChatGPT. OpenAI’s chatbot can provide similar information to Chegg’s offerings with just a few keystrokes, and at no cost. The admission by Chegg that ChatGPT has impacted its financial performance caused a stir in the global edtech sector. Chegg’s shares experienced a significant decline of 50 percent, while London-listed Pearson saw a 15 percent drop in its stock value. Language-learning platform Duolingo and US-listed education company Udemy also suffered losses, with declines of 10 percent and over 5 percent, respectively, according to The Financial Times. To address this challenge, Chegg has collaborated with OpenAI to develop its own AI chatbot called CheggMate. By launching this chatbot, Chegg aims to retain students and mitigate the effects of increasing AI adoption in the education sector.

In an economy where data is changing how companies create value and compete experts predict that using artificial intelligence (AI) at a larger scale will add as much as \$15.7 trillion to the global economy by 2030. As AI is changing how companies work, many believe that who does this work will change, too — and that organizations will begin to replace human employees with intelligent machines. This is already happening: intelligent systems are displacing humans in manufacturing, service delivery, recruitment, and the financial industry, consequently moving human workers towards lower-paid jobs or making them unemployed. This trend has led some to conclude that in 2040 our workforce may be totally unrecognizable. Are humans and machines really in competition with each other though? The history of work — particularly since the Industrial Revolution — is the history of people outsourcing their labour to machines. While that began with rote, repetitive physical tasks like weaving, machines have evolved to the point where they can now do what we might think of as complex cognitive work, such as math equations, recognizing language and speech, and writing. Machines thus seem ready to replicate the work of our minds, and not just our bodies. In the 21st century, AI is evolving to be superior to

humans in many tasks, which makes us seem ready to outsource our intelligence to technology. With this latest trend, it seems like there is nothing that cannot soon be automated, meaning that no job is safe from being offloaded to machines.

This vision of the future of work has taken the shape of a zero-sum game, in which there can only be one winner. We believe, however, that this view of the role AI will play in the workplace is wrong. The question of whether AI will replace human workers assumes that AI and humans have the same qualities and abilities — but, in reality, they do not. AI-based machines are fast, more accurate, and consistently rational, but they are not intuitive, emotional, or culturally sensitive. In addition, it is exactly the abilities that humans possess that make us effective.

In general, people recognize today's advanced computers as intelligent because they have the potential to learn and make decisions based on the information, they take in. However, we may recognize that ability; it is a decidedly different type of intelligence that we possess. In its simplest form, AI is a computer acting and deciding in ways that seem intelligent. In line with Alan Turing's philosophy, AI imitates how humans act, feel, speak, and decide. This type of intelligence is extremely useful in an organizational setting: Because of its imitating abilities, AI has the quality to identify informational patterns that optimize trends relevant to the job. In addition, contrary to humans, AI never gets physically tired and as long it has fed data it will keep going. These qualities mean that AI is perfectly suited to put work in lower-level routine tasks that are repetitive and take place within a closed management system. In such a system, external forces clear and not influence the rules of the game. Think, for example, of an assembly line where workers are uninterrupted by external demands and influences like work meetings. As a case in point, the assembly line is exactly the place where Amazon placed algorithms in the role of managers to supervise human workers and even fire them. As the work is repetitive and subject to rigid procedures optimizing efficiency and productivity, AI is able to perform in more accurate ways than human supervisors are. Human abilities, however, are more expansive. Contrary to AI abilities that are only responsive to the data available, humans have the ability to imagine, anticipate, feel, and judge changing situations, which allows them to shift from short-term to long-term concerns. These abilities are unique to humans and do not require a steady flow of externally provided data to work as is the case with artificial intelligence. In this way, humans represent what we call authentic intelligence — a different type of AI if you will. This type of intelligence is needed when open systems are in place. In an open management system,

the team or organization is interacting with the external environment and therefore has to deal with influences from outside. Such work setting requires the ability to anticipate and work with, for example, sudden changes and distorted information exchange, while at the same time being creative in distilling a vision and future strategy. In open systems, transformation efforts are continuously at work and effective management of that process requires authentic intelligence.

Although Artificial Intelligence (AI 1) seems opposite to Authentic Intelligence (AI 2), they are also complementary. In the context of organizations, both types of intelligence offer a range of specific talents. Which talents — operationalized as abilities needed to meet performance requirements — are needed to perform best? It is, first of all, important to emphasize that talent can win games, but often it will not win championships — teams win championships. For this reason, we believe that it will be the combination of the talents included in both AI1 and AI2, working in tandem, that will make for the future of intelligent work. It will create the kind of intelligence that will allow organizations to be more efficient and accurate, but at the same time also creative and proactive. This other type of AI we call Augmented Intelligence (AI 3).

What will AI3 be able to offer that AI1 and AI2 cannot? In a match in 1998 in León, Spain, Kasparov collaborated with a PC running the chess software of his choice — an arrangement called “advanced chess” — in a match against the Bulgarian Veselin Topalov, who he had beaten 4-0 a month earlier. This time, with both players supported by computers, the match ended in a 3-3 draw. It appeared that the use of a PC nullified the calculative and strategic advances Kasparov did usually display over his opponent.

The match provided an important illustration of how humans might work with AI. After the match, Kasparov noted that the use of a PC allowed him to focus more on strategic planning while machine took care of the calculations. Nevertheless, he also stressed that simply putting together the best human player and best PC did not. In his eyes, reveal games that were perfect. Like with human teams, the power of working with an AI comes from how the person and computer complement each other; the best players and most powerful AIs collaborating up don't necessarily produce the best results. Once again, the chess world offers a useful test case for how this collaboration can play out. In 2005 the online chess playing site Playchess.com hosted what it called a “freestyle” chess



tournament in which anyone could compete in teams with other players or computers. What made this competition interesting is that several groups of grandmasters working with computers also participated in this tournament. Predictably, most people expected that one of these grandmasters in combination with a supercomputer would dominate this competition — but that is not what happened. A pair of amateur American chess players using three computers won the tournament. It was their ability to coordinate and coach effectively their computers that defeated the combination of a smart grandmaster and a PC with great computational power. This surprising result underscores an important lesson: the process of how players and computers interact determines how efficient the partnership will be. or, as Kasparov expressed it, “Weak human + machine + better process was superior to a strong computer alone and, more remarkably, superior to a strong human + machine + inferior process.”

We cannot just passively wait for it to overtake traditional methods. So, what is it that we can then do at this moment to ensure the integration of the different AIs to make our organizations work effectively?

First, teams will gradually become composed of humans and non-humans working together, which we refer to as the “new diversity.” The psychology of the new diversity will bring with it the risk that stereotypical beliefs and biases can easily influence decisions and teamwork. The machine as a non-human co-worker may be met with distrust and negative expectations as any other out-group member and as such encourage humans to share less information and avoid working with a machine. Team leaders will need to be apt to respond to such negative team dynamics and trained in ways that they understand the reality of those negative beliefs and its consequences.

Second, the new shape of teams will call for leaders who are skilled in bringing different parties together. In the future, creating inclusive teams by aligning man and machine will be an important ability to be trained and developed. As the earlier mentioned examples show, to achieve better performance by employing these new diversity teams, a main requirement for leaders will be to transform themselves into masters of coordinating and coaching team processes.

Third, team processes will need to be managed effectively and this will have to be done by a human. For humans to align the

strengths and weaknesses of man and machine, they will need to be educated to understand how AI works, what it can be used for, and decide — by means of the judgment abilities of their authentic intelligence — how it can be used best to foster performance serving human interests.

Augmented intelligence, as the third type of AI, is a step forward to the future of intelligent work. The future of work is a concept used to indicate the growth of employees and their performance in ways that are more efficient. The debate on this topic, however, has become quite ambiguous in its intentions. Specifically, because of cost-cutting strategies narratives, businesses today are in a stage where machines are often introduced as the new super employee that may leave humans ultimately in an inferior role to serve machines. An essential element of a truly intelligent type of future of work, however, means that we do expand the workforce where both humans and machines will be part of, but with the aim to improve humanity and well-being while also being more efficient in the execution of our jobs. So, augmented intelligence is indeed collaborative in nature, but it's also clear that it represents a collaborative effort in service of humans.

Artificial Intelligence and Machine Learning

The two terms do not mean the same thing even if people tend to use them interchangeably when discussing this topic.

- **AI, that is Artificial Intelligence** is the bigger, more complex concept. To create Artificial Intelligence means to simulate the thinking capability and behaviour of humans in machines.
- **ML, that is Machine Learning, on the other hand,** is an application, or a part of an AI that learns from data without being programmed to do so.

So, AI is to mimic human intelligence and get machines to carry out tasks in a smart, humane way. While ML grants machines access to data, and lets them learn for themselves.

Capabilities :

Currently, AI is capable of amazing things, but not world of dominance. It can do :

- **Profiling** – Based on a person's actions, choices, and preferences. Just think about your Netflix or Spotify recommendations.
- **Predictions** – Using data to predict future events. We can remember those projections and charts about the pandemic. That was AI in its prime mode.
- **Pattern recognition** – To find patterns in behaviour, and to show the anomalies. It is there when Google suggests things, or when Gmail finishes your sentences.
- **Natural language** – To understand the way humans communicate, and to be able to react in a similar way. Think Siri and Alexa, but also chatbots that pop up on your screen.
- **Object identification** – It can detect objects that it was trained to recognize. Think self-driving cars and in-time recognized obstacles.
- **Goal achievement** – This is present in video games, where you play against the computer. The ML algorithm can learn on its own in any environment, and win, with maximized outcomes.

So, AI is already advanced but it's nowhere near the state to dominate the world and we are still a long way from the singularity. Still, AI, even in its "infancy" can be harmful and cause disruptions to our societal fabric. Let us see why the ones who scream "Dystopia is upon us!" think that AI will eventually cause our doom.

Top 4 downsides of Artificial Intelligence

Just look at the TV shows and movies of our time. They endlessly project and predict a dystopian future, and you might be inclined to think in terms of *The Matrix* or *The Terminator* when it comes to AI. Because in the end, robots might really win, take our jobs, and destroy the world. Now, if we look at the actual negative traits of this amazing technology, the picture becomes a tad more realistic, but still causing concern among a lot of people.

1. AI makes critical choices but is inherently inhumane

Algorithms have been tasked to make life-altering choices many times and not all instances have gone by without accidents.

Self-driving cars are the future but there is still a lot to learn for the AI brain. Just check the *Moral Machine* for an eerie kick of mistrust towards the technology. Algorithms might be able to think more efficiently than humans might, but they need to be taught what is and is not humane.

