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Since 1950

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Our Activities

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

Indian Leather Technologists' Association

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

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JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION (JILTA)

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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India and Her present Economic Trend



The budget of coming fiscal year highlights the government's attempts to balance supporting economic growth at a time of slowdown with maintaining fiscal prudence - especially as the government announced it was likely to notably miss its original fiscal deficit target for FY 2019. Overall, the FY 2020 budget will likely have a minimal effect on growth, while market analysts will be closely monitoring the realization of revenue projections.

The standout features of the FY 2020 budget are on the revenue side, as the government plans substantial state-asset sales. In addition, the government will abolish the dividend distribution tax and lower income taxes. Despite lower taxes, the government projects tax takings to increase 12.0%. However, there is scepticism as to how this increase will be achieved. Analysts at Goldman Sachs, for example, noted: "Unless there is a sharp increase in tax compliance, we think it is quite likely that the government will have to cut current spending, as was the case [in FY 2019]" to keep the fiscal deficit in check. Moreover, given that the government has underachieved on its asset sales in recent years, they added markets will want to see concrete timelines in the coming weeks "to have more confidence in the government's privatization plans". On the expenditure side, spending is set to increase by 12.7% in FY 2020 (FY 2019: +16.6% year-on-year), although this is primarily due to greater interest payments, which limits the benefit to the real economy. Infrastructure spending and income support for farmers will also increase.

The government announced its fiscal deficit likely increased to 3.8% of GDP in FY 2019, higher than both the originally-budgeted deficit of 3.3% of GDP and the recorded shortfall in FY 2018 of 3.4% of GDP. The fiscal deterioration was due to lower-than-expected tax revenue and even though the government spent less on food subsidies than it originally planned, in response to underwhelming takings. For FY 2020, the government projects a narrower fiscal deficit of 3.5% of GDP, which is slightly more optimistic than our Consensus Forecast of a shortfall of 3.6% of GDP.

Gene Fang, associate managing director at Moody's, suggested the government's FY 2020 fiscal deficit target was ambitious,

saying: "While the latest budget targets a narrower deficit, prolonged weakness in nominal GDP growth in India, combined with lower revenue collections, has dampened the outlook for fiscal consolidation, raising the risk that the debt burden may not stabilize."

Meanwhile, assessing the budget's overall effect on economic growth, analysts at Nomura noted: "In the run-up to the budget, speculation was rampant over whether the sharp slowdown in growth would trigger consumption-oriented fiscal activism. Policymakers instead chose to adopt a 'middle path', which we believe will be growth-neutral in the short run, while the return of fiscal consolidation as a broader policy objective should be a medium-term positive." Focus Economics Consensus Forecast panellists project economic growth to accelerate to 6.0% in FY 2020, which is down 0.2 percentage points from last month's forecast, and 6.5% in FY 2021. The economists are of the view that fiscal deficit moderating to 3.6% of GDP in FY 2020, which is unchanged from last month's forecast, and 3.4% of GDP in FY 2021.

Consumer prices dropped 0.13% in January compared to the previous month, contrasting the 1.21% increase in December. The increase was largely due to cheaper food and beverages. Consumer price inflation accelerated to 7.6% in January from 7.4% in December. As a result, inflation rose further above the Reserve Bank of India's (RBI) target range of 2.0%–6.0%. Wholesale prices rose 0.08% in January from the previous month, down from the 0.41% increase in December. Wholesale price inflation, meanwhile, accelerated to 3.1% in January from 2.6% in December.

Focus Economics Consensus Forecast panellists project consumer price inflation to average 4.2% in FY 2020, which ends in March 2020. The forecast is up 0.3 percentage points from last month's forecast. In FY 2021, the panel projects consumer price inflation to average 4.2%. Meanwhile, our panel sees wholesale inflation averaging 2.7% in FY 2020, which is up 0.1 percentage points from last month's report, and 3.4% in



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FY 2021. Merchandise exports decreased 1.7% in January from the same month a year earlier, similar to the 1.8% decrease in December and amounting to a total value of USD 26.0 billion. Merchandise imports decreased 0.8% in January, after dropping 8.8% in December, amounting to a total value of USD 41.1 billion. The merchandise trade deficit amounted to USD 15.2 billion in January, widening from the USD 15.1 billion shortfall in the same month a year earlier and the USD 11.3 billion deficit in the previous month. The 12-month trailing sum of the trade deficit widened to USD 153.8 billion in January from USD 153.6 billion in December. Economic panellists forecast that exports will expand 5.1% in FY 2020 and imports will rise 4.8%, bringing the merchandise trade deficit to USD 182.0 billion. In FY 2021, we expect exports and imports will expand 9.4% and 8.4% respectively, which would result in a merchandise trade deficit of USD 185.0 billion.

Industrial production decreased 0.3% in December compared to the same month a year earlier, contrasting the 1.8% increase in November. Industrial output fell due to declines in the manufacturing and electricity generation sectors in December; on the other hand, output rose in the mining sector. By use, industrial production in December was dragged on by a sharp fall in capital goods output, in addition to a heavy drop in consumer durable goods production. Annual average growth in industrial production eased to 0.8% in December from 1.1% in November. Focus Economics panellists expect industrial production to increase 3.2% in FY 2020, which is down 0.4 percentage points from last month's projection. For FY 2021, the panel expects industrial output to expand 4.6%.

The Reserve Bank of India (RBI) decided to leave all monetary policy rates unchanged at its three-day meeting ending on 6 February, as expected by market analysts due to higher-than-expected inflation. As a result, the reverse repo, repo and marginal standing facility rates remain at 4.90%, 5.15% and 5.40%, respectively, where they have been since October when they were last lowered. Nevertheless, the RBI announced measures to support bank lending, by offering banks longer-term liquidity options in addition to existing short-term ones and lowering some of their cash reserve requirements. This led analysts at Nomura to say the RBI conducted implicit easing without actually cutting interest rates.

The RBI's latest decision was made shortly after the government released its advance economic growth forecasts for the 2019 fiscal year ending this March, which pencils in growth of just 5.0%, significantly down from 6.1% in the previous fiscal year. The RBI also lowered its growth forecast for April–September to a range of 5.5–6.0% from 5.9–6.3%. However, although the RBI now sees weaker-than-projected growth in the near term, it sees a clear uptick further ahead, pencilling in a 6.2% expansion for October–December. This is partly because previous interest rate cuts should further feed through to lenders and borrowers; the government announced income taxes cuts in its fiscal year budget starting from April, which should support private consumption; and trade policy uncertainty has diminished, which should benefit exporters. In terms of downside risks to growth, the RBI singled out the outbreak of coronavirus in China.

Although weaker short-term growth prospects would normally nudge the RBI towards another outright rate cut, the Bank was constrained by higher inflation. Inflation jumped to 7.4% in December from 5.5% in November, well above the 4.0% midpoint of the RBI's target range of 2.0%–6.0%. The acceleration was driven by higher food prices due to adverse weather conditions, and overshot the RBI's previous projection. Partly because of this, the RBI raised its inflation forecast to 6.5% in January–March, and to a range of 5.0–5.4% in April–September, up from the previous range of 3.8–4.0%. Focus Economics Consensus Forecast panellists project the repo rate to end FY 2020 at 4.93% and FY 2021 at 5.01%.

In sum, although the RBI appeared in a bind at its meeting ending 6 February, it still managed to give the economy a shot in the arm via more unconventional monetary policy tools. Going forward, the Bank said it would “persevere with the accommodative stance as long as necessary to revive growth, while ensuring that inflation remains within the target”. The next monetary policy meeting is set to end on 3 April.

Goutam Mukherjee

Dr. Goutam Mukherjee
Hony. Editor, JILTA



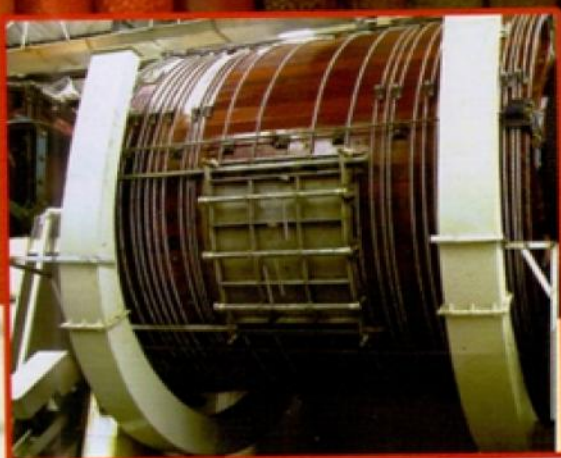
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From the desk of **General Secretary**



2nd Prof. S. S. Dutta Memorial Lecture

The 7th Seminar (since 2014 on the occasion of IILF at Chennai) named as the **2nd S. S. Dutta Memorial Lecture** was organized by Indian Leather Technologists Association (ILTA) in association with CSIR-CLRI, GCELT, CLCTA & ILPA and also Indian Leather & Leather Age magazine as media partners at the Hall-A of Convention Center in the Chennai Trade Center campus on Saturday the 2nd February' 2020 during 35th India International Leather Fair (IILF – 2020).

Dr. Nishad Fatima, Scientist, CSIR – CLRI commenced the programme by inviting the dignitaries to offer flower tribute to the portrait of Prof. S. S. Dutta and invited the following dignitaries on the dais for their respective seats.

1. Mr. Susanta Mallick, General Secretary, ILTA
2. Mr. Tapan Nandy, Chairman, ILPA Leather Goods Park.
3. Padmashree & Padmabhushan Dr. T. Ramasami, Former Secretary, Department of Science & Technology, Govt. of India.
4. Mr. S. Rajasekaran, Auditor / Consultant – Management System and the Speaker of the day
5. Mr. M. Vijayan, President, IFLEAMA and the Guest of Honour of the day
6. Mr. R. M. Uthayaraja, COO (LC), Balmer Lawrie & Co. Ltd. and the Guest of Honour of the day
7. Mr. N. R. Jagannathan, President, ILTA (SR)

A good audience consisting of around 100 people were present in the audience.

The event commenced with delivering of the Welcome address by Mr. N. R. Jagannathan. He sincerely remembered the contribution of Late Prof. S. S. Dutta as a teacher of leather technology during his student hood. Like previous year, he again opined that this type of seminar & symposiums should be organized in different parts of country for sake of development of Indian Leather Industry. He welcomed all the

dignitaries present who responded ILTA to join hands with the activities and interested to play active role in development of modern Leather Industry. He expressed hope that this way ILTA would be able to remain and develop more relevancies to the Industry.

All the Guests were then welcomed and honoured with 'Angabastrams' and Roses followed by delivering of a few words by each of them.

Mr. Mallick in his address informed that among many of the books authored by Prof. S. S. Dutta, one book titled "An Introduction to the Principals of Leather Manufacture" has been most popular among the different leather institutes throughout the country and ILTA has already printed 2500 copies of this book since its publication around 40 years ago. He remembered the contribution of Prof. Dutta to our beloved association.

Dr. Ramasami in his address very emotionally mentioned that Indian Leather Industry is Indebted to Prof. S. S. Dutta not for only as a stakeholder but also a Devoted Guru to the students of Leather Science & Technology. In this respect he recalled that in beginning of his career he was keenly interested to get the 'Student Corner' through the Journal of Indian Leather Technologists' Association (JILTA), where Prof. Dutta was a routine author of this segment and was highly useful for the students of leather technology. In relation with this he wholeheartedly praised the Journal (JILTA) for its rapid development and he advised that JILTA team should now focus to increase its 'Impact Factor'. He wished a great success of the program and assured that he would remain a part of ILTA forever, not as a Guest but as a Host.

Mr. Vijayan, in his address offered thanks to ILTA for inviting him followed by offering his homage to Prof. S. S. Dutta. He elaborately explained the life time achievement of Prof. S. S. Dutta and described him as a legendary Guru of Leather Technology. He mentioned that some 200 technical papers for

the students and more than 35 Research Papers authored by him and published in different technical journals worldwide, made him a real Guru and Scientist of Leather Technology. He suggested that ILTA should play more intensive role in coordination with R & D and Industry.

Mr. Uthayaraja offered his heartfelt gratitude to ILTA for inviting him for this kind of program and paid his homage to Prof. Dutta for his limitless contribution to his students and the students of leather technology as a whole. He assured that his organization would always remain with ILTA for organizing this type of programmes in future also even countrywide.

Mr. Nandi in his address offered his tribute to Prof Dutta and recalled the role of Prof. Dutta for building up the career of his students. He even recalled how Prof. Dutta motivated him to start his own export business and how he provided different technical helps at the start of his business. He also shortly briefed how his organization ILPA and ILTA are associated in different activities undertaken for development of Indian Leather Industry.