2. AI causes unemployment and replaces humans in jobs

This is the most complex argument among all and it needs deeper investigation. AI, in general, can add value to jobs with various augmentations; however, automation technologies that use ML will likely replace humans in the end. Research shows that 48% of experts believed AI would replace a large number of blue- and even white-collar jobs. This will create income inequality, increased unemployment, and slowly but surely a breakdown of the social order.

3. AI discriminates

Artificial Intelligence frequently fails to recognize and censor racial slurs but that is just the tip of the iceberg. Algorithms often amplify societal problems, like gender bias or the spreading of false information.

4. AI is a risk to our personal privacy

Do you feel watched? That is because you probably are when you are out living your daily life. 75 out of 176 countries globally are actively using AI for surveillance. Facial recognition is a prime example of unwanted attention and can be used to passively watch people without their approval.

Top 4 reasons to bat for AI

The positive list is just as impressive as the negative side. AI really does have the potential to change lives for the better and to take humanity to a utopian future. AI fans believe that it depends on us where we take this technology and how we use it.

1. AI improves efficiency

Since data is worth more than oil, it is necessary to process it with the utmost accuracy and there is nothing more efficient than AI when it comes to data processing. It is quick, accurate, and processes data in real-time.

2. AI can eradicate human error

The AI workforce will never make mistakes because of stress, tiredness, or illness. Especially when it comes to risky, even dangerous tasks like inspecting roofs. In the case of these jobs, AI can replace the human element and mitigate incidents. Just think humans on top of roofs doing extremely dangerous tasks. Now change up the picture and let a drone fly there, able to notice and fix problems on the spot. In many instances, it is safer and faster to let AI do the job.

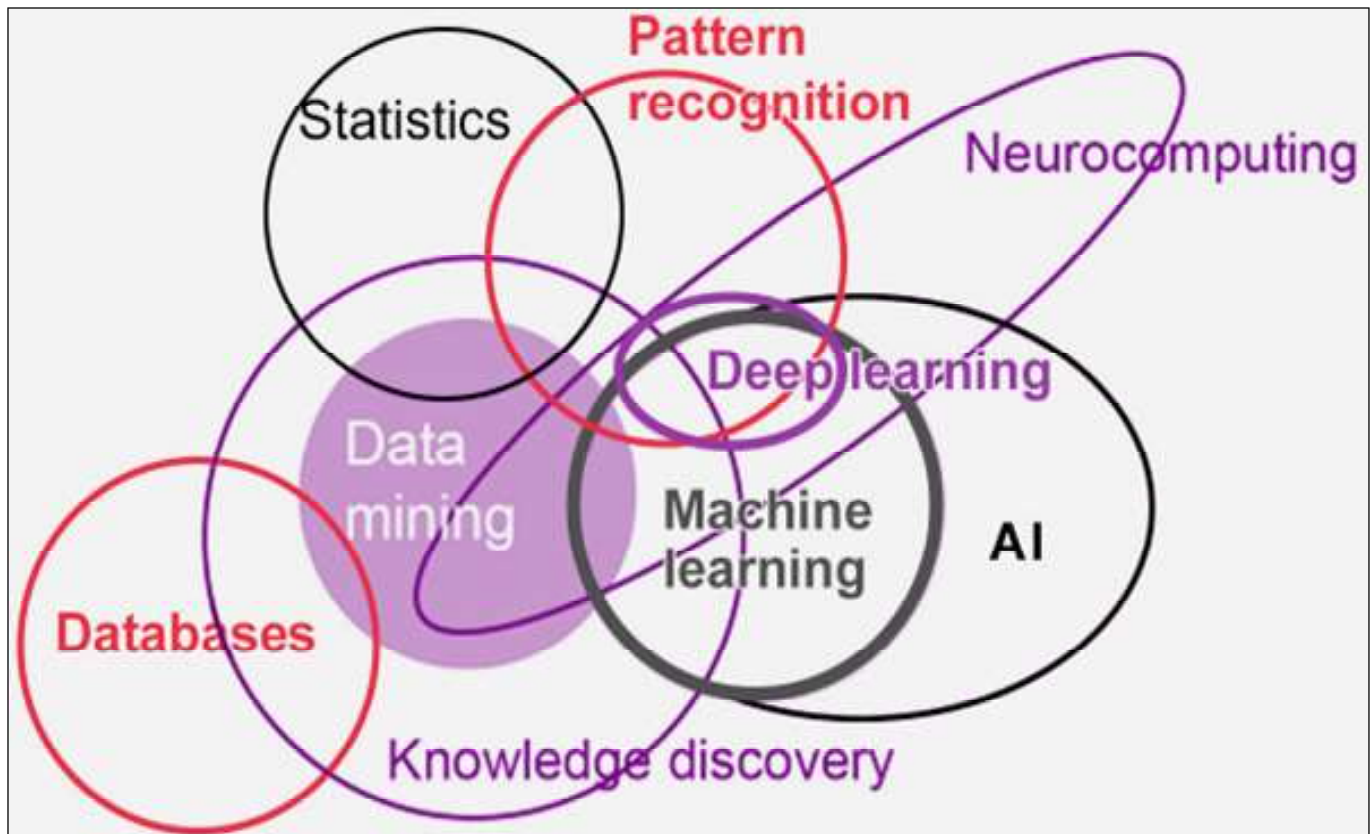
3. AI makes everyday life simple and convenient with smart technology

Now, smart homes are not the norm, but in an optimistic view, AI will power entire smart cities in the future. Life is more simple

and convenient thanks to smart technologies, and many people think that this will only get better with time.

4. AI improves our health and supports people living with disabilities

One of the main benefits of AI lies in helping people who otherwise could not live a fulfilling, independent life. Now, Siri, Alexa or Cortana help millions perform simple tasks. But these solutions will exceed all expectations soon. Smart thermostats, lighting, and plugs can be automated to work on a schedule, and apps like Wheel map already provide users with critical information like wheelchair accessibility. What's more, deep learning algorithms are already better at identifying skin cancer than dermatologists.



Intelligence

AI generally is undertaken in conjunction with machine learning and data analytics. Machine learning takes data and looks for underlying trends. If it spots something that is relevant for a practical problem, software designers can take that knowledge and use it to analyse specific issues. All that is required are data that are sufficiently robust that algorithms can discern

useful patterns. Data can come in the form of digital information, satellite imagery, visual information, text, or unstructured data.

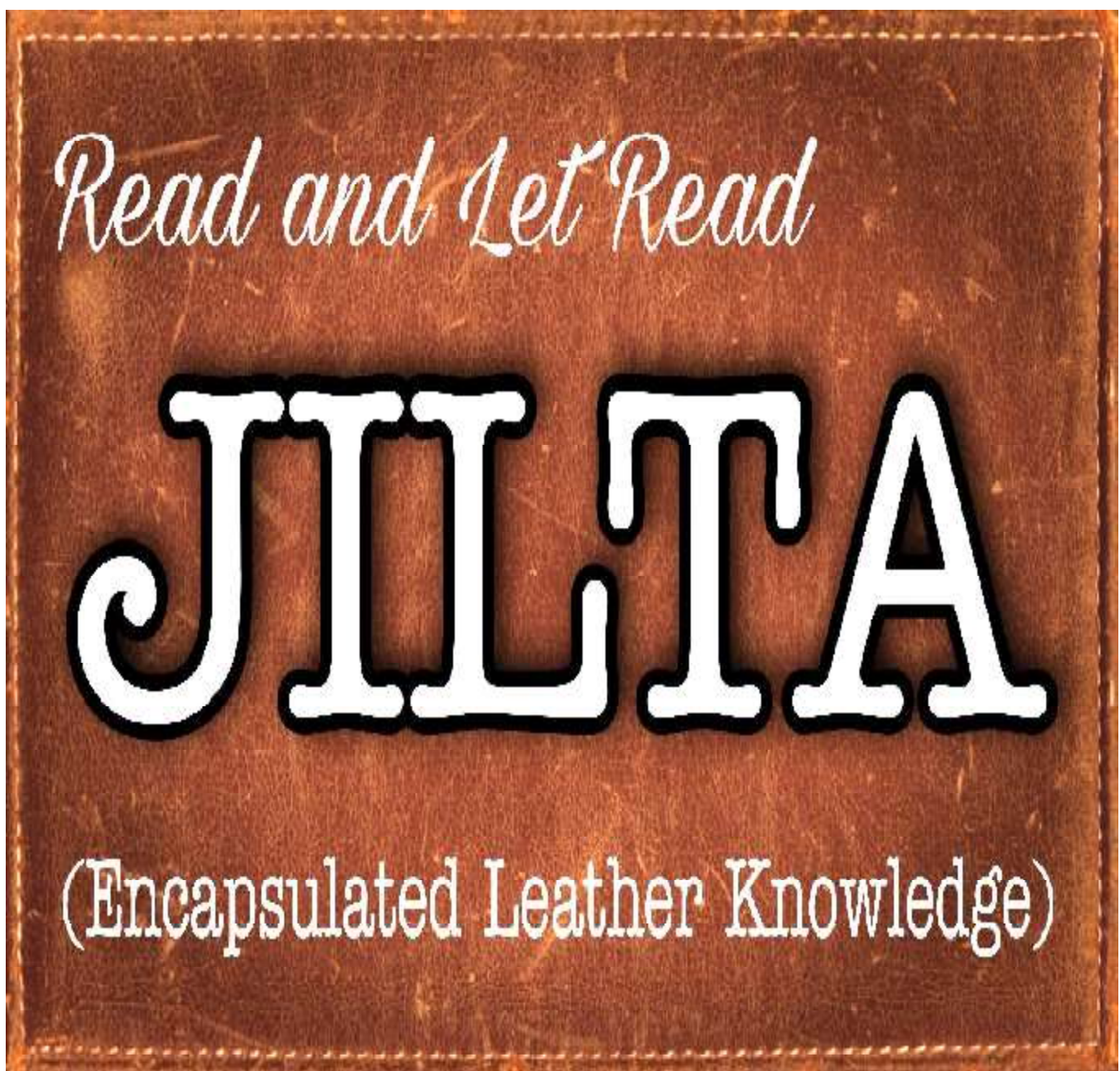
Adaptability

AI systems have the ability to learn and adapt as they make decisions. In the transportation area, for example, semi-autonomous vehicles have tools that let drivers and vehicles

know about upcoming congestion, potholes, highway construction, or other possible traffic impediments. Vehicles can take advantage of the experience of other vehicles on the road, without human involvement, and the entire corpus of their achieved “experience” is immediately and fully transferable to other similarly configured vehicles. Their advanced algorithms, sensors, and cameras incorporate experience in current operations, and use dashboards and visual displays to present information in real time so human drivers are able to

make sense of ongoing traffic and vehicular conditions. And in the case of fully autonomous vehicles, advanced systems can completely control the car or truck, and make all the navigational decisions.

.....(to be continued in the next issue)





**ANALYSIS – EXPORT PERFORMANCE OF LEATHER, LEATHER PRODUCTS AND FOOTWEAR DURING
APRIL-JUNE 2023-24 VIS-À-VIS APRIL-JUNE 2022-23**

As per officially notified DGCI&S monthly export data, the export of Leather, Leather products and Footwear for the period April-June 2023-24 touched US\$1200.93 million as against the performance of US\$1388.56 million in April-June 2022-23, recording a decline of -13.51%. In rupee terms, the export touched Rs. 98,724.55 million in April-June 2023-24 as against Rs. 1,07,235.46 million in April-June 2022-23, registering a decline of -7.94%.

(Value in Million Rs)

PRODUCT	APRIL-JUNE 2022-23	APRIL-JUNE 2023-24	% VARIATION	% Share 2022-23	% Share 2023-24
FINISHED LEATHER	9158.02	9624.56	5.09%	8.54%	9.75%
LEATHER FOOTWEAR	47449.43	42046.76	-11.39%	44.25%	42.59%
FOOTWEAR COMPONENTS	5540.71	6149.78	10.99%	5.17%	6.23%
LEATHER GARMENTS	6982.72	7286.03	4.34%	6.51%	7.38%
LEATHER GOODS	27310.81	24790.04	-9.23%	25.47%	25.11%
SADDLERY AND HARNESS	5084.23	3593.9	-29.31%	4.74%	3.64%
NON-LEATHER FOOTWEAR	5709.54	5233.48	-8.34%	5.32%	5.30%
TOTAL	107235.46	98724.55	-7.94%	100.00%	100.00%

Source : DGCI &S

(Value in Million US\$)

PRODUCT	APRIL-JUNE 2022-23	APRIL-JUNE 2023-24	% VARIATION	% Share 2022-23	% Share 2023-24
FINISHED LEATHER	118.7	117.09	-1.36%	8.55%	9.75%
LEATHER FOOTWEAR	614.4	511.44	-16.76%	44.25%	42.59%
FOOTWEAR COMPONENTS	71.76	74.81	4.25%	5.17%	6.23%
LEATHER GARMENTS	90.29	88.62	-1.85%	6.50%	7.38%
LEATHER GOODS	353.65	301.58	-14.72%	25.47%	25.11%
SADDLERY AND HARNESS	65.83	43.72	-33.59%	4.74%	3.64%
NON-LEATHER FOOTWEAR	73.93	63.67	-13.88%	5.32%	5.30%
TOTAL	1388.56	1200.93	-13.51%	100.00%	100.00%

Source : DGCI &S

- Footwear (Leather Footwear, Footwear Components & Non-Leather Footwear) holds the major share of 54.12% in the total export of leather and leather products with an export value of US\$649.92 Mn.

MONTH WISE EXPORT OF LEATHER, LEATHER PRODUCTS & FOOTWEAR DURING APRIL-JUNE 2023-24

(Value in Million US\$)

PRODUCT	APRIL 2023	MAY 2023	JUNE 2023	TOTAL APRIL-JUNE 2023
FINISHED LEATHER	40.53	38.54	38.02	117.09
LEATHER FOOTWEAR	142.51	180.63	188.3	511.44
FOOTWEAR COMPONENTS	23.54	26.63	24.64	74.81
LEATHER GARMENTS	24.24	30.11	34.27	88.62
LEATHER GOODS	96.03	92.94	112.61	301.58
SADDLERY AND HARNESS	13.03	14	16.69	43.72
NON-LEATHER FOOTWEAR	21.92	22.67	19.08	63.67
TOTAL	361.8	405.52	433.61	1200.93

Source : DGCI &S



ANNEXURE - II

ANALYSIS – COUNTRY WISE EXPORT PERFORMANCE OF LEATHER, LEATHER PRODUCTS & FOOTWEAR FROM INDIA DURING APRIL-JUNE 2023-24 VIS-A-VIS APRIL-JUNE 2022-23

(Value in Million US\$)

COUNTRY	TOTAL			SHARE IN TOTAL EXPORT APR-JUN 2022-23	SHARE IN TOTAL EXPORT APR-JUN 2023-24
	APR-JUN 2022-23	APR-JUN 2023-24	% CHANGE 2023-24		
U.S.A.	358.67	225.32	-37.18%	25.83%	18.76%
GERMANY	151.79	142.93	-5.84%	10.93%	11.90%
U.K.	132.05	98.5	-25.41%	9.51%	8.20%
ITALY	98.64	89.76	-9.00%	7.10%	7.47%
FRANCE	66.88	62.73	-6.21%	4.82%	5.22%
SPAIN	49.19	61.45	24.92%	3.54%	5.12%
NETHERLANDS	55.57	47.04	-15.35%	4.00%	3.92%
BELGIUM	35.78	43.28	20.96%	2.58%	3.60%
CHINA	31.33	31.86	1.69%	2.26%	2.65%
U.A.E.	28.76	29.3	1.88%	2.07%	2.44%
POLAND	20.37	26.26	28.92%	1.47%	2.19%
JAPAN	20.89	19.33	-7.47%	1.50%	1.61%
AUSTRALIA	21.93	18.78	-14.36%	1.58%	1.56%
VIETNAM	18.16	18.6	2.42%	1.31%	1.55%



ILTA
Since 1950

COUNTRY	TOTAL			SHARE IN TOTAL EXPORT APR-JUN 2022-23	SHARE IN TOTAL EXPORT APR-JUN 2023-24
	APR-JUN 2022-23	APR-JUN 2023-24	% CHANGE 2023-24		
HONG KONG	15.6	17.9	14.74%	1.12%	1.49%
PORTUGAL	18.98	17.23	-9.22%	1.37%	1.43%
RUSSIA	4.6	16.34	255.22%	0.33%	1.36%
CANADA	22.49	13.99	-37.79%	1.62%	1.16%
DENMARK	21.75	12.85	-40.92%	1.57%	1.07%
AUSTRIA	10.74	11.56	7.64%	0.77%	0.96%
SAUDI ARABIA	7.98	11.3	41.60%	0.57%	0.94%
MALAYSIA	7.78	10.38	33.42%	0.56%	0.86%
KOREA REP.	10.41	9.56	-8.17%	0.75%	0.80%
MEXICO	6.92	9.22	33.24%	0.50%	0.77%
S. AFRICA	8.23	8.73	6.08%	0.59%	0.73%
CHILE	12.72	8.54	-32.86%	0.92%	0.71%
SOMALIA	10.36	7.58	-26.83%	0.75%	0.63%
TURKEY	6.04	7.39	22.35%	0.43%	0.62%
SWEDEN	7.36	5.61	-23.78%	0.53%	0.47%
NIGERIA	5.06	2.73	-46.05%	0.36%	0.23%
INDONESIA	4.88	5.89	20.70%	0.35%	0.49%
THAILAND	4.26	5.26	23.47%	0.31%	0.44%
BANGLADESH	4.92	5.07	3.05%	0.35%	0.42%
KENYA	1.9	2.06	8.42%	0.14%	0.17%
SWITZERLAND	6.41	4.12	-35.73%	0.46%	0.34%
SLOVAK REP	6.58	3.23	-50.91%	0.47%	0.27%
HUNGARY	2.97	2.8	-5.72%	0.21%	0.23%
FINLAND	4.14	3.81	-7.97%	0.30%	0.32%
ISRAEL	4.35	4.21	-3.22%	0.31%	0.35%
CAMBODIA	2.46	2.71	10.16%	0.18%	0.23%
CZECH REPUBLIC	2.64	3.23	22.35%	0.19%	0.27%
GREECE	2.06	2.63	27.67%	0.15%	0.22%
NEW ZEALAND	2.3	1.73	-24.78%	0.17%	0.14%
OMAN	2.07	1.96	-5.31%	0.15%	0.16%
SRI LANKA DES	1.36	2.24	64.71%	0.10%	0.19%
SINGAPORE	2.73	2.07	-24.18%	0.20%	0.17%
SUDAN	0.58	0.49	-15.52%	0.04%	0.04%
TAIWAN	1.32	1.41	6.82%	0.10%	0.12%
NORWAY	1.99	2.29	15.08%	0.14%	0.19%
DJIBOUTI	0.28	1	257.14%	0.02%	0.08%
OTHERS	61.33	56.67	-7.60%	4.42%	4.72%
TOTAL	1388.56	1200.93	-13.51%	100.00%	100.00%

Source : DGCI & S

The Top 15 countries together account about 78% of India's total leather and leather products export during April-June 2023-24 with export value of US\$ 933.04 Million.



ANNEXURE - V

INDIA'S IMPORT PERFORMANCE OF LEATHER, LEATHER PRODUCTS & FOOTWEAR DURING APRIL-JUNE 2023-24 VIS-À-VIS APRIL-JUNE 2022-23

As per officially notified DGCI&S monthly Import Data, the Import of Raw Hides & Skins, Leather, Leather products and Footwear for the period April-June 2023-24 touched US\$372.09 Million as against the performance of US\$373.23 Million in April –June 2022-23, recording a negative growth of -0.31%.

(Value in US\$ MN)

CATEGORY	APR-JUN 2022-23	APR-JUN 2023-24	% VARIATION	% SHARE IN APR-JUN 22-23	% SHARE IN APR-JUN 23-24
RAW HIDES AND SKINS	10.04	5.55	-44.72%	2.69%	1.49%
FINISHED LEATHER	139.58	99.46	-28.74%	37.40%	26.73%
LEATHER FOOTWEAR	106.22	135.76	27.81%	28.46%	36.49%
FOOTWEAR COMPONENTS	9.58	5.86	-38.83%	2.57%	1.57%
LEATHER GARMENTS	0.16	0.32	100.00%	0.04%	0.09%
LEATHER GOODS	12.85	15.38	19.69%	3.44%	4.13%
SADDLERY AND HARNESS	0.9	0.61	-32.22%	0.24%	0.16%
NON-LEATHER FOOTWEAR	93.9	109.15	16.24%	25.16%	29.33%
TOTAL	373.23	372.09	-0.31%	100.00%	100.00%

Source : DGCI &S

Import of different categories of Footwear holds a major share of about 67.39% in India's total leather & leather product with an Import value of US\$250.77 Mn. This is followed by Finished Leather 26.73%, Raw Hides & Skins 1.49%, Leather Goods & Accessories with a share of 4.13%, Saddlery & Harness 0.16% and Leather Garments 0.09%.