Mr. Sothi Selvam, Ex-Director, Balmer Lawrie & Co. Ltd. expressed his heartiest gratitude to ILTA for inviting them to attend the programme and assured his support to ILTA for playing a role of bridge between Academy – Industry partnership.

Thereafter, Dr. Fatima announced the following details of the students who were nominated for felicitation with Prof. S. S. Dutta Memorial Medal for submitting their projects in M. Tech and B. Tech, Leather Technology Examination – 2019 and adjudged as the 'Best Project'.

- a) **Mr. Monimul Islam**, M.Tech, Leather Technology, GCELT-Kolkata, project titled "A Promising Novel Biocatalyst for Post-Tanning Operation in Leather Processing"
- b) **Mr. Subhankar Dutta** and **Ms. Juin Gorai**, B.Tech, Leather Technology, GCELT-Kolkata, project titled "Re-Tanning Agent from Leather Solid Waste : An Economic Recycling Approach for Leather Industry"
- c) **Mr. Shivam Singh Jadaun**, B.Tech, Leather Technology, HBTU-Kanpur, project titled "Manufacturing and Applications of Different Fatliquors"

- d) **Mr. Pradeep S**, M.Tech, Leather Technology, Anna University, Chennai, project titled "Studies on Development of Hyper-branched Tanning Agent and its Application in Leather Processing"
- e) **Mr. Aravindh P** and **Mr. Jagdeesan K**, B.Tech, Leather Technology, Anna University, project titled "Bio-catalytic Beam House Process for Leather Manufacture using Tripot System"

Dr. Fatima then announced the names of the three export houses who would be felicitated by ILTA for securing 1st, 2nd and 3rd places respectively as winner of Best Export Award 2018-19 for their overall export performance in the country as declared by Council for Leather Exports (CLE).

Names of the houses are as follows :

- 1st Place - M/s Farida Group, Chennai
- 2nd Place - M/s K. H. Exports (I) Pvt. Ltd., Chennai
- 3rd Place - M/s TATA International, Chennai

All the dignitaries then lead by Dr. T. Ramasami, joined hands to release the 'IILF-2020 Special Issue' of Journal of Indian Leather Technologists' Association (JILTA), February' 2020 and the first copy was handed over to Mr. M. Vijayan by Dr. Ramasami, followed by presentation of Mementoes to all the Guests and the Speaker.

Mr. S. Rajasekaran was then invited to podium to deliver the 2nd S. S. Dutta Memorial Lecture titled "**System and Safety in Industries**". He started his lecture with offering heartfelt homage to Prof. S. S. Dutta and then he expressed his gratitude to ILTA for inviting him to deliver the prestigious Prof. S. S. Dutta Memorial Lecture.

His way of talking mesmerized the whole audience. In that pin drop silence he described some highly important aspects, their pros & cons and prospective solutions regarding the Industrial Safety and management system might also be implicable to the Leather Industry as well. Number of the Industry persons agreed with him that they are really not well aware about these safety and management systems.

However due to limitation of time the highly charming lecture had to be shortened by just touching few important points to observe and follow.

On completion of his lecture Mr. Rajasekaran was honoured with a Memento and Citation by Mr. Jagannathan.

Dr. R. Mohan then concluded the event with offering of Vote of Thanks to the gathering. He expressed his heartfelt thanks to all the dignitaries present. He also offered his thanks to CSIR-CLRI, GCELT, ILPA and CLCTA as the Co-organizers of the event and to Indian Leather and Leather Age Magazine as the media partner of the event. He also offered thanks to ITPO and Event Management group for their all out support to the event. He concluded his speech with requesting all to join in Lunch arranged outside the seminar hall.

9th Moni Banerjee Memorial Lecture

Above is scheduled to be held at the auditorium of Freya Design Studio, ILPA Leather Goods Park, Calcutta Leather Complex, Bantala, 24 Parganas (South) at 03.00 PM (Registration from 02.30 PM) on Saturday 14th March, 2020.

Mr. Satya Narayan Moitra, Director, Stahl India Pvt. Ltd. has kindly consented to deliver the memorial lecture titled **“Designing Sustainable Leather Production”**. Individual Invitation Cards were posted on 26th February, 2020.

LEXPO – XXXXI at Kolkata

The next LEXPO at Kolkata – LEXPO XXXXI will be organized at Kolkata Ice Skating Rink, 78, Syed Amir Ali Avenue, Kolkata – 700 019 from 20th to 27th May, 2020. The exhibition hall has

already been booked. There will be two types of stalls – 9 sqmt. & 12 sqmt. area. More details in respect of the fair in the next issue of JILTA.

Health Check Up / Health Talk

It has been decided that henceforth Health Check Up and Health Talks will be arranged in alternate month on the last Thursday of every month and that way the next health check up will be on Thursday the 26th March, 2020, from 12.00 noon (Registration from 11.30 am) at Freya Design Studio, ILPA Leather Goods Park, Calcutta Leather Complex, Bantala.

Cardiac and Pulmonological check up will be done in the camp.

Management Talk Shop

ILTA has introduced ‘Management Talk Shop’ for next generation of leather technologists. The main focus of this venture is to make the Students of Leather Technology and the Junieur Leather Technologists understanding Management, which will assist them to work efficiently and effectively along with technological expertise in their professional career.

The first experimental Talk Shop was held on 17th January’ 2020 at the auditorium of Govt. College of Engineering and Leather Technology. Prof. Ashok Banerjee, Ex-Professor, IIM – Kolkata and immediate past President of Calcutta Management Association was the Mentor of the programme.

The next Management Talk shop by Mentor Prof. Asok Kr. Banerjee will be held at GCELT Conference Room from 03.00 PM on Friday 27th March, 2020. The title of the talk is **“Principles of Business and its Structure”**.

1) Health Check Ups and Health Talks will be held alternatively on the Last Thursday of every month.

2) Management Talk Shops will be held on the Last Friday of every month at GCELT.

BEREAVEMENT

With profound grief and a heavy heart we announce the sad demise of Mr. Santipriya Das on 25th February, 2020. He was a Life Member of ILTA.

May his soul rest in peace and May God give strength to the members of the bereaved family.

You are requested to :-

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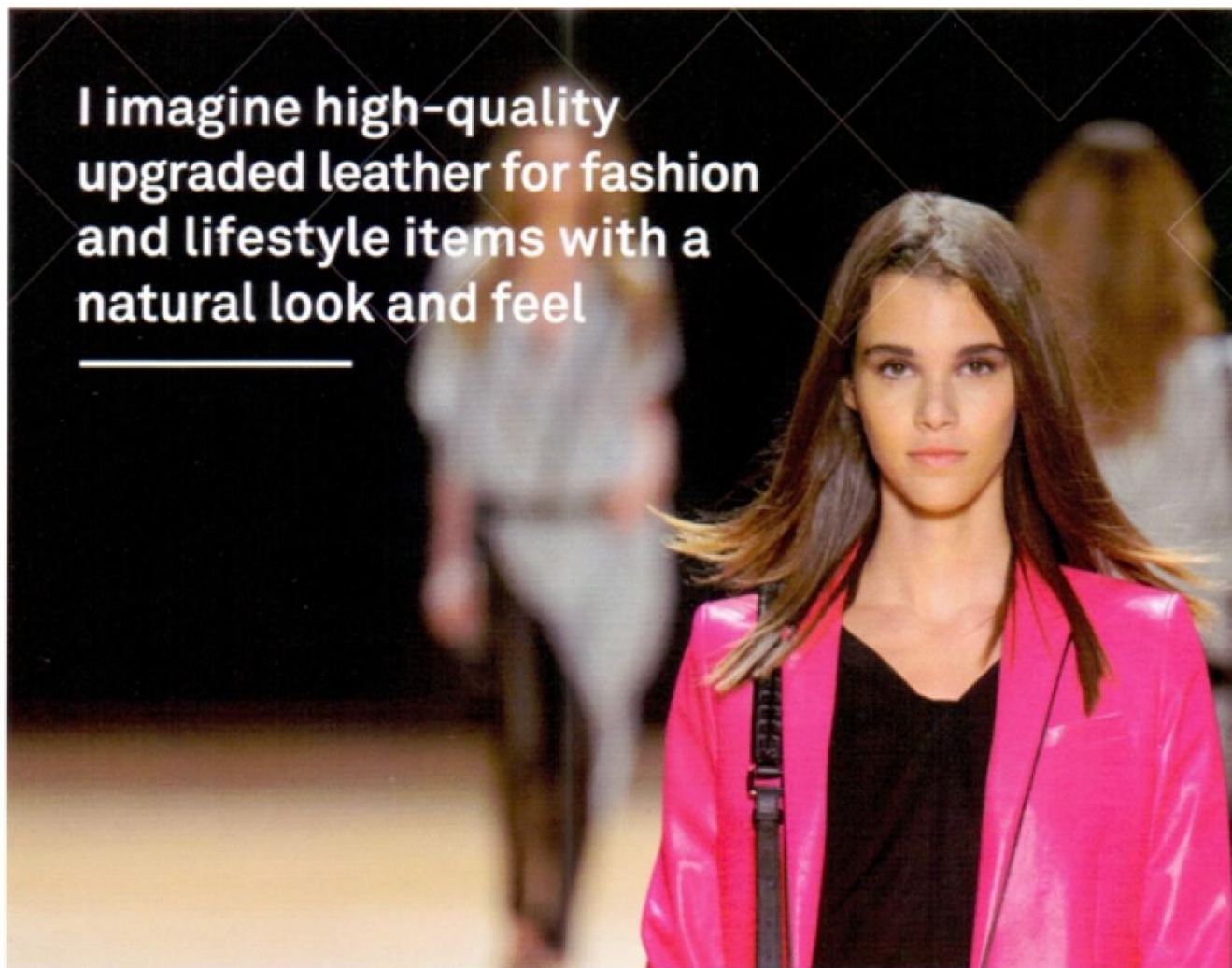
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Comparative Study between Moving Bed Biofilm Reactor (MBBR) and Activated Sludge Process (ASP) for COD Removal in Tannery Effluent

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Abstract: The Leather Industry produces a massive amount of toxic effluent which needs to be treated properly. Moving Bed Biofilm Reactor (MBBR) and Activated Sludge Process (ASP) are two efficient biological treatment technologies which are very efficient and easy to install and operate. This experiment was aimed at evaluating the efficiency of MBBR and ASP in treating composite tannery wastewater. Kaldness K1 bio-media was used with 50% filling ratio in the laboratory setup of the MBBR and aeration was provided to both the setups. The average removal efficiency of COD was found to be $87.8 \pm 4\%$ for the MBBR and $80.6 \pm 4\%$ for ASP. The set-ups were also supplied effluent with varying Organic Loading Rates (OLR), and the MBBR was found to be more efficient than ASP, especially in higher OLRs.

Key Words: Moving Bed Biofilm Reactor (MBBR), Activated Sludge Process (ASP), Tannery Effluent, Sulphide, COD.

1. INTRODUCTION

The leather industry is a water and chemical intensive industry, where a number of complicated chemical and mechanical processes are involved. The composite wastewater produced from the leather industry is one of the most complex industrial effluents to treat and dispose. Water consumption in the tanning industry is maximum during the pre-tanning operations but a significant amount of water is consumed in the post-tanning stage (Chowdhury, 2015).

The tannery wastewater's composition is dependent on the process used in tanning operation (vegetable or chrome tanning). The effluent produced due to the vegetable process has a high BOD value and, hence a very high oxygen demand and the one coming from the chrome tanning has a high trivalent chromium concentration. Typically, the industrial outflow contains high load of organic matter, dissolved and suspended solids, organic nitrogen and ammonia, and possess high pH.

The soaking stage is responsible for around 50–55% of the total pollution load of the leather industry. In the liming stage, protein, skin, hair and emulsified fats are eliminated from the hides and skins, then they are released in the discharge which increases the total solid contents of the effluent.

The wastewater from de-liming and bating operations (tan-yard operations) contain a significant amount of sulphides, ammonium salts, and calcium salts. The effluent released by the aforesaid processes is slightly alkaline. The wastewater from the pickling and chrome tanning processes contain sulphuric acid, chrome, sulphates, sodium bicarbonate and chlorides. The wastewater released from the various processes has variable pH values, from very alkaline to very acidic with values ranging from 3 to 13 pH. Nearly 85% of all tanning operations are done using chromium salts due to its ability to add desirable properties to leather. Chromium exists commonly in two stable oxidative forms, trivalent chromium(III) and hexavalent chromium(VI). The discharge mostly consists of the stable chromium(III) but it can easily oxidise into the carcinogenic chromium(VI) which is extremely dangerous to living organisms and needs to be removed efficiently.