MONTH WISE IMPORT OF LEATHER, LEATHER PRODUCTS & FOOTWEAR DURING APRIL-JUNE 2023-24

(Value in US\$ MN)

PRODUCT	APRIL 2023	MAY 2023	JUNE 2023	TOTAL APRIL-JUNE 2023
RAW HIDES & SKINS	2.1	1.63	1.82	5.55
FINISHED LEATHER	32.28	41.2	25.98	99.46
LEATHER FOOTWEAR	23.14	46.34	66.28	135.76
FOOTWEAR COMPONENTS	2.16	2.46	1.24	5.86
LEATHER GARMENTS	0.05	0.12	0.15	0.32
LEATHER GOODS	4	4.93	6.45	15.38
SADDLERY AND HARNESS	0.11	0.26	0.24	0.61
NON-LEATHER FOOTWEAR	25.48	42.42	41.25	109.15
TOTAL	89.32	139.36	143.41	372.09

Source : DGCI &S

Valorisation of Invasive Species - For Leather, Fur, Bristle, Meat and By-Products

(Part-8)

Subrata Das, M.Tech (Leather Technology)

Freelance Leather Technologist & Consultant, Chennai



Nile Monitor



Nile Monitor

Nile Monitors, which are apex predators, are the largest lizard species in Africa, and the biggest among all lizards living outside of captivity, in the United States. They can reach lengths of 1.7 -2.4 m and weigh up to 15 kg; possess a very high keeled, laterally compressed tail, often 150% longer than the length of the body, tightening to a trenchant edge, along the dorsal surface. This heavy and hard-hitting caudal extremity acts as a rudder, when assisting the semi-aquatic varanid to push and propel through water, while swimming. It is adapted for use as a bullwhip when the intractable behemoth is imperilled or threatened. Sturdy, puissant limbs supported by extended digits, tipped with sharp, destructive claws, are used to overcome prey, to gain traction on branches and tree trunks, as well as to dig and burrow into soft or sun-baked soil and termite mounds. As and when required, they can sprint at top speeds of up to 48 km per hour on land, and swim even faster in water (1)



Nile Monitor Skin

Distributed in 33 of the 48 countries in mainland Africa, the carnivorous predators are natives of the “The Dark Continent” – from Senegal in the west, to Somalia in the east, from landlocked Zimbabwe, extending as far south as the Cape of Good Hope in South Africa, to south- central Egypt in the north, along the course of the River Nile. Since they flourish in riparian areas and wetlands adjacent to streams and rivers, they do not inhabit desert, arid and waterless regions, which have little or no vegetation. Hence, no individuals are seen in the Sahara or Kalahari deserts, or in very dry regions of the Horn of Africa. The reptiles can thrive from sea level to an elevation of 2000m, in mangrove swamps, lake- and river-shores, tidal creeks, grasslands, thickets, canal banks and forests.

In recent times peri- and suburban areas, especially in the Republic of South Africa (RSA) have witnessed frequent incursions by free ranging monitors, habituated to human

presence. There have been multiple instances of gravid females, laying eggs, in garbage dumps, compost heaps, waste yards and home gardens, in cities and townships such as Durban, Umlazi, Centurion, Johannesburg, Pretoria and Queensburgh. In RSA, the feisty lizards are protected by law.

The exothermic, highly reproductive, oviparous, menacing, generalist feeders possess a high metabolic rate. They are reliant on salubrious weather conditions to regulate body temperature. In outward aspect, the Nile monitor is rangy but sinewy, possessing a strong deltoid crown and a pendulous lower jaw, adjoining an elongated neck. A prominent distinguishing feature of the species is its retractable, throat pouch.

This useful and versatile accoutrement serves three functions, when flared.

- a) Demonstrates intimidation and threat Displays nervousness and stress.
- b) Functions as a respiring bellow to force air into the lungs, if required, compensating for the absence of diaphragms. Unable to simultaneously breathe and run – its locomotor movements being powered by the same rib muscles, which contract and expand the chest with each breath - the gullet sac creates a cavity for storage of air. When the throat constricts to distend the gullet, air is inhaled both for oxygenation, and for maintaining the lacertilian's high metabolic rate. Since these creatures expend a lot of energy, between inception and conclusion of daily activities, the throat pouch performs a very crucial and high priority task. The increased energy reserves, provided by the augmented oxygen intake, enable them to explore wider areas and exploit a larger prey pool.
- c) Presumably plays a role in courtship and mating rituals.

As with other reptiles, Nile monitors possess, a distinctive collection of tissues, joined in a single structural unit, to serve an olfactory function. This sensory, vomeronasal organ, known as Jacobson's organ, adjoined with the Nile's narrow, forked tongue, is essentially a supplemental nostril, enabling it to gather scent gradients, by flicking the tongue in and out of the mouth. For the active and aggressive predators, driven to perpetrate the periodic role of scavengers, this specialized dual-

chambered tubular crescent, to which the forked tongue, split into two distinct tines at the tip, is fused, is essential for locating, stalking, ambushing and hunting. It places the varanid in pole position to overwhelm hapless prey, or forage for carrion. Jacobson's organ perceives and recognizes terrestrial, aerial, aquatic and fossorial scent particles, as the nimrod ceaselessly darts its forked tongues to collect, collate and decipher the olfactory information, for forward course of action. The vomeronasal organ also assists asocial, solitary males to locate females for courtship and mating.

While ambling or sauntering, the menacing squamate maintains equilibrium by adjusting its neck, parallel to and raising its body above the ground surface, with its powerful limbs, poised on a declivity, simulating a sinuous arc, with hindquarters and long tail trailing behind on the terrain. For alacrity or urgency, leisureliness is replaced by anatomical tautness to accelerate motion. In water, swaying its body laterally, and using the tail as a paddle, the adept semi aquatic predator swims with a fluid, serpentine grace, limbs retracted close to the abdomen. When submerged, to forage for prey, they can hold their breath effortlessly for 15-20 minutes. On near vertical and steep surfaces, if required, the monitors are capable of friction climbing, with careful, deliberate movement, jouncing upward, by clamping the surface between their limbs.

Nile monitors have remarkable visual acuity and colour vision in their unblinking eyes - exceptional ability to perceive and discern the size, shape, silhouette and shade of both predator and prey. Their auditory competence is mediocre. They are sensitive to medium - low frequencies - limited as compared to mammals. However if and when familiar with a sound source, associated with availability of food, the Niles become progressively attuned to it. They have been found to exhibit a reasonably high level of intelligence, whereby, they remember locations where they had cached food.

A combination of recurved, caniniform and molariform teeth along the dental arcade, assists the carnivore to crush snails, turtles and crabs to extract the succulent flesh and to immobile bigger prey with a bite force of 10 N. Located just below the eyes is the venom gland, which is a modified salivary glands. Preys are doubly diminished both by the bite strength and the venom. The latter induces anticoagulation, hypotension, laboured breathing, blurred vision and rapid swelling, particularly in smaller victims.



Since 1981, Nile Monitors have been recorded, in the wild in South Florida, when the first varanid was trapped from Lake Kanapaha, Gainesville, and Alachua County. These are assumed to be escaped or abandoned pets and their progeny. According to another school of thought, a pet trader had intentionally released some of these reptiles to create an inexpensive inventory, through natural breeding, from which juveniles could be collected for sale, as and when necessary, thereby saving on husbandry costs and mandatory fees towards State regulatory compliance of keeping and trading in exotic fauna. (2) Once the monitors had been liberated, the sequence of events unravelled predictably.

Collectively known as “Nile monitors”, three varieties of the invasive lizards – comprising of three genetically recognizable lineages - West African Nile Monitors, Ornate Nile monitors and Nile monitors are established in Florida. Reeves of the highly motile species, which occupy home ranges of up to 50 square kilometers, are almost indistinguishable in size, shape, structure, shade and salient morphological features. Contributing further to the irresolution is the ability of the strains to hybridize freely, thereby further blurring differentiating boundaries. Ornate and Nile are now considered as two distinct forms of a single polymorphic species.

The pestiferous interlopers- Nile and Ornate differ from each other in five aspects.

- a) The tongue of the Nile monitor ranges from purple to blue in colour, as compared to pink for the ornate monitor.
- b) The former are snake –hipped and sylphlike, while the latter are more muscular and heavyset in build. Although Niles have robust heads, ornate crowns are larger and heavier. The body, limbs, and tail of the ornate monitor are generally fleshier and more strapping.
- c) Ornate varieties possess 4-5 abdominal ocelli bands as compared to 6-9 for their Nile (sometimes called water leguaan) cohorts. However due to the vagaries of nature, lifestyle, diet, skin and scale attrition, both pattern and colouration can fade, to obscure this distinction.
- d) Ornate monitors predominantly inhabit thickets and woodlands. Nile monitors prefer riparian areas and river banks.
- e) Nile monitors range in colour from black to olive and have gold coloured V-shaped ribbons extending from the cranial

floor to the tail, disintegrating into blotches or bands along the back. Although similar in cast, spots of an ornate are larger but fewer, markings bigger and bolder, than the fine and delicate patterns of the Nile monitor.

Since their first reported sighting at Cape Coral, in the 1990s, the presence of Nile Monitors in the United States has been conclusively proven in three counties in Southern Sunshine State – Homestead Air Reserve Base (Miami Dade county), Charlotte county and the nearby Lee County (Cape Coral). Eye witnesses have also recounted seeing the lizards in thirteen other counties – Monroe, Volusia, DeSoto, Sarasota, Brevard, Seminole, Osceola, Orange, Pasco, Broward, Palm Beach (between Lake Okeechobee and the Atlantic Ocean), Pinellas and Collier. The lizards have also been reported from barrier islands – Sanibel Island, Cayo Costa, Little Pine Island, Matlacha Pass and Gasparilla Island. Populations between Miami and West Palm beach are now thought to be interconnected.

That the Nile monitors have significantly expanded their territorial range is evident from the substantiation, whereby in 1990 -2010s they were mainly seen in the vicinity of Cape Coral, currently they are well established in Homestead, which is 190 km away from Cape – a 2h 45m nonstop drive. Today, not only all throughout the city, but also in the wetlands on Homestead Air Force Base, spread over 12 square kilometres, can these invasive predators be seen. Homestead, being midway between Key Biscayne National Park to the east and Everglades National Park to the west, has become a natural midpoint for the vagile carnivores, successfully metastasizing overland or pelagically, in either direction.(3)(4) Their aquatic adaptations and capabilities enable them to surmount challenges posed by rivers and streams, in the quest for niche and range expansion, and also to avoid resource competition and confrontation with conspecifics.

In Cape Coral, a profusion of trees such as Brazilian pepper, swamp pines, dwarf palms and mangroves, canals and waterways crisscrossing the “waterfront wonderland”, creates a “lacertilian paradise” to which the reptiles are drawn, like iron to magnet. The largest colony of the temperamental and aggressive giants, comprising of almost one thousand individuals, is at Cape Coral. Smaller but growing populations at the two other locations are worrisome.

The irascible creature has successfully exploited the 650 km of canals around Cape Coral to spread far and wide. Annually

hundreds of Nile monitors use the tranquil waters of these inviting niches of human altered habitats to spread to new areas, thereby establishing contiguousness with cohorts thereby diversifying the gene pool. The concrete banks and promenades offer pleasant basking opportunities and burrowing locations, in the soft soil by canal banks – thereby providing the two-fold benefit of (a) ample availability of prey (b) quick getaway possibility by waterway, in the event of danger.

In Lee County, monitors inhabit estuarine areas, a 644 km long network of man-made canals, pine flat woods, golf courses, barrier islands, suburban and urban development and decorative ponds. Their burrows are commonly found along canal banks and sometimes under outdoor decks and ornamental plants in private property. The ecologically plastic species are often found basking on rooftops or residences, sidewalks and parks, and have been reported a number of times, trying to break into houses in search for food.

Homestead Air Reserve Base's proximity between two sprawling National Parks - Kay Biscayne and Everglades emboldens a diverse array of wildlife to hide, nest, roost, swim, climb, burrow, forage, feed and multiply in the installation's woodlands and wetlands. (5). The conditions and circumstances were further ameliorated in the aftermath of Hurricane Andrew, in 1992, which devastated 97% of the facility, compromised perimeter walls and fences and allowed unhindered access of plants, birds and animals from surrounding parcels of land into the expansive USAF grounds.

Nowadays alligatoroids, crocodilians and lacertilians such as alligators, spectacled caimans, chameleons, iguanas and anoles and chelonians- sliders, terrapins and turtles are commonly seen basks along the canal banks around the base. The rich riparian habitat provides a safe haven both for native and invasive flora and fauna. In the last two decades Nile monitors have bred successfully and are fairly abundant in the sprawling US governmental property (6)

The notorious invasive species, which lives between 15 degrees N and 15 degrees South in its native continent of Africa, thrives in the tropical monsoon climate of Florida (24.30 to 31 degrees N) with its hot and humid summers, warm, dry winters and a six month long wet season between mid-May to mid-October. Protracted warm temperature profile and persistent humidity of the Sunshine State are exceedingly salutary for herpetofauna from other subtropical and tropical latitudes.

Winter temperatures, rarely if ever, fall below zero, thus doing away with much of the risks to ectotherms from physiologically deleterious conditions.

The Florida Fish and Wildlife Conservation Commission lists the reptile's range of food preference as crabs, crayfish, mussels, snails, slugs, termites, caterpillars, beetles, spiders, grasshoppers and crickets, fish, frogs, toads, lizards, turtles, snakes, young crocodiles, and other reptiles, birds and their eggs, and small mammals." (7) Preying across ecotypes, the ontogenetic feeders commence with a preference for invertebrates and insects, before opting for obligate carnivory.

In 2002, Ronal Huff of New Castle County Delaware, who had a collection of seven enormous Nile monitors as pets, was killed and partially eaten by his monitor companions. Police checking on the health and well-being of the professional car salesman – unreachable and absent without leave from duty, were challenged by seven massive Nile monitor lizards feasting on the 42-year-old's corpse. The monstrous quadrupeds, their muzzles smeared with the deceased's blood, turned on the officers with truculent posture. Some of the varanids were later placed in zoos and the belligerent ones were euthanized. Ronal Huff's death is the most terrifying instance of a human being eaten by his Nile monitors (8)

Female monitors, like most lacertilians reach sexual maturity at 2 years of age. Smaller females have been observed laying smaller clutches, while those of heftier built are known to lay as many as sixty eggs. Female reptiles deposit eggs every alternate year. Therefore, during breeding season, only half the breeding female population is ready to breed. Hatchlings emerge 6 -10 months later.

Active termitaries, typically within a tall mound of toughened earth, perforated on all directions by numerous small intersecting passages, are sought out by gravid females as egg incubators. During the downpours, the outer covering of a termitary becomes soaked with rainwater and can be riven into very easily by the female Nile, with its lanceolate claws. In the wet season, the gravid female digs its way to the centre of the termite nest and lays her eggs, about the size of hens' eggs, each of which is covered with a tough, leathery integument.

In some cases, the female returns to normal activity in her regular habitat, without making any attempt, to cover the eggs. The termites, which are always particularly active in a healthy



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colony, repair the break, in their hill, and in a few hours at most, only the presence of faintly soggy area on the surface of the nest remains as evidence of what had occurred.

At the end of ten months, during the onset of spring of the following year, the eggs hatch and through their own efforts aided by the softening effect of the excess fluid contained in the egg shell, the young make a vertical tunnel to emerge from the top of the termite heap. As soon as they leave the nest, they make for the nearest stream to hunt for food, as readily, as do the adults.

In the absence of termitaries, the female monitors have been observed to deposit their eggs in compost heaps, rotting logs or heaps of wild vegetation. (11)

The quantum of collateral damage due to Nile monitors in Florida include, predation of native species, biodiversity loss, competition for resources with native birds and animals, their habitat alteration, interference with the quality of life of humans and their companion animals and crushing burden on the fragile Florida ecosystem, which is already forced to support the highest number of established non-native herpetofauna in the world. (12)

Scientists are apprehensive that the West African Nile monitor which has been found to be pre-adaptive genetically to North American climatic conditions, could reach as far north as Chicago, in the not-too-distant future. On the other hand, the ornate and Nile monitors, have the potential to extend their range to the eastern and western seaboard, if the US continues to experience mild winters, due to global warming, because they are genetically programmed to survive the winter temperatures of South Africa (-2 -25 degrees in winter) by brumating in deep underground burrows.

The Nile monitor has quite dramatic, but irregular skin patterns. The lizard's jaw and head exhibit cream striations with the diagonal stripes meeting at an angle, with the point up, at the nape. Six to nine bands of ornamental gold spangles go around the predator's body like auric guilders, earning it the moniker of "money monitor" in its native Africa. The grey-brown or olive-green hue of the tough and beady skin contrasts with its creamy yellow to ochre underside.

The skin of the Nile monitor has been used for various purposes – as dietary protein, in ceremonies and medicine, as

also for leather goods, for many centuries in various African nations.

Nile monitors have been used nose to tail in countries of sub-Saharan countries of Africa, particularly in Liberia, Mali, Chad and Cameroon. Its nutritious and appetizing flesh is considered a great delicacy. Not in the least tough or stringy, the tender meat is partaken fried, curried, stewed, smoked, roasted or grilled, prime cuts being the base of the tail, where fat is stored and the liver. Monitor eggs are eaten as cheap sustenance protein. A bewildering smorgasbord of salves, ointments, potions, medicines and talc are made from Nile monitor body parts, by traditional healers to treat rheumatic pain, gout, haemorrhoids and failing eyesight. Dried and desiccated gall bladder powder has considerable therapeutic importance in impotency, sexual dysfunction, cardiac issues and liver ailments. The lizard's fat is utilized as a conceptive lubricant, while its genitalia, uterus and cloacae are used in occult and shamanistic practices.

In North Africa sun-dried monitor heads are pulverised and powdered for oral intake as well as topical medication to treat a gamut of symptoms.

There is robust cross border trade in Nile monitor body parts for zootherapy in East and Southern African countries such as Mozambique, Tanzania, Zambia, Malawi, Zimbabwe and Swaziland, especially South Africa, for traditional African "muti" medicine, and for its skin for use as ceremonial regalia. Mozambican nationals sell a diverse range of fauna in urban traditional medicine markets in Maputo, Johannesburg and Durban.

The elastic, resistant, durable and non-fatty skin of the Nile monitor has been the preferred material in making drumheads for small and medium sized frame drums, which are renowned for their, sonic fidelity, primordial optic and for radiating visual, structural and functional integrity. Distention and stretching of the fibre structure of the skin, imparts greater flexibility and offers a wider range of beats and modulation to the drummer.(13)(14)

Nile monitor skin is the second most abundantly traded species of monitor skin in the world. Major exporters are Cameroon and Mali, who between them provide around 80% of the exports. Chad and Sudan account for a further 15% of the trade.

The EU is responsible for 78% of the world trade in Nile monitor skins, out of which 50-60% is imported by France. The Nile monitor is, in numerical terms, the predominant species used by French tanneries, this being undoubtedly a reflection of France's trading links with Africa. Its main supplier of Nile monitor skins is Mali, with lesser quantities contributed by Cameroon, Sudan and Chad.

After France, Italy is the most important importing country, importing one-fifth of France's volume. UK, Spain and Belgium also import smaller quantities of Nile monitor skins. Italian dealers and tanners import appreciable number of skins from French dealers as well.

Australia and Switzerland have also imported substantial number of Nile monitor skins in the past. The USA was previously a fairly important market, but has shown a steady decrease over the years and now plays an insignificant role in the market.

Japan which is a predominant player in the market for monitor skins from Asia-Bengal monitor, golden monitor and Asian water monitor, is a fringe player in the Nile monitor skin market. (15)

In 2020, United States exported \$110M in Reptile skins, raw, making it the 1st largest exporter of Reptile skins, raw in the world. At the same year, Reptile skins, raw was the 1235th most exported product in United States. The main destination of Reptile skins, raw exports from United States are: France (\$50.1M), Singapore (\$21.2M), Germany (\$19.5M), Italy (\$13.5M), and Spain (\$3.48M).

The fastest growing export markets for Reptile skins, raw of United States between 2019 and 2020 were Hong Kong (\$1.08M), Spain (\$104k), and South Korea (\$95.7k).

In 2020, United States imported \$62.6k in Reptile skins, raw, becoming the 22nd largest importer of Reptile skins, raw in the world. At the same year, Reptile skins, raw was the 4550th most imported product in United States. United States imports Reptile skins, raw primarily from: Singapore (\$19.2k), Spain (\$18k), Italy (\$14.6k), Indonesia (\$7.89k), and France (\$2.92k).

The fastest growing import markets in Reptile skins, raw for United States between 2019 and 2020 were Italy (\$12.2k), Spain (\$11.7k), and Indonesia (\$7.89k). (16)

Although there were at least twenty reptile tanneries in the USA in the 1970s, by 1991, there was only one in operation. This tannery, American Tanning & Leather LLC (AMTAN), the oldest and largest exotic leather tannery in the USA, located in Griffith Georgia, supplies luxury brands worldwide.