Traces of metals like Mg, Ca, Pb, As, Mn, Cd and Zn are also present in the tannery sludge along with small amounts of phosphate. Hence, the tanning industry is one of the most polluting industries worldwide and is struggling to reduce its environmental impact. The outflow has a very detrimental effect on plants, wildlife and people residing nearby. (Bhatnagar et al., 2013). Seed germination, growth and development of cultivable crops is adversely affected by tannery effluent concentration (Sinha et al., 2015).

The treatment of tannery wastewater is commonly performed via physical, chemical and biological methods and in various combinations of these methods. Biological treatment is the

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best option for the treatment of wastewater containing carbonaceous and nitrogenous organic matter i.e. high Chemical Oxygen Demand (COD) and Total Kjeldahl Nitrogen (TKN). The traditional biological treatment methods like Activated Sludge Process (ASP), Sequencing Batch Reactors (SBR), Up flow anaerobic sludge blanket (UASB), etc. have certain limitation towards the treatment of composite tannery wastewater because of various inhibitory substances. Out of biological methods, aerobic process is observed to be more cost effective and consistent in performance than anaerobic processes. The MBBR and SBR technologies are promising in the field of chrome tannery wastewater showing COD and TKN removal efficiency appreciably higher than conventional ASP system.

Application	Experimental details	Treatment performance	References
Municipal wastewater	Pilot scale	60–65 % COD removal	Andreottola et al. (2000)
Pulp mill effluent (kraft pulping)	Pilot scale	75 % BOD ₅ removal at 38 °C 63 % BOD ₅ removal at 65 °C	Embley (2001)
Chemical Industry wastewater	Bench scale (two reactors both having 1L volume)	90%SCOD removal	Ratcliffe et al. (2006)
Dairy farm waste water	Pilot and fullscale	40–95 % COD removal for pilot scale	Rusten et al. (1992)
Cheese	Fullscale	87–97 % COD removal	Rusten et al. (1996)
Thermo-mechanical Pulping whitewater	Lab. scale	60–65 % SCOD removal at organic loading rates of 2.5–3.5 kg SCOD m ⁻² d ⁻¹	Jahren et al. (2002)
Municipal waste water	Pilot scale	Filtered COD removal rate appeared to be proportional to OLR up to 8	Pastorelli et al. (1997)
Newsprint Mill (3 integrated mills)	Pilot scale	65–75 % COD removal	Broch-Due et al. (1997)

MBBR is vastly different from conventional suspended systems. The activated sludge within the reaction, is not suspended in the water to be treated, but adheres to a series of plastic material carriers, shows a high specific surface protection as the biomass exists in suspended flocks and in a biofilm attached to carriers. Such carriers are present in plastics, whose density is similar to the density of water, and they are suspended through the air inflow from the base of the aeration tank.

It can easily be operated at high organic loads and the possibilities of hydraulic overloading is extremely less. The first MBBR was developed with the help of Norwegian company Kaldnes Miljøteknologi (now Anox Kaldnes AS) at the Norwegian University of Science and Technology in Norway. MBBR was initially installed in 1989. The moving bed biofilm reactor uses floating plastic carriers (media) within the aeration tank to maximize the number of microorganisms available to treat the effluent. The microorganisms consume organic material and breaks them down. The media is responsible for the significant increase in surface area which helps the biological microorganisms to attach and grow in the aeration tanks. The increase in surface area of the tank reduces its footprint that is required to treat the wastewater. The media is continuously agitated by bubbles from the aeration system that releases oxygen from the bottom of the initial compartment of the aeration tank. When compared to conventional secondary treatment it is more effective and can reduce operational costs significantly. The MBBR media has an active surface area greater than 4000 m² which is up to 6 times greater than any other Activated Sludge systems presently used.

The MBBR is a biological process in which biofilm grow as suspended floc as well as attached biomass on the surface of carriers which move inside the tank through mixing or aeration (Lopez-Lopez et al., 2012). When compared to attached biomass processes, MBBR has several benefits such as very good mixing, effective mass transfer, the higher removal rate of pollutants, and relatively small area requirements (Chen et al., 2008; Leyva-Díaz et al., 2013). In the recent decade, MBBR reactors have been widely used for the treatment of different pollutants (Qaderi et al., 2018; Safwat, 2018).

The nature and characteristic of carrier media play a significant role in the performance of MBBR. For this, widely used several kinds of moving carriers media are HDPE, PUF, porous ceramic, polyvinyl alcohol (PVA), PP, polycaprolactone, and Kaldnes biofilm chip etc. (Deng et al., 2016; Leiknes and Ødegaard, 2007;). However in the lab scale, MBBR filled with 40% carriers has been widely used by previous researchers (Aygün et al., 2008; Zhang et al., 2013). Based on the literature, very limited attention has been given on the development of the specific configuration of novel biofilm carrier. Also, limited work has been done to enhance the performance of MBBR using an optimization tool for the treatment of wastewater.

Ødegaard et al. (1994) stated that the Moving Bed Bio Film Reactor (MBBR) process was developed in Norway during the

late 1980 and early 1990. Odegaard *et al.* (2000) suggested Biofilm carriers were the fundamental aspects of MBBR, for which the geometry, sizing and materials of construction had been optimized with great care to maximize performance. In the MBBR, surface area could be increased by adding a greater number of carriers to a reactor volume or by providing media with high specific surface area. Brinkley John (2001) selected the MBBR process due to the success rates of the process with regard to treatment of high strength wastewater for comparable pharmaceutical applications. The 0.5 million gallon per day MBBR process consisting of two reactors operated in series designed to treat an influent and effluent Biochemical Oxygen Demand (BOD₅) of 3,197 mg/L and less than 75 mg/L, respectively. Maurer M. *et al.*, (2001) carried out investigation on denitrification on a full-scale installation and a pilot plant for moving-bed biological treatment. Borghei *et al.*, (2004) studied using MBBR in treating different domestic and industrial wastewaters. Currently, there are more than 400 units of full scaled wastewater treatment plants based on this process. Åhl *et al.*, (2006) explained that the aeration system supplied enough oxygen to make the outer layers of the bio films created by aerobic bacteria and thus relatively rapid biodegradation. The bio films ultimately partially eventually got removed from the carrier and the detached components were carried by the fluid to the secondary clarifier for sludge separation.

Javid, A.H., *et al.*, (2013) investigated feasibility of improving and retrofitting traditional wastewater treatment plants at laboratory scale using Moving Bed Biofilm Reactor (MBBR) process. The obtained results regarding system efficiency indicated high ability of the system to withstand organic loading and was able to remain stable at a high food to microorganism (F/M) ratio. The experiment resulted in effluents with good quality at low HRTs and led to an average BOD₅ removal efficiency of nearly 88% during the operational period. MahmoudkhaniRouhallah *et al.*, (2012) made the study which aimed at treatment of waters that were contaminated with petroleum compounds. The results of the average effluent from each reactor concluded that denitrification process was preceded in the aerobic MBBR, filtration and activated carbon occurred and in pre-denitrification system in filtration, consumed most of the biodegradable organic matter. In case of formaldehyde, phenol and total petroleum hydrocarbon (TPH) parameters, they were removed in the pilot up to 96, 79 and 94%, respectively.

Another attempt was made, in response to earlier industrial applications, to apply MBBR as the chief biological treatment

process in the laundry industry in 2014. S. Awomira Bering *et al.*, (2014) conducted large, laboratory scale biological treatment tests of real industrial wastewater, generated in a large industrial laundry facility. This research sought to develop laundry wastewater treatment technology which included tests of a two-stage MBBR having two reactors filled with carriers Kaldness K5. The setup was realized in aerobic condition and fed with actual wastewater from the laundry retention tank.

A few research studies was performed so far on the moving bed biofilm process especially for tannery waste water treatment. Supriyo Goswami and Debabrata Mazumder (2014) envisioned a biological recovery of valuable chromium rather than chemical method to reduce the overall cost of tannery effluent treatment in view of rapid development in biological processes. However, biological methods were employed mainly for a few sub processes generating significant organic matter and without chromium, chlorides etc. This experiment is also aimed at further studying the advantages of implementing the MBBR technology on tannery effluent.

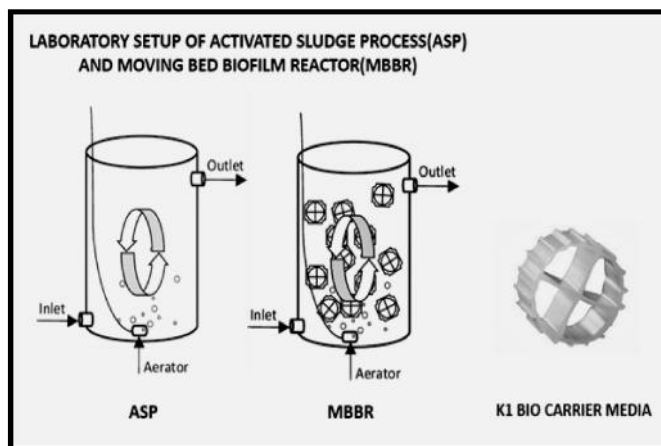
MATERIALS AND METHODS

Wastewater

The industrial wastewater used for this study was obtained from the effluent treatment plant of T.F.L. Quinn India Pvt Ltd , a leather manufacturing company. Samples of wastewater were collected at the exit of the primary treatment unit and transferred to our laboratory.

Experimental arrangement and operational conditions

The experiment was performed in a batch process in a series of beakers equipped with stirrers for stirring the tannery effluent. The MBBR reactor was filled with Kaldnesbiomedia K1 in order to operate with a bed/reactor volume ratio of 0.5. A diffuser placed at the bottom of the reactor was used for oxygen supply and mixing. The laboratory-scale ASP system also consisted of the storage tank, the bioreactor (1 L) and the settler and a diffuser placed at the bottom of the reactor was used for oxygen supply and mixing. Activated sludge from a municipal sewage treatment plant was used to inoculate the MBBR. The start-up period lasted about 1 month for biofilm growth on the biomedia. The experiment was carried out at a temperature of 30±2! and original effluent pH of 7.15. The effect of various controlling parameters such as contact time, pH, and loading rate was determined.



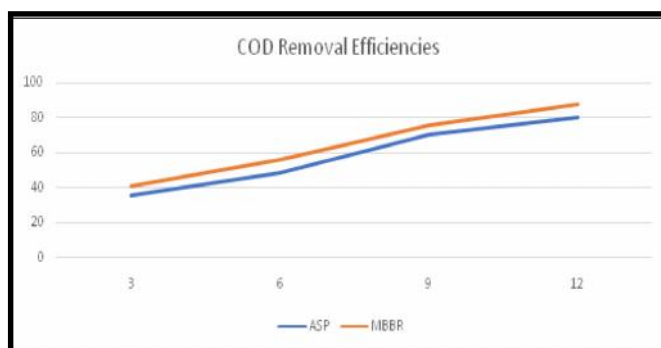
Analytical methods

Analytical procedures used for COD, BOD₅, NO₃, S²⁻, Cr(III) and Cr(VI) determinations were those outlined in Standard Methods. Single Beam Visible Spectrophotometer BSSBV-401 was used for measurement of NO₃, Cr(III) and Cr(VI). Digital scale (AS 220 R2 model manufactured by Rad Wag) with a precision of 0.001gram was used as a BOD measurement device (OXITOP RESPIROMETER). Air pumps (Air-8000 made by Resun Company, and AT- 703 manufactured by Atman) were used to supply demanded oxygen.

3. RESULTS AND DISCUSSION

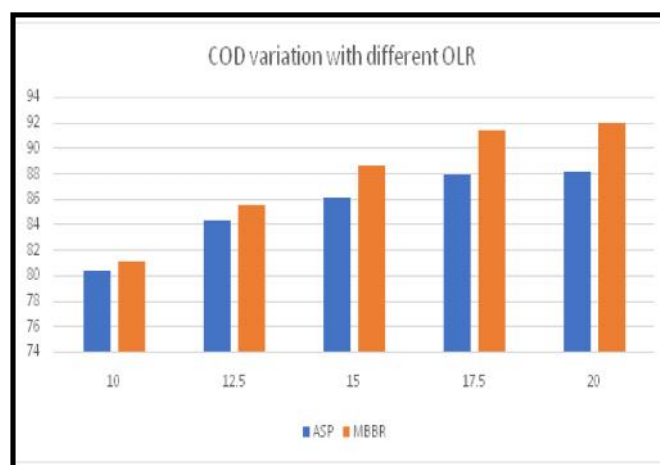
3.1 COD Removal Efficiency Varying With Different HRT

The removal efficiency of COD (Chemical Oxygen Demand) of composite tannery wastewater was studied using MBBR and compared to the Activated Sludge process which was also carried out under similar environmental conditions simultaneously. The samples had a average COD content of 25,000 ± 5000 mg/l. After treatment the MBBR and ASP had average COD removal efficiencies of 88.8 ± 4% and 80.6 ± 4 % respectively after the stipulated time of 12 hours. Maximum COD removal in both the processes was obtained after 9 hours.