Each and every skin tanned by AMTAN is selected directly from the very best farms and trappers around the globe. The establishment is the only tannery of exotic leather to work directly with fishermen and trappers in Louisiana and Florida, ensuring the very best quality and closest connection to the sustainably procured raw material. (17)

American Tanning and Leather LLC is a 5th generation business, belonging to and operated by the Plott family. The tannery still using the original drum built by the founder, Chris Plott, himself in 1980,

The establishment is the only tannery of exotic leather to work directly with fishermen and trappers in Louisiana and Florida, ensuring the very best quality and closest connection to the sustainably procured raw material.

Glazed reptile leather is produced by polishing the skins with an agate stone, which takes between 30 minutes to 1 hour per skin, wherefore a glazing machine operator can only produce between 8-10 skins daily.

The reptile tannery of Louisiana began operations in 1991, and in the recent past another small tannery in Florida, Sebring Custom Tanning, has been making leather both from livestock as well as from reptiles.(17)(18)(19)

From the data above, it is evident that even with the precipitous decline, since its halcyon days in the 1980s, both the export and import markets for reptile skins in the USA remains impressive.

Once the invasive Nile monitors, tegu lizards, and green iguanas are captured and humanely euthanized, the onus is on the Florida Fish and Wildlife Conservation Commission to work closely with reptile wranglers, certified butchers and skinners to temporarily preserve the lizards and ensure their proper flaying. By working in close cooperation with the tanneries which have decades of specialization in making exotic reptile leather of beauty and quality, the USA in general and Florida in



particular, will remain invested in today's market in order to stay on the cutting edge of making and selling reptile leather.

In view of the familiarity of African countries, in which the reptile is endemic, with its value in zootherapeutic applications, often in combination with and complementary with medications based on ethnobotany, there exists a market potential to export invasive Nile monitor body parts to the countries in east and Southern Africa, where there is limited public access to modern western medicine. Consequently, the healthcare among tribal and impoverished communities is heavily reliant on traditional medicine from herpetofauna, among them the Nile monitor.

The invasive ornate and Nile monitors of Florida, now a permanent part of the state's landscape, are among the best adapted for sustainable use. They grow, multiply, proliferate prodigiously and prosper - with equal insouciance in waste yards, cornfields or woodlands. The generalist omnivores are not fastidious eaters and can survive on any flesh on offer.

There are both definite and well delineated consumer segments and regions, where Nile monitor meat from culled animals could be sold both for human consumption (in US, Europe and Africa), as well as a pet protein (in the US). The lacertilians skins, made into leathers of beauty, functionality and quality would have ready markets in North America and Europe, while live animals captured from their Floridian havens, could become significantly valorised, when exported to zoos, to Universities and laboratories for research and dissection or as mounted specimens to museums across the world.

The final option, to growing the market and expanding the reach of commercialization of invasive Nile monitors of Florida could be to set up monitor farms and conservancies of the interloping species, on the lines on cuniculture, poultry and sheep farms, to provide a steady supply of monitor skins and body parts, to any industry which may require the same.

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Low Waste Closed Loop Chrome Tanning Methods*

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INTRODUCTION

The polluting nature of the tannery effluents has led to major challenges for the leather industry worldwide[1]. One of the chief pollutants of the leather industry is chromium. The environmental regulatory agencies in many countries have come out with stringent stipulations for permissible levels of chrome in the waste water which are in the range of 0.3-2.0 ppm[2-4]. These stipulations are difficult to comply with as the current chrome tanning methods employing the commercially available tanning salts exhibit exhaustion levels of only 50-65%[5,6]. As a result, the

chrome tanning activity has shifted from developed countries to developing countries like India. Moreover, the chrome tanning is on the rise already due to the increasing demand for soft leathers in the International market. It is estimated that Indian leather industry is discharging nearly 15,000 tonnes of chrome tanning salts into the waste streams annually [7] and this figure is likely to increase considerably in the near future due to the aforesaid reason.

The pollution load on the environment due to increasing chrome tanning activity in India is likely to be significant. In

order to meet the challenges arising out of this situation, concerted efforts are needed to find lasting solutions to the problem.

It is recognized that one of the convincing solutions to the problems in chrome management rests in the reduction of discharge of chrome in the effluent through inplant control measures and cleaner chrome tanning practices[8, 9]. Hence the TNO-CLRI cooperation program in the area of environmental sector pertaining to the Indian leather industry identified the development and delivery of high exhaust and cleaner chrome tanning methods suitable

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ble to Indian conditions as one of its primary objectives. The potential of the methodology to contain not only the problem of chromium pollution but also that of dissolved solids on the one hand bring about significant saving in wet finished chemical cost on the other adds further importance to high exhaustion chrome tanning technologies among all the known chrome management practices.

Preliminary screening of high exhaustion chrome tanning methods

After indepth analysis of literature data, five technologies were selected for preliminary screening as high exhaustion chrome tanning approaches. Criteria taken into account for the selection of high exhaustion methodology are

- their suitability to Indian conditions
- the easy availability of chemicals/products
- economic process viability and
- ease of application.

Among five high exhaustion chrome tanning approaches, two methods have been chosen

after preliminary studies. The two methods which have been user evaluated successfully in commercial tanneries alone have been presented here. These are based on

- ethanolamine pretreatment and
- Alutan-basic chromium sulfate combination system

The special feature of the processes standardized is that they present a technological measure for "Near-zero waste loop systems" involving easily available chemicals and commercial products. A possibility to save on wet finishing chemicals has also been presented by one of these methods.

Alutan-chrome combination tanning method

Polyhydroxyaluminium gels are known to aid the exhaustion of chromium during tanning and function as a chrome saver[10]. The reversibility of aluminium binding to leather has however, limited the utility of previously known processes based on Al (III) salts as chrome savers. Further, the use of Al(III) based tanning compounds used to make the utility of special grade

fatliquors necessary in wet finishing. CLRI developed a high performance and special aluminium based tanning salt, "Alutan"[11] which is available commercially in the brand name Balsyn AL. In this tanning salt, aluminium is in the stabilized form and is irreversibly bound to the substrate. This product is based on a polymeric network carrying suitable liganding sites to increase chrome fixation when used in combination with BCS. On account of these reasons, it can effectively function as both chrome exhaust aid and a chrome saver.

A high exhaustion chrome tanning method has now been developed. In the initial experiments with the Alutan-chrome combination involving use of Alutan 2% and BCS 5% (based on pelt weight), it was shown that exhaustion levels of about 95% of chrome were possible and that the resultant wet blue leathers possess the required hydrothermal stabilities.

The concentration of chrome formed in the spent liquor emanating from Alutan-chrome high exhaustion tanning method was generally in the range of about 500 ppm. Therefore, the direct discharge of the spent tanning

solutions cannot be made without treatment. At the same time, the chrome recovery methods may be less economical when compared to their utility in the conventional chrome tanning with 60% chrome exhaustion. Therefore, a combination of high exhaustion chrome tanning with recycling of the spent solutions as pickle bath in the successive batches has been approached. Since the amount of chrome in the spent liquor is <500 ppm, it seems possible to reuse the spent tanning solutions from high exhaustion tanning as pickle bath directly without the danger of grain coarsening.

A closed loop system has many potential advantages which include

- considerable amount of water saving
- material economy
- near zero discharge of chrome and
- reduction in neutral salt discharge leading to better environment

The Choice of Pickling Process for The Closed-loop Tanning System

Recycling of the spent chrome liquor involves accumulation

of sulfate from the basic chromium sulfate salt as well as from the neutralized acid. If conventional sodium chloride-sulfuric acid pickling is employed, a closed loop procedure has to stabilise the concentrations of two kinds of neutral salts (viz, NaCl and Na_2SO_4). This might be difficult in real field and commercial conditions. Therefore, a sodium sulfate H_2SO_4 pickling system has been developed. This pickling system has the additional benefit of easier treatability of waste streams with respect to neutral salts. It is easier to handle sodium sulfate than sodium chloride, when the waste streams are let out when necessary.

The Closed-loop Alutan-BCS Combination Tanning System.

The scheme employed for the high exhaustion closed loop system is given in Figure 1. Total three loops with packs of 10 cow sides of uniform size had been carried out. Matched sides selection procedure was adopted to allow for interpack comparison. A control chrome tanning with 8% chrome was

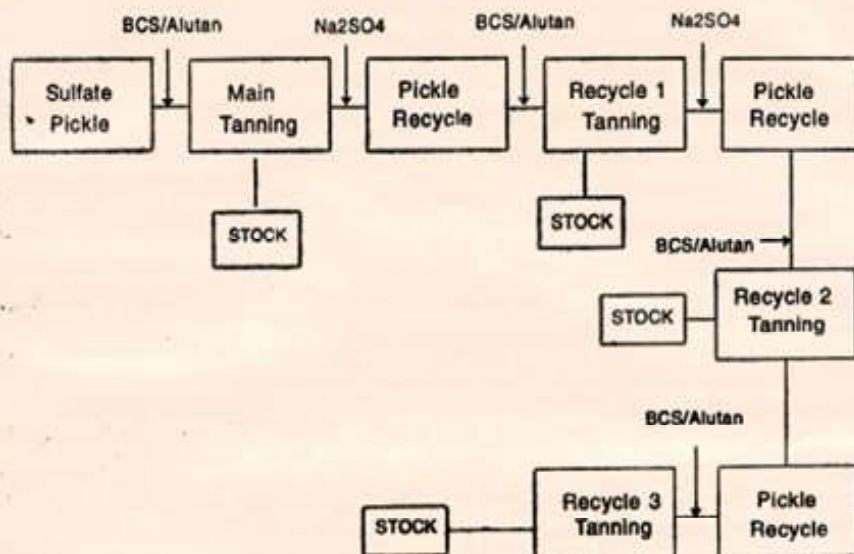
also performed for the comparison of the quality of the leathers produced on recycling.

A common process was adopted for all the packs including the control lots upto deliming. Pickling was stopped at a pH of 3.3-3.5 for experimental packs while a heavier pickle to pH of 2.8-3.0 was employed for control leathers. The beam house operations for packs selected for recycling experiments were staggered suitably to enable planned recycling of the spent chrome liquor without having to age the delimed pelt or the spent liquor.

The spent liquor from Alutan-BCS combination tannage was quantitatively collected and recycled as pickle liquor for the next lot. The exhaustion levels of chromium as well as aluminium and concentration levels of sodium sulfate were estimated for each cycle. The salt concentration was maintained through suitable additions of fresh sodium sulfate salt and water.

The processes followed for the control chrome tanning, Alutan-chrome combination tanning and the first recycle

Figure 1 Closed Loop High Exhaustion Chrome Tanning System



loop are described in detail for improved clarity.