3.2 COD Removal Efficiency Varying With Organic Loading Rate (OLR)

Variations in COD removal efficiencies were determined by changing the Organic Loading Rates applied to the reactor. At the minimum Organic Loading Rate of 10 gCOD/m²d the average COD removal efficiency over 5 days was found to be 81.1% in the MBBR and 80.3% in the ASP. Similarly, for the OLRs 12.5 gCOD/m²d, 15 gCOD/m²d, 17.5 gCOD/m²d, 20gCOD/m²d the average removal efficiencies for the same time period in the MBBR were 81.1%, 85.5%, 88.56%, 91.38% and 91.94% respectively and in the ASP were 80.3%, 84.3%, 86.1%, 87.9% and 88.19% respectively



Conclusion

MBBR and AS setups showed similar results to previous studies done in other industries. The MBBR proved to be a more competent biological wastewater treatment process across all HRTs and OLRs studied within this experiment. Although the results of present study show that MBBR is a very effective treatment process for the removal of COD from tannery wastewater, it still could be further modified to have an even more efficient biological treatment system. The results clearly indicate that Moving Bed Biofilm Reactor should be used instead of Activated Sludge Method with more effectiveness for organic matter removal from tannery wastewater with very meagre increase in costs. The quality of effluent from MBBR system is also within the permissible limits for discharging effluent in the water resource as well as for land disposal (CPCB, 2015).

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LEATHER EXPORTERS TAP NEW MTS, SEE DEMAND GROWING



Leather exporters from India have penetrated new markets such as the US, Canada, Russia Japan, Australia and South Korea to tap increasing demands in these countries and boost the country's overall exports, CLE said on Friday.

Council for Leather Exports (CLE) Chairman PR Aqeel Ahmed said they have organized Reverse Buyer-Seller Meet here to showcase products to global companies.

Besides, the traditional market of Europe, the industry has penetrated many potential markets like the US, Canada, Russia, Japan, UAE, Korea and Australia ,” he said in a statement. He said the Council has been undertaking several export promotion events in both Europe and other major and potential markets to expand market share.

“During 2019-20, we are organizing 15 such marketing events and have planned 25 marketing events during 2020-21, he said adding that in the Reverse Buyer-Seller Meet here, as many as 55 overseas buyer from 26 countries participated.

PUSH FOR MSME TO JOIN ECOMMERCE EXPORTS



The government is in talks with ecommerce firms to help sell goods produced by small enterprise in remote parts of the country around the world via online marketplace and to identify district-wise products that can be promoted globally, amid sagging exports.

“The idea is to increase overall exports, especially of small enterprise which are located in remote areas,” said an official aware of the details. “Ecommerce platform are a good way to do so Discussions are on.”

The move comes ahead of the government finalizing the ecommerce policy. The government is urging ecommerce platform to push exports and ensure that smaller units are included ,and not just mainstream companies, the official added.

Exports have been hovering around \$300 billion since 2011-12. In the April- December period, exports fell 1.96 % year on year to \$239.29 billion while imports fell 8.9% to \$357.39 billion, leaving a trade deficit of \$118.10.

In FY 19, total trade deficit was a record \$176.42 billion. The government had in 2018 increased the value limit for availing export incentives under the Merchandise Export from India Scheme (MEIS) to Rs 5 lakh per consignment sold via ecommerce platform, courier or foreign post offices from Rs 25,000 earlier for handloom products, books and periodicals, leather footwear, toys and customized fashion garments .

India exported products worth \$1.2 billion via the ecommerce channel in 2018-19, according to Local Circles. About 75,000 sellers or exporters currently engage in ecommerce.

(Source : The Economic Times – 30/01/2020)

NOW COMFORT FOOTWEAR TO ADORN ARMYMEN; FDDI SETS UP INSTITUTE



Footwear Design and Development Institute (FDDI) in Jodhpur is setting up an Institute of Excellence (IoE), the country's first unique research and develop, to develop specialized shoes for Indian Army posted in extreme conditions like deserts in Rajasthan, Ladakh, mining areas and border areas.

The Union Ministry of Commerce and Industry has announced in 2017 to setup seven institute of FDDI in Jodhpur (safety and medicated), Noida (material research and testing, UP) Rohtak in Haryana (sports shoes), Kolkata (leather goods), Chennai (material testing and research), Rai Bareilly (retailing) and Hyderabad (design).

Neeraj Pachar, spokesperson of FDDI in Jodhpur told The Statesman that the construction work of the Centre of Excellence (CoE) building has just started from this month and within a year work will be completed. The Central government has already sanctioned Rs 126 crores for setting up these seven projects, out of which FDDI, Jodhpur has been provided a grant of Rs 20 crores.

The building is being set up in sprawling 25 acre picturesque campus in Mandore. "We have already tied up with University of Nottingham in United Kingdom for training and designing of footwears. Our defence personnel has to move in extreme weather condition like the desserts in Jaisalmer or Ladakh

Here in this Research and Development (R&D) laboratory we will try to make both hardy and at the same time comfortable shoes for easy movement of our soldiers," he added. Mahesh Kumar, senior faculty member of FDDI, Jodhpur said that besides safety shoes also medicated shoes will be developed.

"Speciality shoes for health related problems like for diabetic patients, blister foot, other orthopedic medical problems etc will be addressed and developed. Besides safety footwear research, the institute will also undertake medicated footwear research.

(Source : The Statesman – 20/12/2019)

YOUNG LEATHER SCIENTIST AWARDS 2020 ANNOUNCED BY IULTCS

The 2020 YLSG will have three monetary grants in the following areas: Basic Research, Machinery/Equipment and Sustainability/

Environmental. Please submit the applications to Dr Michael Meyer, IUR Chair at michael.meyer@filkfreiberg.de.

- ◆ Basic Research Grant - € 1,500 Grant by IULTCS
- ◆ Machinery/Equipment - € 1,000 Grant by Erretre, Italy
- ◆ Sustainability/Environmental - € 1,000 Grant by Leather Naturally

Details may be available by clicking on the link below :

★ <http://iultcs.org/research-iur.php>

★ <http://iultcs.org/pdf/YLSG-2020-Overview.pdf>

DUTY ON IMPORTED FOOTWEAR HIKE; SPL ATTENTION TAKEN TO PUT MEASURED RESTRAINT ON IMPORT OF ITEMS PRODUCED BY OUR MSMEs WITH BETTER QUALITY: FM



In the Union Budget 2020-21, the customs duty on imported footwear has been proposed to be hiked. Finance Minister Nirmala Sitharaman, who cut short her Budget speech after feeling unwell towards the end.

In her budget speech, the finance minister said, "Labour intensive sectors in MSME are critical for employment generation. Cheap and low-quality imports are an impediment to their growth."

She said special attention has been taken to put measured restraint on import of those items which are being produced by our MSMEs with better quality. Keeping in view the need of this sector, customs duty is being raised on item like footwear.

LEATHER RESEARCH INDUSTRY GET TOGETHER (LERIG - 2020) : A REPORT



53rd Leather Research Industry Get Together (LERIG - 2020) was organized by CSIR - Central Leather Research Institute during 28 – 31st January' 2020 at the Triple Helix Auditorium, CSIR-CLRI, Chennai.

The 53rd LERIG 2020 was special as AC Tech of Anna University, the Academy partner of CLRI was observing its Platinum Jubilee. In celebration of the Platinum Jubilee of Academy of Leather Technology, the theme for LERIG 2020 selected as "Research Academy Industry for Sustainable Ecosystem (RAISE) for Leather". Synergy among them was widely celebrated. LERIG 2020, enshrines a new mode of working. Working together seamlessly and as one connected mind of three bodies was the philosophy behind RAISE for Leather.

It was unfortunate this year also, to be witness of the fact that the memorial lectures during Inaugural session, to remember the Father of Indian Leather Industry, Prof. B. M. Das has been censored by the organizers.

Synopsis of the 3 days programme was as follows :-

Day 1 :

- ❖ Inaugural session

Day 2 :

- ❖ Technical Session - I
- ❖ Technical Session - II

Day 3 :

- ❖ Open Day Session

Day – 1 : (Inaugural session)

Welcome address was delivered by Dr K J Sreeram, Director, CSIR-CLRI followed by Presidential address from Shri P R Aqeel Ahmed, Chairman, CLE, The Chief Guest's address from Dr K Kasthurirangan, Former Chairman, ISRO, Guests of Honour's address by Prof MK Surappa, Vice Chancellor, Anna University and Dr. M Rafeeqe Ahmed, President, AISHTMA.

The Vote of thanks was offered Dr. J. Raghava Rao, Coordinating Convener, LERIG 2020





Day – 2 (Technical Session - I)



Subject of the session was **“Leather and Leather Products Education”**. The session was chaired by Shri Habib Hussain, Director, AVT Group.

- ❖ Dr J Raghava Rao, Chief Scientist, CSIR-CLRI delivered the Lecture on “75 Years of Excellence in Leather Education”
- ❖ Dr M Aravendan, Professor, NIFT delivered the Lecture on “Design and Technology Education for Footwear

& Leather Products Industries - Present Trends, Challenges & Future Directions”

- ❖ Dr Swarna V Kanth, Senior Principal Scientist, CSIR-CLRI delivered Lecture on “Empowering Leather Sector by Skilling”

After Q & A session, followed by presenting mementoes to all the speakers and chairs, Mr. Habib Hussain offered thanks to all the speakers and the audience and asked to join in a Tea Break.

Day – 2 (Technical Session - II)





JILTA
Since 1950

Subject of the session was “**Sustainability of Leather Sector**”. The session was chaired by Dr B Chandrasekaran, Former Director, CSIR-CLRI.

- ❖ Shri A Sahasranaman, Vice-Chairman, CEMCOT delivered Lecture on “Sustainable Development of Leather Value Chain in India”
- ❖ Dr V Vijayabaskar, Chief Manager, M/s Balmer Lawrie & Co delivered Lecture on “New Chemistry for Sustainable Leather Chemicals”
- ❖ Shri M Prasanna, Assistant Manager, M/s Stahl India Pvt Ltd delivered Lecture on “Chemicals for Sustainable Leather Manufacture”
- ❖ Shri P Rajasekaran, Head of BU (India) M/s Lanxess delivered Lecture on “Green Beamhouse – A Toolbox for Cleaner Wastewater”
- ❖ Shri TR Sankaranarayanan, Associate Professor, NIFT delivered Lecture on “Measures

for sustainable development in Leather Products Industries”

After Q & A session, followed by presenting mementoes to all the speakers and chairs, Dr. Chandrasekaran offered thanks to all the speakers and the audience

The program came to end with Lecture from Dr. K. J. Sreeram evaluating the LERIG and its future followed by Lunch

Day – 3 (Open Day Session)

This was an Open Day for the visit of Leather, Leather Products and Leather Chemicals Manufacturers to CSIR-CLRI Techno Exhibition and for one to one discussions with Scientists of various departments of CSIR-CLRI.

53rd LERIG - 2019 programme came to conclusion with offering Vote of Thanks by Dr. Raghava Rao Convener of LERIG-2020 followed by National Anthem.



Read and Let Read :-

JILTA

PRELIMINARY UNDERSTANDING OF THE COSMOS

Dr. Buddhadeb Chattopadhyay

Former Principal of Govt. College of Engineering & Leather Technology, Kolkata & Principal, MCKV Institute of Engineering, Liluah, Howrah, W. B.



Imagine a small pin-point having enormous density of about 10^{90} kg/mL and enormously hot 10^{32} K. Naturally, such a point cannot be stable. The only option left for it is to explode. It exploded with tremendous voracity. This is called as Hot Big Bang that happened at about 15.0 Billion years ago.

All tiny building blocks of matters, energies escaped in all directions with a tremendous velocity. Four forces that we know of a) strong nuclear, b) Weak nuclear, c) Coulombic and d) Gravitational forces all glued together. This explosion helped the formation of particles, antiparticles and consequently formation and annihilation. Nothing specifically can be said what happened during the very small span of Planck's time at that moment. Planck's time = $[Gh/c^5] = 1.33 \times 10^{-43}$ s. which is infinitesimally small duration, in other words, between $t = 0$ to $t = 10^{-43}$ s. (one tenth trillion-trillion-trillionth of a second) after beginning, and before the universe grew to 10^{-35} m. (one hundred billion-trillion-trillionth of a meter).

We, nonetheless, expect that by the end of Planck's era, gravity wriggled out loose from the others, still unified forces of nature, achieving an independent identity nicely described by our concurrent theories. As the universe aged through 10^{-35} s., it continued to expand, diluting all concentrated three energy soup, and what remained of the unified forces split into the "electroweak" and "strong nuclear" forces. Later still the electroweak force split into two a) electromagnetic and b) the weak nuclear forces, laying bare the four forces we have come to know and love: with weak nuclear force controlling radioactive decay, the strong nuclear force binding the atomic nucleus, the electromagnetic binding the molecules and gravity binding the bulky mass. Amongst all of them gravitational force is pitifully weak as compared to its kinfolks, which becomes evident when a huge mass, able to bend the space come around. Most of the day to day experience that we face are Coulombic in nature.

A trillionth of second passed now from $t = 0$. All the while, the interplay of matter in the form of subatomic particles and energy of photons (massless vessels of electromagnetic energy that are as much wave as they are particle) was incessant. The universe was hot enough for these photons to spontaneously convert their energies into matter-antimatter particle pairs, which immediately annihilate, returning back their energies to photon. Yes, antimatter is real and not an abstraction. These transmogrifications are entirely prescribed by the Einstein's famous formula $E = mc^2$, which is a two-way recipe how much matter our energy is worth; and also, how much energy our matter is worth. The c^2 is the speed of the light in vacuua squared – a huge number which, when multiplied by the mass reminds us how much energy we can actually get in this exercise.

Similarly, before, during or after the strong and electroweak forces parted company, the universe was a seething soup of quarks, leptons and their antimatter siblings, along with bosons, the particles that makes their (quarks) interactions happen. None of these particles were thought to be divisible into any smaller or more basic, though each comes with several variants. The ordinary photon belongs to Boson family. There are two kinds of particles antisymmetric (asymmetric), those follow Fermi-Dirac quantum statistics (all having fractional spin quantum numbers like electron, proton etc.; while the others are symmetric, those follow Bose-Einstein quantum statistics (all having principal spin quantum numbers, like photon etc.). The leptons, most familiar to non-physicists are the electrons and perhaps the neutrino, and the most familiar quarks are.....well, there are no familiar quark. Each of their six subspecies have been assigned abstract names that serves no real philological, philosophical or pedagogical purpose, except to distinguish one from the remaining five siblings: up and down, strange and charmed, top and bottom – these are the names. The word lepton derives from Greek leptos means light or small. Quarks have however far more imaginative origin.

Quarks are quirky beasts. Unlike protons, each of which with an electrical charge + 1 and electrons having – 1, quarks have fractional electrical charges that come in thirds. We can never catch a lone quark all by itself; it will always be clutching other quarks nearby. In fact, the forces that keep two or more of them together grows stronger the more we separate them – as if, they are bound by some invisible subnuclear rubber band! Separate quarks enough, the rubber band snaps and the store energy summons $E = mc^2$ to create new quark at each end, leaving us back to square with frustration!

During the quark-lepton era, the universe was dense enough for the average separation between unattached quarks to rival the separation between attached quarks. Under those conditions, allegiance between adjacent quarks could not be unambiguously established, and they moved freely amongst themselves, in spite of being collectively bound to one another. The discovery of this state of matter, a kind of quark cauldron was reported for the first time in 2002.

Strong theoretical evidences suggest that an episode in the early universe, perhaps during one of the force splits, endowed the universe with remarkable asymmetry, in which particles of matter barely outnumbered particles of antimatter: by about a billion-and-one- to a billion. That tiny difference in population would hardly get noticed by anybody amidst continuous creation, annihilation and recreation of quarks and antiquarks, electrons and antielectrons (called positrons), neutrino and antineutrino. The odd man out had oodles of opportunities to find somebody to annihilate with, and so did everybody else batting them to and fro as they interact with one another.

But this freedom was abruptly ceased when the temperature of the universe fell below 3,000-degree Kelvin (about half the temperature of the Solar surface), and all the free electrons combine with nuclei. The marriage leaves behind a ubiquitous bath of visible light, for ever imprinting the sky with a record of where all matters was in that moment, and completing the formation of particles and atoms in the primordial universe.

For the first billion years, the universe continued to expand and cool as the matter gravitated into a massive concentration, which we call galaxies. Nearly a hundred billions of them formed, each containing hundreds billions of stars that undergo

thermonuclear fusion in their cores. Those stars with more than ten times the mass of the Sun achieve sufficient pressure and temperature to manufacture dozens of elements heavier than hydrogen, including those that compose planets and whatever life that may thrive upon them. These elements would be stunningly useless were they to remain within those cosmic nuclear factories, where they were formed. But high-mass stars explode, scattering their chemically enriched guts throughout the galaxy. After nine billion years of such enrichment, in an undistinguished part of the universe (the outskirts of the Virgo supercluster) in an undistinguished galaxy (the Milky Way) in an undistinguished region (the Orion arm), the undistinguished star (the Sun) was born.

Though the fact remains worthwhile to note that During the small niche of cosmic history, from about 10 – 500 s., Universe acted like a homogeneous fusion nuclear reactor. Containing large amount of D and He nuclei. Within a span of 8 minutes of Big Bang, almost 25% of the mass of the Universe was converted to He nuclei and nearly 75% as H nuclei. A small fraction of about $10^{-3}\%$, were converted to D and $10^{-6}\%$ to Li nuclei. Even today the element content in the oldest or newest Star is 25% He. Remarkably, D content remained the same in the entire interstellar cloud ($10^{-3}\%$). Stars can destroy D, but cannot form them in appreciable amount since the temperature is excessively high in them. The Big Bang is believed to be the sole source of D in the Universe now. Emission spectroscopic analysis of lights found on earth emitted by meteorites, comets, surface of planets and satellites in the solar system showed a unique parity. Hydrogen is the most abundant element amounting about 88.6% of all atoms, He about 11.3% put together hydrogen and He comprises 99.9% of all atoms and about 99% of the mass of the Universe!

The gas cloud from which the Sun was born contained sufficient supply of heavy elements to coalesce and spawn a complex inventory of obtaining objects that includes several rocky and gaseous planets, hundreds of thousands of asteroids and billions of comets. For several hundred million years, large quantities of leftover debris in wayward orbits would accrete onto larger bodies. This occurred in the form of high speed, high energy impacts, which rendered molten the surfaces of rocky planets, preventing the formation of complex molecule.



JILTA
Since 1950

As less and less accretable matter remained in the solar system, planet surfaces began to cool. The one we call earth formed in a kind of Goldilocks zone of the Sun, where oceans remain largely in liquid form. Had earth's orbit be closer to the Sun, the entire water of the ocean would have evaporated.

Coming back to the slightest differences in the initial population (by about a billion-and-one- to a billion) between matter and antimatter let us reexamine the issue. As the cosmos continued to expand and, therefore, cool, growing larger than the solar system, the temperature dropped down. Now a millionth of a second passed since the beginning.

This tepid universe was no longer hot enough or dense enough to cook quarks, and so they all grabbed the dance partners, creating a permanent new family of heavy particle called hadrons (from Greek "hedros" means thick). That quark-to-hadron transition soon resulted into the emergence of protons and neutrons as well as other, less familiar heavy particles, all composed of various combination of quark species. In Switzerland (back to earth) the European Particle Physics Collaboration (the European Centre for Nuclear Research – CERN) used a large accelerator to collide beams of hadrons in an attempt to re-create these very conditions. The largest man-made machine in the World is sensibly called the Large Hadron Collider.

The slight matter-antimatter asymmetry affecting the quark-lepton soup now passed to the hadrons, but with extraordinary

consequences. As the universe continued to cool, the energy available for the spontaneous creation of basic particle dropped. During the hadron era, ambient photons could no longer invoke $E = mc^2$ to manufacture quark-antiquark pairs. Not only that, the photons that emerged from all the remaining annihilations lost energy to the ever-expanding universe – leaving a billion photons in their wake – a single hadron survived. Those loners get to have all the fun; serving as the ultimate source of matter to create galaxies, stars, planets and petunias.

Without about a tiny billion-and-one- to a billion imbalance between matter and antimatter, all mass in the universe would have self-annihilated, leaving cosmos made of photons and nothing else – let there-be-light scenario.

Nothing can be as thrilling in cosmology and in human common sense (by the way, which is not so common), that an infinitesimally small difference in numerical count of particle and antiparticle in the universe (by about a billion-and-one- to a billion), can create such an enormous diversity with galaxies, stars, planets, even biological diversity. All of us in the universe has one thing common, which unifies all biotic or abiotic components in the universe and that is all are made of star dusts.

[Source : Nell de Grasse Tyson, "Astrophysics for People in a Hurry", W.W. Norton & Co, NY (2017).

Eric Chaisson & Steve McMillan, "Astronomy: A Bigginer's Guide to the Universe", Perason India ND, (2017)]

Read and Let Read :-

JILTA

Solidaridad ASIA

Solidaridad Network is a global civil society organization providing efficient, scalable and economically effective and innovative sustainability solutions in various agricultural and industrial commodities such as:



Solidaridad Asia has more than 320 sustainability experts operating from 26 offices in 9 countries and has also pioneered development and implementation of national sustainability standards in the region.

Solidaridad initiated its efforts in the leather cluster in late 2017 with the Kanpur-Unnao leather cluster. Within 2 years of inception, we have started our efforts in Kolkata and Bangladesh Leather clusters. Through tailor-made programs, Solidaridad has tried to address the following components:

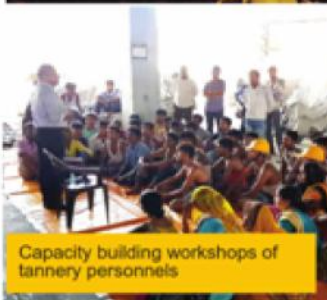
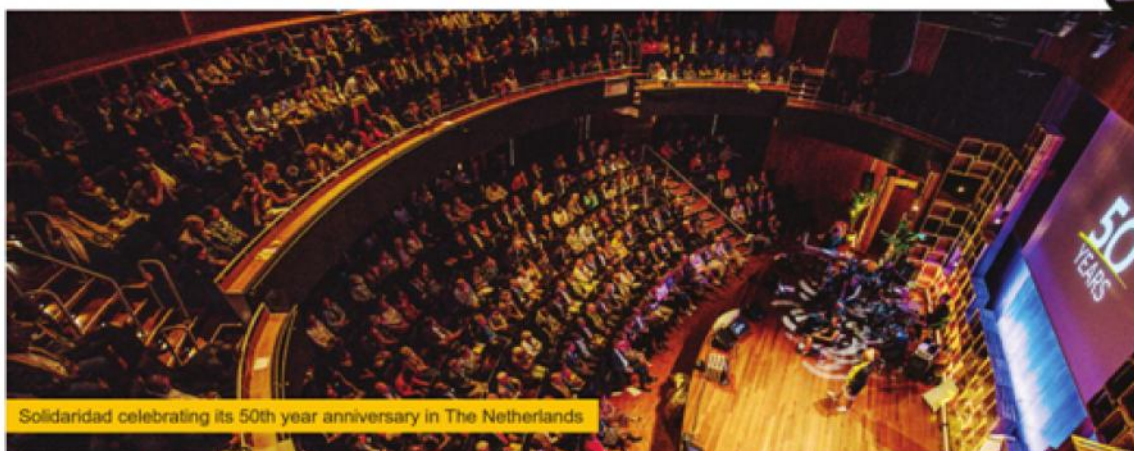
KEY COMPONENTS



SUSTAINABLE WAY FORWARD IN THE LEATHER CLUSTERS ACROSS INDIA



Solidaridad ASIA



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Kanpur Welcomes 'Centre of Excellence' to Drive Sustainable Transformation in Leather Industry



On 06 February 2020, Kanpur in Uttar Pradesh, India, welcomed a facilitation centre to drive sustainable transformation in the leather industry. The state-of-the-art facility, which was launched at the Kanpur Leather Complex in Banthar by His Excellency Marten van den Berg, Ambassador of the Netherlands to India, is a part of Dutch funded program 'Pollution Prevention and Efficient Water Use in Kanpur-Unnao Leather Cluster' aimed at introducing the tanneries to global best practices for optimum water usage and recycling, and prevention of pollution through effluent discharge.

'Centre of Excellence', led by Stahl, is an initiative under this programme directed at improving the efficiency of tanneries through knowledge-sharing on sustainable practices and innovative, eco-friendly technologies. The state-of-the-art facility is designed to build the capacities of tannery workers, supervisors and other relevant stakeholders on novel technologies, globally-recognised eco-friendly practices, chemical-use safety and management, shop-floor management and other related areas of expertise as per the global leather industry standards.