1. Beam house process upto Deliming

(The process is the same for all the packs)

Trim and note the trimmed weight.

Wash with 2 changes of water in pit.

Soaking(pits)	Water	300%	
	Preservative	0.2%	
	N. I. wetting agent	0.1%	Leave overnight

Next day Drain

Liming(Paddle)	Water	300%	
	Sodium sulphide	2.5%	
	Lime	5%	run 30'

Then 5' every one hr. for 16-18 hrs. Unhair and relime

Reliming(Paddle)	Water	300%	
	Lime	5%	run 5'

every 1 hr for 24 hrs.

Flesh, Note the fleshed weight



Washings	Water	200%	run 15'
Deliming	Water	150%	
	Ammonium chloride	2%	run 1 hr
Check with phenolphthaleine for completion. Raise temperature to 27°C			
	Microbate	0.5%	run 45 min
Wash twice ; Drain.			

2. Process for Control Chrome Tanning

After deliming and bating, the pelts are washed well and pickled.

Pickling	Water	100%	
	Sodium sulphate	4%	run 15'
	Sodium formate	0.5%	run 15'
	Sulfuric acid	1.5%	added in three feeds at 15' intervals
Finally run for 60'			
Check pH ; should be 2.8-3.0 at the cross section, leave overnight ;			
next day run for 30', check pH again.			

Chrome Tanning	To the same bath, add		
	BCS	8.0%	run for 2 hrs
Check penetration. Basity to pH 3.8-4.0 with sodium bicarbonate over 4 hrs			
	Run overnight	Heat to 40°C	run 1 hr
Drain and collect liquor ; wash and collect washings.			

3. Process for Alutan-chrome Tanning Method

After deliming and bating, the pelts are washed well and pickled.

Pickling	Water	100%	
	Sodium sulphate	4%	run 15'
	Sodium formate	0.5%	run 25'
	Sulfuric acid	1.0%	added in three feeds at 15' intervals
Finally run for 60' ; check pH ; should be 3.3-3.5 ; leave overnight.			
Next day run for 30' ; check pH again ; should be 3.5 at the cross section,			

Chrome tanning

To the same bath add

Alutan	2%	run 30'
BCS	4%	run 2 hrs

Check penetration. Basify to pH 4-4.2 with sodium bicarbonate over 4 hrs. Heat to 40°C

run 1 hr

Drain and collect liquor; Pile on a Horse

4. Process for Closed Loop Recycle Experiments

The spent liquor from the alutan-chrome tanning method is quantitatively collected and filtered. The salt concentration is determined and the spent liquor is replenished with required amount of water/sodium sulfate to maintain the same percentage of float and salt concentration as in the main tanning.

Pickling

Spent chrome liquor	100%	
(containing 4% sodium sulfate)		
Add Sulfuric acid	0.3%	run 15'
Sulfuric acid	0.7%	

added in two feeds at 15' intervals; finally run for 1 hr. Check pH; should be 3.5 at the cross section; leave over night. Next day, run for 30 min; check pH; should be 3.5.

Chrome tanning

To the same bath, add

Alutan	2.0%	run 30'
BCS	5.0%	run 2 hrs.

Check penetration. Basify to pH 4-4.2 using sodium bicarbonate over 4 hrs. Heat to 40°C; finally run for 1 hr. Drain and collect liquor. Pile the leathers on the horse.

The results of the spent liquor analysis and shrinkage temperature measurement and chemical analysis of the wet blue leathers for all the packs are summarized in Table 1. The wet blue leather were processed into upper leather employing the wet finishing operations outlined below in the next page.

Table 1 : % Exhaustion data of closed loop system

Experiment	Cr ₂ O ₃ offered	Al ₂ O ₃ offered	Cr ₂ O ₃	Al ₂ O ₃	% Exhaustion		% Sodium sulfate	ST (°C)
			g/L	g/L				
			In effluent		Cr	Al		
Control	980.0	0	3.860	—	75	—	4.01	116
BCS-Alutan	595.0	95.2	0.603	0.15	95	92	3.90	116
Recycle 1	585.0	93.6	0.632	0.21	97	90	3.89	116
Recycle 2	536.4	85.8	0.352	0.19	96	90	3.85	114
Recycle 3	656.3	105.0	0.509	0.10	92	95	4.15	116

The physical testing and chemical analysis for the dyed leathers were carried out and the results are furnished in Table 2 and 3, respectively. The visual assessment data for the leathers are presented in Table 4.

Table 2 : Physical testing data of the dyed leathers

	Alutan-BCS		Recycle 1		Recycle 2		Recycle 3	
	Control	Expt.	Control	Expt.	Control	Expt.	Control	Expt.
Tensile strength (Kg / cm ²)	207	215	121	130	170	196	103	147
% Elongation at break	68	63	50	60	61	60	56	59
Tear strength (Kg / cm)	42	42	23	29	48	41	43	43
Bursting load (Kg)	70	70	41	54	80	70	42	38
Load at grain crack (Kg)	40	40	21	24	34	36	20	30

Discussion of Laboratory Results

An exhaustion level of about 95% was obtained in all loops

compared to 75% with control chrome tanning. In otherwords, the exhaustion of chrome is unaltered by the recycling of the

spent liquor in pickling. Another point to be noted is that the concentration of sodium sulfate is generally in the the range of

of 4+0.15%. The hydrothermal stability of the wet blue leathers produced in loop experiments were comparable to control leather inspite of the less offer of chrome.

Visual assessment of the wet blue leathers revealed that the experimental leather were full with less wrinkles on the shanks compared to control leathers. The grain smoothness of the leathers produced in recycles was found to be comparable to control leathers.

From the physical testing data, it can be seen that the strength properties are unaffected by recycling. In fact the

leathers produced in recycling experiments were found to have improved strength properties compared to control leathers.

The visual assessment data for the dyed leathers indicate that the experimental leathers are uniformly fuller and with better grain tightness compared to the control leathers.

On the whole, closed loop tanning system based on Alutan-chrome high exhaustion chrome tanning method offers itself as an attractive proposition for adoption by Indian tanners.

Field Trials with The Alutan-Chrome Tanning Systems

Field trials with the high exhaust closed loop based on Alutan-BCS combination was carried out in one tannery at Ambur and two tanneries at Calcutta. An exhaustion level of about 90% of chrome offered has been achieved. This has to be compared to 50-60% exhaustion of chrome through conventional processes in some of the tanneries. The wet blue leathers produced exhibited good filled up character and without any wrinkles. The final leathers also had improved fullness, grain tightness and dyeing characteristics. The cooperating tanner has expressed much satisfaction with the results obtained

Table 3 Chemical analysis data of the dyed crust

Property	Control	Al-BCS	Recycle 1	Recycle 2	Recycle 3
% Moisture	19.50	19.30	18.50	18.70	17.80
% Water solubles	4.30	4.40	3.90	4.10	3.40
% C ₂ O ₃	3.80	3.64	3.89	3.80	3.91
% Oils & fats	7.97	9.37	9.56	10.20	9.10

Table 4 Visual assessment data of the crust leathers

Property	Control	Al-BCS	Recycle 1	Recycle 2	Recycle 3
General appearance	6	7	7	8	8
Grain tightness	6	7	6	7	7
Grain smoothness	7	8	7	7	8
Fullness	8	6	6	6	8
Strength	6	8	7	8	8
Grain crack	8	8	8	8	8
Single, Double	Stands	Stands	Stands	Stands	Stands

Field Trials with Ethanolamine assisted Chrome Tanning

The ethanolamine assisted high exhaustion tanning procedure investigated in this work has been developed by the European colleagues and adopted to Indian tannery conditions through joint efforts. For purposes of convenience, the process adopted and the results of a field trial carried out for ethanolamine assisted chrome tanning in a tannery in Calcutta have been presented here. The process adopted for trials is as described below.

Process for First Ethanolamine Pack (Offers on limed weight)

After deliming and bating the pelts were washed and pickled

Float	75%	
anhydrous sodium sulphate	4.8%	
formic acid	0.5%	
sulphuric acid	0.5%	added in three feeds over 30 min

Solution pH 3.5, cut 1/3 blue to BCG

Add sulphuric acid 0.1% stored overnight

Solution pH 3.9

Add ethanolamine 1% run 1 hr

Solution pH 9.8, central 1/3rd colourless to phenolphthalein

Add formic acid 0.2% run 30 min

Solution pH 5.9

Add formic acid 0.1% run 5 min

Add BCS 5% run 90 min

Central 1/3 not coloured, solution pH 3.7

Run 60 min, pale streak solution pH 3.7

Run 135 min, solution pH 3.8

Add sodium bicarb 0.1% run 60 min

cut uniform, solution pH 4.1 run 60 min

Solution pH 4.05, temperature 32°C, run 60 min

Solution pH 4.07

Drain and horse.

July, 1995

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Process for First Recycle

Float 75% (recycled from ethanolamine tannage)
 formic acid 0.5%
 sulphuric acid 0.5%
 Run and then stand overnight, solution pH 4.3
 Add ethanolamine 0.4% run 30 min
 Solution pH 8.75
 Add formic acid 0.2% run 30 min
 Solution pH 5.2
 Add formic acid 0.05% run 345 min
 Add BCS 5% run 5 min
 Penetration complete, solution pH 3.7
 Add sodium bicarb 0.1% run 20 min
 Solution pH 3.9 run 90 min
 Solution pH 3.9 Drain and horse

The results obtained with respect to the exhaustion data of the field trials with the ethanolamine tannage are presented in the Table 5.

Table 5 Exhaustion data in the field trials with ethanolamine tannage

Tannage	g of $\text{Cr}_2\text{O}_3/\text{L}$ in the spent liquor	% uptake of chrome
Control	7.6	72
1st Ethanolamine	2.4	84
1st Recycle	3.6	77 ^c (87 ^d)
2nd Recycle	4.2	80 ^c (92 ^d)
Bulk Ethanolamine	1.6	90

c : Calculated for total chrome offer ; d : Calculated to fresh chrome offer

Concluding Remarks

The closed loop high exhaust tanning system based on alutan-chrome combination and ethanolamine assisted chrome tanning methods offer themselves as an attractive zero waste

options suitable to indian leather

industry. The tanners should adopt such ecologically acceptable processing methodologies for the sustainable development of leather industry.

Acknowledgement

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INDIA, US SETTLE FINAL TRADE DISPUTE AT WTO



India and the US have settled the last trade dispute at the World Trade Organization (WTO) over poultry products, according to a joint statement released on Friday.

With this, the two countries have mutually resolved all the seven pending trade disputes at the WTO.

“The leaders lauded the settlement of the seventh and last outstanding WTO dispute between India and the United States.