The Centre, was launched on 06 February 2020 and was inaugurated by His Excellency Marten van den Berg, Ambassador of the Netherlands to India, in the presence of Mr. Huub van Beijeren, CEO, Stahl B.V.; Mr. Tuncay Deriner, Managing Director, Stahl India; Mr. Gert van der Bijl, International Program Coordinator, Solidaridad; Mr. D.P. Mathuria, Executive Director, National Mission for Clean Ganga, Government of India; Mr. Tatheer Zaidi, Senior Programme Manager, Solidaridad Asia; Mr. Mukhtarul Amin, Former Chairman, Council for Leather Exports; Mr Jawed Iqbal, Regional Chairman, Council for Leather Exports; Dr.S. Sundarapandiyam, Scientist, CSIR-CLRI; Ms Maya

Acharya, Senior Policy Adviser, Embassy of The Netherlands in India; Mr Sharad Thadani; Honorary Consul, Kingdom of The Netherlands in Uttar Pradesh and other national as well as other international dignitaries and key industry representatives. Around 200 people from the leather fraternity attended the event.

At the launch event, His Excellency Marten van den Berg said, "The 'Centre of Excellence' is the future of Indo-Dutch cooperation — jointly building on each other's experience and knowledge to innovate, cooperate, facilitate, and introduce more environmentally friendly alternative technologies at tanneries. The mission would be to educate industry stakeholders on cleaner business processes and fewer discharges into the water. The facility would be instrumental not only in training tannery staff but also making them familiar on leather manufacturing, best practices, chemicals management, safety and health." He also mentioned that the Dutch government's investment of €2.3 million Euros to the project reflects its commitment towards Indian government's vision to clean the holy river Ganga under Namami Ganga Initiative.



"The Netherlands and India make a great team to achieve SDG6 and SDG17, and both the countries emphasise the value of water globally, not just as an economic asset but also in the light of social, cultural and environmental importance," His Excellency added.

Mr. D.P. Mathuria, Executive Director, National Mission for Clean Ganga, Government of India, said, "It is encouraging to see businesses and civil society organisations coming together under the ambit of this meaningful project to contribute significantly in the Clean Ganga mission. With 'Centre of Excellence' coming into operations, hope the industry is able to benefit from the facility and implement global best practices in their production process."

Mr. Huub van Beijeren, CEO of Stahl, mentioned, "The partnership with Solidaridad is a great opportunity to drive positive change in one of India's leading leather clusters. Now, with the opening of the 'Centre of Excellence', we are taking an important step towards reducing the environmental footprint and improving working conditions in the Kanpur leather cluster."

Beijeren reiterated that Stahl's approach towards a more sustainable and transparent leather industry is built on promoting collaboration throughout the supply chain, and the 'Centre of Excellence' is a result of an effective collaboration.

The tanneries, especially the small tanners, in the Kanpur leather industry face stringent penalties from government and regulatory bodies, such as UP Pollution Control Board, for discharge of pollutant by-products (of leather manufacturing) into the river Ganga — to the extent that more than 200 tanneries in the region have suffered lockdown for months altogether leading to insurmountable losses both in terms of business and employment.



The 'Centre of Excellence' under the 'Pollution Prevention and Efficient Water Use in Kanpur-Unnao Leather Cluster' aims to educate and equip tannery workers with water-efficient, environment friendly technologies and processes in leather manufacturing. The Solidaridad-led consortium strongly believes that environmental action and economic growth must work in tandem to realise constructive developments in both realms. In this respect, one of the singular goals of 'Centre of Excellence' would be to address the issue of water pollution in Ganga while ensuring sustainable economic development of the industry by imparting know-how of good practices on tanning and related processes to the respective stakeholders.

Dr. Shatadru Chattopadhyay, Managing Director, Solidaridad Asia, commented, "The center dedicated to the leather industry stakeholders of Kanpur would showcase the state-of-the-art Dutch technologies for water-efficient and eco-friendly tanning. The center would provide capacity building support to the tanners to reduce pollution of the river Ganga cost-effectively. The present project also showcases how a serious ecological challenge could be solved in a business-wise viable way using a public-private partnership model in India."

Mr. Tatheer Zaidi, Senior Programme Manager, Solidaridad Asia, said, "It has been a great journey in the last three years with the right kind of partnership that has led to a meaningful consortium. We have received immense support from all stakeholders, including industry associations, government authorities and national and international partners. We have observed several tangible outcomes in the form of a variety of pilot demonstrations proving techno-commercial viability in tanning processes."

Mr. Mukhtarul Amin, Former Chairman, Council for Leather Exports, and Chairman of Kanpur Leather Complex representing the industry stated, "We are thankful for this unique facility established by Stahl, wherein tanners, workers, supervisors can be exposed to the global best practices and seek concrete solutions to the challenges in their tanneries."

Mr Tuncay Deriner, Managing Director, Stahl India, thanked the key National and International dignitaries, partners and stakeholders from the leather Industry for their continued support in the project and said, "The doors of the center are now open for the sustainable way forward." He concluded by saying that "if it can be imagined, it can be created!"

All the dignitaries and stakeholders of leather industry, tanners visited the centre. Stahl showcased the mini-model tannery with Zero liquid discharge functioning, operating and complying all the norms with eco-friendly practices.

INDIAN LEATHER PRODUCTS ASSOCIATION

The Indian Leather Products Association (ILPA), established in 1987, is a premiere representative body of manufacturer-exporters of superior quality leather and leather products with head office in Kolkata and a regional office in Chennai.

IMPORTANT ACTIVITIES OF ILPA :

- Brings together manufacturer & merchant exporters on a common platform.
- Stimulates growth & development of the industry as a whole.
- Promotes export of leather & leather products.
- Develops & maintains symbiotic liaison with international trade bodies & Chambers of Commerce.
- Organises trade delegations to international fairs & seminars.
- Organises various Seminars/workshops both the benefit of its members and industry.
- Promotes International Fairs and RBSMs like IILF Kolkata, ILPA Buyer Seller Summit.
- Organises the ILPA SHOW : Leather on the Ramp , one of the most prestigious and sought after Fashion event in Eastern India.
- Closely involved in setting up the Calcutta Leather Complex (CLC).
- Runs and manages the Freya Design Studio : a CLE award winning Design Studio both for leather goods and footwear.
- Runs and manages the ILPA INFRASTRUCTURE DEVELOPMENT FOUNDATION (IIDF) – a state of the art Common Facility Centre.
- Imparts Skill Development Training through ILPA Technical School.



Common Facility Center



Design Studio



CAD CAM Center



ILPA Technical School



Indian Leather Products Association

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Ladies Hand Bags, & Purses, Men's Bag & Wallets, Belts, Hand Gloves (Fashion & Industrial), Garments, Luggage & Holdalls, Portfolio, laptop bags, iPod Covers, small leather goods & Accessories



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The Economics of the Raw Materials used and Improved Techniques for the manufacture of Brown Picking Bands

A. S. Naik

Small Industries Service Institute, Bombay

The combination Sulphur, Oil and Vegetable Tanned picking band is popularly known as double oak Tanned or brown picking band in the market.

RAW MATERIALS

(Availability, Grading, Statistics, Economic Implications of flay cuts and Improvements).

In India Buffalo Hides are the only suitable indigenous raw material available. Imported ox-hides from North of Italy and South of Germany are famous for their use in the manufacture of Belting and Picking Bands.

Being the chief source of milk in our country, buffaloes are the best fed of all the Indian live-stocks. Hence the hides derived are the best raw materials in India. The latest production figures for buffalo hides are not available, the figures available from the Report on Marketing of Hides, Second Edition being for the year 1948. Today due to restriction on the slaughter the figures will not exceed the ones discussed below.

Madras, Madhya Pradesh, Uttar Pradesh, Bombay and Bihar account for nearly $\frac{3}{4}$ th of the total production of buffalo hides. In total we produce about 48 lakhs Buffalo hides annually out of which 12% or a little less than 6 lakhs are slaughtered hides. The slaughtered hides come mainly from Madras, West Bengal, Uttar Pradesh, Bihar, Bombay, Travancore-Cochin and Mysore States. The slaughtered buffalo production for the rest of our country is negligible.

The slaughter is done for beef but due to restriction on the number of heads to be killed per slaughter house, only the heaviest animals are killed to get more beef. Exact statistical data regarding the production of Buffalo for different weight ranges is not available but it may be roughly divided as follows as per green slaughtered weights :—

Below 50 lbs. Green	..	..	1½ lakhs
50 lbs. to 60 lbs.	..	..	1 lakh
60 lbs. to 70 lbs.	..	..	1 "
70 lbs. to 80 lbs.	..	..	1 "
Suitable for Picking Bands : 80 lbs. to 90 lbs.	..	..	1 "
" " Pickers : Above 90 lbs.	..	..	½ "
Total annual production			6 lakhs

Hides upto 75 lbs. Green Wt. are totally uneconomical for making picking bands due to thinness. The hides in weight range 75 to 80 lbs. may be suitable



for picking bands provided there is improvement in the take off. The hides above 90 lbs. are always bought by the picker manufacturer who requires the heaviest stuff and is in a position today to offer the best prices in the market. This leaves only 1 lakh hides to the picking bands manufacturer annually and from this he has to select hides free from any brand marks and deep flay cuts and holes. This is surely far from satisfactory and people to whom it may seem we are self sufficient in buff hides are not so correct.

Buff hides are good raw material for picking bands. Even after conceding to the fact that they have a loose structure as compared with the imported ox hides, the latter are twice as costly as buffs. Another fact is that our buffaloes are almost free from warbles whereas 50% of the imported ox are sometimes full of warbles, and this has a direct effect on the life of a picking band. The hides are much more free from any grain defects and give a good substance.

Flay Cuts: The major drawback seems to be the poor take off and this needs a lot of improvement. The hides from weight range 75 to 80 lbs. can easily be brought for use in picking bands, provided there are no cuts. Flay cut is a continuous headache and accounts for most of the higher cost of production. Picking bands have to be completely free from cuts and only due to cuts about 33% of cut lengths in the production get little or no price. The cost of these picking bands are naturally borne by the full lengths and hence this leaves only little price difference with the imported quality.

Imported ox-hides being from the best fed and treated animals give a naturally close texture of even substance and even at the backbone they give a thickness of 6 mm. The wastage in this case is almost nil. Only 5% cut length are got from these hides and that too from the borders due to irregular shape which is unavoidable. The imported ox-hides also give more yield due to regular shape and thickness. The final picking band is 20% more durable than buff one and therefore finds more demand in the market even with a price difference of (Re. 1/- to Rs. 2/- per lb.) 15% to 30%. As long as the flay cuts exist there will be a demand for import of ox-hides.

Another very important observation regarding flay cuts is that they are more in number for lighter raw material and same in depth for all weight ranges. This is why only hides above 80 lbs green are suitable for picking bands as most of the cuts can be eliminated during the shaving operation. Hides from weight ranges 75 to 80 lbs., though being most suitable for picking bands are useless due to cuts which cannot be eliminated in shaving. If we can get rid of the cuts completely we can make available about $\frac{1}{2}$ lakh hides annually for sufficiency in our raw material for picking bands. Also there will not be more than 5% cut lengths and thus the final price difference in picking bands with imported material will be in favour of indigenous picking bands.

Improvements: The report of the F.A.O. of U.N. on the "Flaying and Curing of Hides and Skins as a Rural Industry" is an extensive study on the subject. The different recommendations in the publications must be immediately and vigorously adopted in our country. The method of flaying hides with compressed

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air oscillating machine can be very easily adopted at least in India's big slaughter houses. The blowing in air method described for flaying skins is also very interesting and can be adopted even in our villages. The simple methods described for hoisting the animal can also be adopted in our villages. As long as we cannot get rid of the flay cuts we will never be able to firmly stop the import of ox-hides.

Bellies & Offal: One more problem with the indigenous raw hides is the disposal of offal. Unfortunately in India there are no tanneries, who do only the offal tannage. In foreign countries where there are a number of tanneries doing only offal tannage, it is possible for the raw hide dealer to sell the hides into butts and offal separately. The Indian tanner has to buy whole hides and has to either sell the cuttings in raw or tan it by himself. Tanning of this type is not possible unless the picking band man is also a sole leather tanner and this means a lot of investment. A small unit can only sell the bellies for whatever price it gets and buyer usually obliges in offering some prices.

We hope that as the time marches and with the steady industrialisation there will be more and more demand for picking bands. Assured with a regular supply of offal some people are likely to take interest in the tanning of the offal.

TANNING AND TREATMENT MATERIALS

(1) *Quebracho Extract*: Quebracho is the indispensable item required in the manufacture of this type of leather. The tanning content of Quebracho Extract is upto 80% which is not available in any other extract in the world. The molecular weight of tannin in Quebracho is also the highest. It is this high molecular weight of quebracho tannin which gives leather the property of holding and retaining the maximum amount of greases. The life of a picking band depends on the amount of greases it is able to retain after continuous working. The longer the grease is retained the longer will be the lubrication and thus the lesser distortion of the fibres due to continuous twisting and abrasion during working. This gives the combination tanned picking band the longest life. It is the tensile strength coupled with the maximum retainable lubrication property rather than the tensile strength only, that decides the life a picking band.

In Western countries attempts have been made to replace quebracho with substitutes from Chestnut Extract, but not with much success. India with a very limited source of vegetable tanning materials is unable to substitute wattle extract with indigenous tanning material and I think it will not be possible for her to find a natural substitute for quebracho. Only possible substitute India should explore is some synthetic tanning agent, with a very high molecular weight. In view of this attempts were made by the author to tan some oil tanned pieces with synthetic tanning agents of heavier molecular weight, alone and along with quebracho extract.

The samples tanned alone with syntans did not show any difference with the oil tanned leather and I somehow feel that the synthetic tannins do not easily combine with the oil tanned leather and some type of foreign agent is necessary or in extreme case, it may be that syntan have very little or no affinity for oil



tanned leather. Probably the oil tannage satisfies the groups with which syntans would have combined, and still some active groups are left with which only vegetable tannins can combine feebly. Vegetable tannins with a natural affinity for fats may also be forming bonds with the fats which have been firmly fixed on leather and the final vegetable tannage may not be taking actual part in the tanning of the fibres.

The combination quebracho and synthetic tanned samples gave an emptier leather. Moreover the cost of the synthetic tannins of the specially high molecular weight made its use prohibitive.

Gambier : Gambier is the best but the costliest Tanning material and a well known luxurious tanning material. In spite of its cost, this extract is even now used by certain tanneries making strap leathers. Telephone and Electrical workers who work on tall buildings and skyscrapers as in U.S.A. use straps their life depends on the strap and the cost of the straps therefore is a secondary question.

Substitutes for Gambier are possible by blending and treating natural vegetable tanning material like wattle. We should explore the possibility of making similar substitutes from Babul or Konnam Extract, preferably by blending with myrab and sulphiting.

Fish Oil : This is the third important material for the manufacture of combination picking bands. Pure fish oil of iodine value above 150 only is useful. The higher the iodine value the better will it combine with the hide fibre, and longer will be the life of the picking band.

The chief source of this fish oil of iodine value above 150 is the Sardine fish available on the Western Coast from Goa to Cochin. The availability of this variety of fish is seasonal and so uncertain that the oil may be available from Rs. 0.25 to Rs. 1.20 per lb. Sometimes the fish is caught on this coast abundantly and then for three or four years it completely disappears from this coast. A recent bulletin published by the C.L.R.I. is a very useful survey on this industry. Looking to the huge catches of Sardine on our coast one wonders why our fisheries departments could not set up scientific plants for extraction of this oil. Apart from the growing local demand there is a shortage of this oil in the Western Countries and we can earn very precious dollars for our five year plans. The catches of the fish also can be increased by improved methods of fishing and some scientific restrictions on fishing. The tanner will also be assured of some regular and reliable source of fish oil which will give him the necessary iodine value. The present extraction of oil of this variety is done in a very crude way and the quality therefore is full of stearins, dirt, thorns and water.

Centrifuging this oil with the conical discus centrifuge separates the dirt, water and stearins simultaneously and gives a clear filtered oil which is much more useful and pure. The iodine value also increases to some extent. If the clear oil is further treated with activated carbon or china clay and stirred vigorously at about 200°F and then again filtered, the resultant oil will be paler in colour and will have a pleasant fishy smell. The final colour of the leather is decided

more by the colour of the oil than by the colour of the final vegetable tannage. Thinner the fish oil better will be the lubrication and thus better will be the picking band.

Tallow : Plenty of beef tallow is available in our country but only of late due to restriction on imports of Australian mutton tallow more and more industries like soap and textile are turning to the indigenous supply. The Indian beef tallow is therefore becoming costlier day by day. A time may come when the Indian prices will equal to the imported mutton tallow. As far as the quality of our indigenous tallow is concerned, it is quite upto the standard provided one pays for the quality. But now-a-days due to restriction of imports there is a tendency to mix some "Murder" or dead tallow in the supply.

TECHNIQUE AND METHOD OF MANUFACTURE

Not much literature is available on the manufacture of this type of picking bands and the process is even now kept a secret by the French manufacturers who have specialised in this item. An attempt is therefore made to discuss the process in detail with the necessary points that can be explored by our research workers.

Raw Materials : Slaughtered buffalo hides from wet salted weight range 65 to 85 lbs. are the most suitable raw material. Ox croupions from weight range 40 to 45 kilos (whole hides) wet salted from North of Italy are the best raw material.

While buying the buffalo hides care should be taken to select only the hides from young animals, of good substance, free from cuts and brand marks. Minor grain defects are permissible. It is best to have a sole leather tannery side by side when it is possible to select hides in the liming stage. Only wet salted hides are useful. Green slaughtered hides should be salted and aged for sometime in the tannery before taking them for further processing. The hides are rounded in raw into butts and bellies and shoulders. The butts are rounded upto maximum 60" in length as the picking bands are cut only neck to tail wise and are sold in the lengths of about 60". Only butts are taken up for picking bands.

Soaking : The butts are soaked in plain water in a tank and an addition of about 8 ozs. of bleaching powder per 100 galls. of soak is made as a preservative. An addition of about the same quantity of a synthetic detergent also helps. The butts are soaked for 3 to 4 hours and washed and drained for about 15 minutes.

Shorter the liming better will be the life of picking band. It is due to this reason that many people are in favour of complete elimination of this process and do the tanning with hair on. This is possible only with ox-hides in which case the long hairs of the imported ox have to be clipped as they hinder the penetration of fats, etc., during further process. The hairy hides are preferably fleshed in raw and then soaked in an acid salt soak to firm up the hair. An addition of little alum recommended for this reason. After proper soaking the hides go directly for the pickling process.



Limings: Unfortunately for buffalo hides have a very harsh hair and an unpleasant look and colour and liming therefore becomes necessary. The liming if properly done will not affect the life of the picking band much.

There are three different ways of liming :

- (1) Paddle liming.
- (2) Painting.
- (3) Pit liming.

(1) *Paddle Liming*: This is the best and the quickest way of liming. The following receipe is recommended :

2.5% Sodium Sulphide.
20% Lime.
400% Water.

The more the amount of lime more will be the loss in hide substance, and therefore lesser will be the life of picking band. Lime has got a more drastic action on the epidermis. The hides are entered in the paddle and the paddle is run for 15 minutes and rested for 45 minutes. The liming should be complete within 4 to 6 hrs. The period of liming should be so adjusted that the hair just start coming out. Excess of paddling will reduce the life of picking bands. While starting the paddle the hides are given an outside motion with a stick etc. as the butts will take much time to come into motion especially when they become plumped and heavy. If this is not done the hides on the top may get damaged due to continuous beating of the paddle.

After correct liming the hides are scudded and fleshed and again scudded. The hides are then piled to drain for 15 minutes and weighed, this weight is the limed pelt weight of the butts and the further quantities of material are based on this weight. The liming is so started that the hides come for deliming in the evening.

(2) *Painting*: This is the second suitable method of liming, but is more useful for ox-hides. The buffaloes have more deeply rooted hair and it is very difficult to remove the hair completely even with the most perfect painting.

The paint is made as follows :—

50 lbs. Shell Lime.
12 lbs. Sodium Sulphide.
80 lbs. Water.

This is sufficient for about 20 to 25 butts. It is also preferable to replace some of the amount of lime in the paint with clays, to avoid loss of hide substance by lime. Some people also use old lime liquor instead of water to quicken the unhairing.

The paint is aged for 24 to 48 hrs. before use. The necessary amount of water is added if necessary and the whole thing is stirred to make a viscous mass.

The soaked hides are dipped one by one and piled in a heap of 25 hides. Care should be taken to lift the hides properly and pile without scraping the ground so that the paint remains on the hides. The painting is completed by evening and the goods are left in the pile overnight well covered with gunnies. For ox-hides it should be possible to unhair in the morning very easily. This is due to two reasons. The longer and more hair on the ox-hides carry more paint than buffalo hides, and secondly because the ox-hair are less deeply rooted than the buffalo hair. The buffalo hides will have to be painted for a second time during the night 4 to 5 hrs., after the first painting, so that they come for unhairing on the next day morning.

Care should be taken to drain the hides properly after soaking as otherwise no paint will stick on to the hides.

(3) *Pit Liming*: This method is suggested only to people who have a serious objection to work in strong sulphide liquor. The method is lengthy and much hide substance is lost, resulting in an inferior quality of leather. The hides after soaking are immersed in a lime pit containing:

1	to 1½%	Sodium Sulphide.
10%		Lime.
400%		Water.

The liquor is prepared on the previous day of its use. The hides are entered in the liquor and handled twice daily. The liquor is well stirred before putting back the butts in the liquor. On the 4th day the hides are unhaired, fleshed and scudded and weighed after complete draining for 15 minutes.

Drum liming is also possible for this type of leather but special type of drum without pegs and with cross paddles inside is required. The period of liming and the quantities are done on the same lines as paddle liming.

It is best to remember that any mechanical action should be avoided during the entire process, as far as possible.

Deliming: The hides after liming are in a most delicate physical condition and any mechanical action like drumming in the limed stage should be avoided as it will distort and break up the fibres and fibre bundles resulting in a poorer strength. The deliming is, therefore, carried as follows:—

The hides are given one plain wash for 15 minutes in 400% water and drained.

150% water and 2% Ammonium sulphate and ½% Sodium Bisulphite is added to the drum and run for 10 minutes. The goods are then well pressed below the surface of the float and left in the drum overnight.

Next day the drum is run for 10 minutes and the goods tested with phenolphthalein. Complete deliming is effected evenly by this process and the hides undergo a sort of bating action.



After complete deliming the goods are given a thorough scudding. This scudding is very important in case of buffalo hides due to deeply rooted hair. The hides are then washed briskly in two changes of water, drained and taken up for pickling.

Pickling: A comparatively heavy pickle is given to deposit maximum sulphur in the subsequent depickling with Hypo. 10% salt and 80% water are dissolved and added to the drum. The drum is run for 15 minutes in the salt solution.

2% salt is dissolved and made to 80°Bk in a tub separately and 2½% Sulphuric acid or 4½% Hydrochloric acid is given in four equal instalments. Each instalment of acid is added to the drum at the interval of 20 minutes after diluting each instalment with the 80°Bk salt solution from the tub.

The goods are drummed for 2 to 3 hrs. after the last instalment and left in the pickle overnight. Next day the goods are drummed for 10 minutes and tested with Bromo phenol Blue to get yellow colour throughout (about pH 3). After complete pickling the goods are piled for 24 hours and allowed to drain.

In order to increase the tensile strength of the hides much research needs to be done on the fixation of aluminium on the hides. Aluminium Sulphate can either be given in the pickle or in the depickle bath, along with Sodium Acetate or Citrate. Any fixation of Aluminium also gives a pleasant yellowish colour to the picking bands due to contact with the final vegetable tannins.

Depickling: The hides are drained completely and sammed to some extent. This samming ensures the fixation and deposition of sulphur on the fibres and less into the bath. The bleeding of sulphuric acid into the hypo bath is prevented to some extent.

20 to 22% Hypo is dissolved in 50% water in the drum and the semi sammed hides are thrown into the liquor at once. The drum is started rotating quickly and run for 6 to 8 hrs. The drum is stopped for 10 minutes at the end of every hour to avoid overheating. The goods are left in the liquor overnight. Next day again the goods are drummed for one hour and tested with Bromophenol Blue to get a yellowish green colour (about pH 4 to 4.5).

In order to avoid the immense mechanical action, it is also possible to depickle the butts by spreading hypo in between the butts in a pit. The butts are turned over every day for about six to seven days by which time the depickling is complete. The hypo in this case, should be finely ground as otherwise the impressions left by the big hypo crystals on the hides will be permanent on the final picking band. This is a very expensive process and the depickling may not be as thorough and even as by the drumming. No paddling is possible due to the very little quantity of Hypo bath. If more quantity of water is used as in paddle. The acid in the hides will bleed into bath and there will be precipitation of Sulphur in the bath. The hypo bath cannot be used for subsequent packs.

The hides after depickling are piled to age for 24 hrs. to effect maximum fixation of Sulphur on the fibres.