“This follows the unprecedented settlement of six outstanding bilateral trade disputes in the WTO in June 2023,” the joint statement said.

It was issued after the meeting of Prime Minister Narendra Modi and United States President Joseph R Biden, Jr., in New Delhi. Biden is in India to attend the G20 Summit to be held on Saturday and Sunday.

Modi and the US President vowed to “deepen and diversify” the bilateral major defence partnership while welcoming forward movement in India’s procurement of 31 drones and joint development of jet engines.

In their over 50-minute talks, the two leaders deliberated on India’s G20 presidency, cooperation in nuclear energy, critical and emerging technologies such as 6G and artificial intelligence, and ways to fundamentally reshape multilateral development banks.

Earlier, the seventh dispute was discussed during the visit of US Trade Representative Katherine Tai’s meeting with Commerce and Industry Minister Piyush Goyal last month.

They had tasked their respective teams with continuing discussions on this dispute in order to reach a solution soon.

During Modi’s visit to the US in June, the two countries announced ending of six trade disputes at the WTO and India’s removal of tariffs on certain US products (chickpeas, lentils, almonds, walnuts, apples, boric acid, and diagnostic reagents).

The poultry case was filed by the US against India in the WTO in 2012.

India has lost the dispute both at the panel as well as the appellate body levels.

It was ruled against India that New Delhi’s ban on imports of poultry products from the US was inconsistent with global norms.

As India was not able to implement the decision within the stipulated time frame, the US had demanded compensation. After that, both countries were discussing ways to resolve the case mutually.

The US is the largest trading partner of India. In 2022-23, the bilateral goods trade increased to \$128.8 billion as against \$119.5 billion in 2021-22.

(PTI – 08/09/2023)

G20 PAPER BY WORLD BANK: MSME CREDIT ISSUE CAN BE ADDRESSED BY DIGITAL PUBLIC INFRASTRUCTURE; HERE’S HOW



Credit access for MSMEs: MSMEs are a critical component of most economies, accounting for a significant portion of employment and economic activity. However, MSMEs often face challenges in accessing finance, particularly in developing countries, where financial systems may be less developed,” the

World Bank document prepared with inputs from the Ministry of Finance and the RBI said.

A G20 Policy Recommendation paper by the World Bank on advancing financial inclusion and productivity gains through digital public infrastructure (DPI) has explained how DPIs can help address the challenge of access to credit faced by SMEs by providing latter with access to financial services and information through digital channels.

“MSMEs are a critical component of most economies, accounting for a significant portion of employment and economic activity. However, MSMEs often face challenges in accessing finance, particularly in developing countries, where financial systems may be less developed,” the World Bank document prepared with inputs from the Ministry of Finance and the Reserve Bank of India (RBI) said.

In emerging markets, approximately 41 per cent of formal MSMEs have unmet financing needs. The finance gap for formal MSMEs in developing economies is estimated at \$5 trillion while women-owned businesses comprise 23 per cent of MSMEs and account for 32 per cent of the MSME finance gap.

Here are five recommendations by the World Bank document, released on September 7, on easing credit access for MSMEs by leveraging DPIs:

Digital payment systems, which allow MSMEs to accept payments from customers electronically, reducing the need for cash transactions and making it easier for SMEs to track their revenue and expenses, can also help SMEs to build a credit history. This can be important for accessing formal sources of finance, such as bank loans. Likewise, digital payment solutions for commerce generate rich data on cash flows and business performance of active MSMEs, which can then be used by credit providers to assess relative creditworthiness.

Data exchange DPIs can enable fast and seamless sharing of information from traditional sources as credit infrastructure. Credit reporting systems allow lenders to access information about a borrower's credit history, making it easier for MSMEs to demonstrate their creditworthiness and access formal

sources of finance. Digital credit reporting systems can be particularly useful for MSMEs in developing countries, where traditional credit reporting systems may be less developed.

Data exchange can also facilitate the use of alternative data sources and big-data analytics to provide additional information sources to the credit risk-assessment process for MSMEs. Data exchange can also leverage alternative sources of data, such as mobile phone call records, utility and bill payments, digital payment transactions, social media, and industry data, for this purpose. The risks associated with the use of alternative data and big data analytics—for example, data protection and privacy, and perpetuation of biases—need to be effectively addressed, the document said.

Data exchange and digital payments, when used together, can also provide alternate sources of collateral for MSMEs. For instance, they can facilitate merchant receivables financing by using the digital record of an MSME retailer's payment receipts as collateral. Additionally, reverse factoring platforms such as the Trade Receivables Discounting System (TReDS) in India, allow financial service providers other than the buyer's bank to discount the buyer's receivables.

DPIs can also support MSME access to finance by providing information and education about financial products and services. For example, digital platforms can be used to provide SMEs with information about different types of loans, interest rates, and repayment terms. Digital platforms can also be used to provide training and education on financial management, improving MSMEs' understanding of their financial needs and helping them make informed decisions about borrowing.

DPI refers to interoperable, open, and inclusive systems supported by technology to provide essential public and private services. Some examples of DPIs are digital ID systems such as India's Aadhaar, Singapore's Singpass, and the United Arab Emirates' UAE-Pass; digital payment systems, especially fast payment systems, such as Brazil's Pix, India's UPI, etc.; and (iii) data-exchange platforms such as India's Digilocker and Account Aggregator, Singapore's MyInfo, Australia's Customer Data Right, etc.

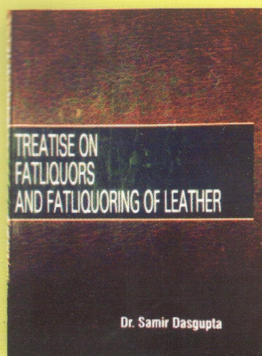
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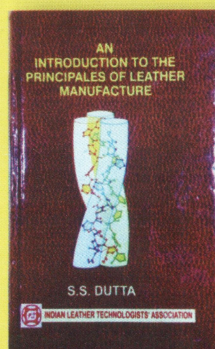
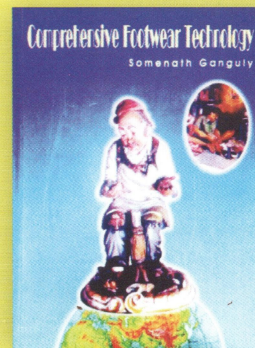
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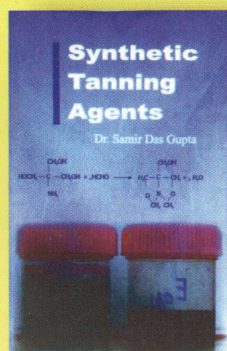
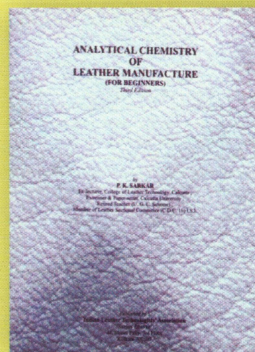
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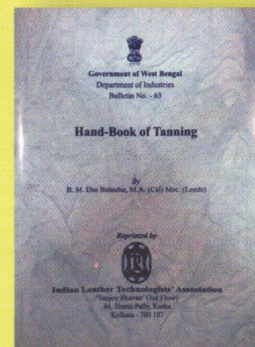
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History and Activities of Indian Leather Technologists' Association

Registration No. KOL RMS/074/2022-24

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

ILTA also organizes Prof. B. M. Das Memorial Lecture every year during the Foundation Day Celebrations on 14 th August and Sanjoy Sen Memorial Lecture on 14 th January, the birthday of our late President for several decades. 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.

ILTA have published the following books:

1. An Introduction to the Principles of Physical Testing of Leather by Prof. S.S. Dutta
2. Practical Aspects of Manufacture of Upper Leathers by J. M. Dey
3. An Introduction to the Principles of Leather Manufacture by Prof. S. S. Dutta
4. Analytical Chemistry of Leather Manufacture by P. K. Sarkar
5. Comprehensive Footwear Technology by Mr. Somnath Ganguly
6. Treatise on Fatliquors and Fatliquoring of Leather by Dr. Samir Dasgupta
7. Synthetic Tanning Agents by Dr. Samir Dasgupta

ILTA presents awards in the name of Prof. B. M. Das Memorial, Sanjoy Sen Memorial and J. M. Dey Memorial Medals to the top rankers at the University graduate and post graduate levels. 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). From the year 2023 ILTA has started to present a Scholarship namely Prof. Moni Banerjee Memorial Scholarship to a Student of B.Tech / M.Tech Leather Technology who is meritorious but financially crippled.

ILTA is the Member Society of IULTCS (International Union of Leather Technologists' and Chemists Societies) which is a 125 years old organization. The International Congress of this union is held in different locations of the world once in two years. In its 125 years history, for the first time the Congress was held in January 1999 outside the developed countries and that too in India at CLRI, Chennai. Indian Leather Technologists Association organized the Congress under the able leadership and guidance of Late Sanjoy Sen, the then President of ILTA and IULTCS and Dr. T. Ramasami, the then Vice-President of ILTA and Director, CLRI, Chennai. In 2017 IULTCS Congress was successfully held again at Chennai, India for the second time.

In order 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 and Durgapur, ILTA have held LEXPO at Bhubaneswar, Gangtok, Guwahati, Jamshedpur and Ranchi. In commensurate with the time, demand and new perspective of the modern leather users, ILTA has started to organize LEXPO at Kolkata from 2022 in a new shape with the Manufacturers and Exporters of Leather Goods from all over India.

ILTA has celebrated its Golden Jubilee with a year-long programme from 14 th August' 2000 to 13 th August' 2011 along with the first conference of South East Asian Countries at Netaji Indoor Stadium, Kolkata.

ILTA has also celebrated its Diamond Jubilee with a year long programme from 14 th August' 2010 to 13 th August' 2011 which included National Seminars, B. M. Das Memorial Lecture, Sanjoy Sen Memorial Lecture, Moni Banerjee Memorial Lecture, Y. Nayudamma Memorial Lecture and 3 day's AICLST (Asia International Conference on Leather Science and Technology) at Hotel 'The Stadle' at Salt Lake City, Kolkata.

The Association's present (as on 31.03.2023) strength of members is around 550 from all over India and abroad. Primarily the members are leather technologists passed out from Govt. College of Engineering and Leather Technology – Kolkata, Anna University – Chennai, Harcourt Butler Technological Institute – Kanpur, B. R. Ambedkar National Institute of Technology – Jalandhar and Scientists and Research Scholars from Central Leather Research Institute (CLRI).

In order to strengthen its activities, ILTA have constructed its own six storied building at 44, Shanti Pally, Kasba, Kolkata – 700107, West Bengal, India and have named it as "Sanjoy Bhavan".

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



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