Splitting and Shaving: After aging the hides are passed through plain water to remove the excess of salts in the hides, and then sammed in the open. The hides become very thin and depleted, due to the highly hygroscopic nature of hypo and therefore they are dry drummed to open up before splitting. The hides are then split to 4.25 mm. Though the final picking band is about 6 mm. thick the splitting thickness should be far less because of the thickness of the depleted state of hides.

The hides are then shaved to about 3.8 mm. and taken for further processing. Too dry portions are again wet back by sprinkling water and piling.

Oil Tanning: There are two different ways the hides may be processed from this stage.

The first one is by tanning with oil alone. In this case, the hides are put in the hot air stuffing drum and 10 to 12% of good quality Sardine or Cod Oil of good smell and colour, free from foots is given. The temperature of the drum is controlled at 100°F. The oil should have an iodine value of at least 150. Cod oil has better tanning properties than sardine oil. If a properly centrifuged, bleached sardine oil is used it gives about the same results. The hides are drummed for 4 to 6 hours till penetration of the oil is thorough. They are then hung up in a hot room at a temperature of 130°F for 20 days when all the oil is oxidised and the cut edge shows a dark brown colour throughout. After complete drying the hides are washed in plain water with an addition of 1% Synthetic detergent like Teepol and taken for vegetable tanning.

The second method is by stuffing with equal proportion of Tallow and Fish Oil. This method is more preferable because of the following advantages :—

1. More quantity of fats can be incorporated and retained by leather.
2. The resulting leather is full and compact and give a very high angle of weave.
3. The leather is much softer due to the presence of tallow of non-drying nature which combines with the fibres due to the tanning properties of fish oil.
4. There is a very good improvement in the colour of the leather due to the light colour of tallow.
5. There is increase in the yield of upto 30%.
6. All the above properties makes this picking band the most durable product on the loom.

Method: The sammed hides are entered into the hot air stuffing drum and drummed for 10 to 15 minutes to open up. The temperature of the drum is raised to about 120°F and about 10 to 12% of the molten mixture of equal quantities of tallow and fish oil is poured through the hollow axle. The goods are drummed for 4 to 6 hours till the complete absorption of the dubbin. The temperature of the drum is maintained at 120°F throughout.



The more the iodine value of fish oil the better and more will be the fixation of dubbin on the fibres, resulting in better life for the picking band. It must be remembered that the oil is incorporated in the leather along with an equal quantity of tallow which has little iodine value and no tanning properties. It is only by virtue of fish oil that the tallow is fixed on the fibres.

An addition of about 2% of metallic dryers like manganese linoleate, speeds up the drying. Best results are obtained with dryers based on Chromium or Cobalt by which the drying period is reduced by nearly 40%.

The goods after the 1st Stuffing are dried in a hot room at 130°F. The temperature of the drum is maintained evenly throughout the room. Care should be taken to circulate the air perfectly. Some air from the hot room is gradually replaced with fresh air from outside which will ensure the availability of oxygen in the room. This is very important because some of the oxygen from the room is being used up for the oxidation of oil. The room should be perfectly sealed and heat insulated to prevent leakage of heat. In the long run this will pay because much of the heat that is wasted due to leakage will be saved.

The goods after drying in the hot room for 7 days are again given a second instalment of dubbin with the same quantity and method as the first stuffing. The goods are then allowed to dry in the hot room for 20 to 30 days. Complete oxidation of the fish oil takes place within one month if the temperature of the room is perfectly maintained. The cut edge should show a dark brown colour and a dry feel and look on the fibres. Unoxidised portion will be cream in colour.

Drying of the leather in this condition is a very important factor and any traces of unoxidised oil will retard the subsequent tanning process and the resulting leather. The fats will come out of the hide and the leather will become greasy. The unoxidised parts will show a character more like a vegetable tanned leather and will be more plumped than other parts.

Vegetable Tanning: After complete oxidation of the hides they are given two plain washes with water, and are taken for tanning. 10% quebracho Extract (Sulphited) and 2% Gambier or myrab Extract are dissolved and made to 40°Bk strength. The hides are drummed in this liquor for two days. The drum is stopped for 10 minutes at the end of every hour to avoid overheating. The penetration is complete within two days.

It is possible to do the vegetable tanning in suspenders and handlers. In this case, the hides are directly suspended in 20°Bk liquor and is completed in 40°Bk liquor. This method saves much of the mechanical action in the drumming. The goods generally are tanned through within 10 to 15 days. This method is, however, possible only to sole leather tanners, because the waste liquors from tail suspenders still contain much useful tannins which cannot be used up for any other purpose.

After complete penetration of the hides they are piled in plain water overnight. During this period the loose tannins on the surface get into solution with water and little or no scouring is necessary.

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Next day the hides are hung up to samm. If the hides are dried in this condition they will give a very dry leather. They are therefore given a third Stuffing with about 5% of the mixture of fish oil and tallow in equal proportion in the stuffing drum. The hides are drummed for 3 to 4 hours at 140°F when all the grease is taken up by the hides.

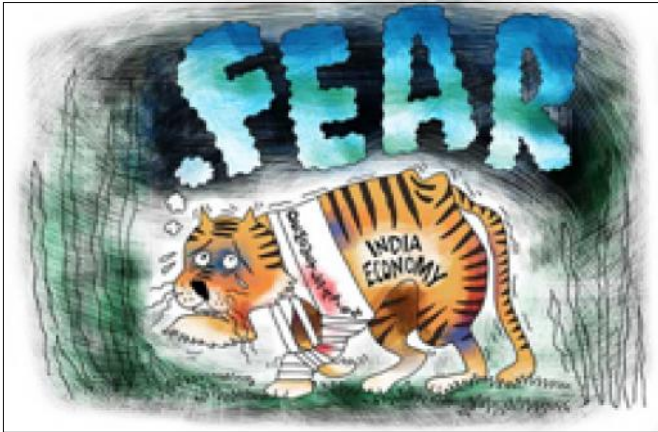
The hides are hung up in hot room at 140°F for 4 to 5 days, then set well with hand setting machines on tables and piled to age for 15 days to 1 month. Ageing increases the life of the picking bands considerably.

The hides after ageing are shaved to correct thickness, set by hand, and the picking bands are cut as per the size, stretched, trimmed and coiled for packing.

Read and Let Read :-

JILTA

INDIA'S Q3 GDP GROWTH DIPS TO 7 YRS LOW OF 4.7%



NSO has pegged economic growth at 5 per cent in 2019-20 in its second advance estimates.

India's economic growth slowed to a near 7-year low of 4.7 per cent in October-December 2019 on continued slump in manufacturing, and now faces the next big challenge of corona virus outbreak stifling global growth.

Despite being one of the strongest periods due to festival season and higher rural spending driven by kharif harvest, October-December was the third straight quarter of growth decline and the lowest rate in 27 quarters.

The 4.7 per cent expansion in the third quarter of the current financial year compares with a revised 5.1 per cent growth witnessed in the previous three months and 5.6 per cent expansion in the same period of the previous year, according to official data released on Friday.

The government retained its estimate of 5 per cent GDP growth for the fiscal year through March, the lowest for 11 years.

This, after the first quarter growth was revised upwards to 5.6 per cent from earlier estimate of 5 per cent. While agriculture output rose 3.5 per cent versus 3.1 per cent in the previous quarter, mining grew 3.2 per cent versus 0.2 per cent in the July-September period.

Manufacturing output declined 0.2 per cent while electricity growth fell 0.7 per cent compared with a 3.9 per cent growth earlier. The only bright spot in the third quarter of 2019-20 fiscal was minor improvement in private final consumption expenditure, which grew 5.9 per cent.

Going forward, the corona virus epidemic has added a complexity to economic recovery with production halts in its epicenter China — source of more than one-fifth of India's total non-oil, non-gold imports, posing downside risk to domestic manufacturing. Commenting on the GDP data, economic affairs secretary Atanu Chakraborty said the decline in economic growth has bottomed out. Industry body Assocham also said green shoots are visible in sectors like coal, cement and agriculture, but India Ratings said there are no clear sign of economic recovery in the short-run.

Sreejith Balasubramanian, economist - fund management, IDFC AMC, said India's growth could be impacted by the coronavirus depending on the duration and intensity of both its spread and containment measures across the world.

Rumki Majumdar, economist, Deloitte India, said while India's exposure to the external world is low because of the country's limited presence in the global supply chain, it is highly unlikely that it will remain immune to a worldwide slowdown as a shortage of manufacturing and intermediate products (procured from China) are likely to disrupt industries and businesses globally.

"Investments, which are in the slow motion mode (contracting in the past two quarters), are unlikely to pick up anytime soon. "Industries such as automobiles, technology, pharma, and fashion have some exposure to Chinese imports of raw and intermediate inputs. "If the shutdown in China is more protracted, production in Indian industries could be hit," Majumdar said.

India Ratings said since the NSO advanced estimate pegs the GDP growth for FY20 at 5 per cent, the fourth quarter (January-March) of FY20 will need to have the same expansion as Q3, which is achievable. Majumdar further said with the fiscal deficit for FY2020 pegged at 3.8 per cent, which is 0.5 per cent higher than the earlier target, "the question is how much can the government boost growth through higher spending.

"Any further monetary policy easing is unlikely as long as inflation remains high." The GDP growth for the December quarter is the lowest since January-March of 2012-13, when it stood at 4.3 per cent. According to the data released by the National Statistical Office (NSO), the gross value added (GVA) growth in the manufacturing sector contracted by 0.2 per cent in the third quarter of this fiscal from 5.2 per cent expansion a year ago.

However, the farm sector GVA growth was up at 3.5 per cent, compared to 2 per cent growth in the corresponding period of the previous fiscal. Construction sector GVA growth too slowed to 0.3 per cent from 6.6 per cent expansion earlier. Mining sector growth came in at 3.2 per cent, as against a contraction of 4.4 per cent a year ago.

Electricity, gas, water supply and other utility services segment contracted by 0.7 per cent, from 9.5 per cent growth a year ago. Similarly, trade, hotel, transport, communication and services related to broadcasting growth declined to 5.9 per cent in the third quarter from 7.8 per cent a year ago.

Financial, real estate and professional services growth was up at 7.3 per cent in Q3 FY2019-20 from 6.5 per cent. Public administration, defence and other services reported improvement with 9.7 per cent rise during the quarter under review, from 8.1 per cent a year earlier.

During April-December 2019, the GDP growth reduced to 5.1 per cent as compared to 6.3 per cent in the same period a year ago. "GDP at Constant (2011-12) Prices in Q3 of 2019-20 is estimated at Rs 36.65 lakh crore, as against Rs 35.00 lakh crore in Q3 of 2018-19, showing a growth of 4.7 per cent," the NSO said in a statement.

"The per capita income at current prices during 2019-20 is estimated to be Rs 134,432, showing a rise of 6.3 percent as compared to Rs 1,26,521 during 2018-19," it added. Meanwhile, data released by the commerce ministry showed that eight core industries recorded a 2.2 per cent growth in January, helped by expansion in the production of coal, refinery products and electricity.

(Rediff.com – 28/02/2020)

IF YOUR BANK GOES BUST, HOW MUCH MONEY WILL YOU GET ?



The new ceiling will cover around 93 per cent of all deposit accounts, up from 90 per cent earlier,' notes

Finally, the deposit insurance cover has been raised fivefold to Rs 5 lakh — a huge comfort for small depositors, some of whom have been staring at losing their money kept in fraud-hit and mismanaged cooperative banks. Now if any bank fails, the depositors will get as much as Rs 5 lakh from the Deposit Insurance and Credit Guarantee Corporation, a wholly-owned subsidiary of the Reserve Bank of India.

It took 17 years and a Rs 6,670 crore fraud in multi-state Punjab and Maharashtra Co-operative Bank to raise the cover. The latest revision, sixth since it started in 1962 with a Rs 1,500 cover, has been long overdue. Even though it's a big jump from Rs 1 lakh, the last revision in 1993, it is still less than what the amount should have been after adjusting inflation.

Every nation, which has a banking system, offers such an insurance cover to depositors. At least 146 nations have deposit insurance schemes — explicit or implicit. The last country to get into this club is probably Georgia, which set up its deposit insurance agency in July 2017.

Incidentally, New Zealand introduced deposit insurance as a provisional system in response to the global financial crisis and it was withdrawn subsequently. From January 2019, Austria has been running two deposit insurance systems, instead of the five earlier.

In fact, many nations including the US, Italy, Brazil and Portugal run at least two such schemes. And, hold your breath, Germany runs nine deposit insurance systems. There are wide variations among the deposit cover schemes. For instance, the Deposit Insurance Corporation of Japan is responsible for insuring deposit-taking institutions in general, but the agricultural and fishery cooperatives are separately insured as the risk associated with such bodies is different.

The Korea Deposit Insurance Corporation provides deposit insurance not just for commercial banks, but also for insurance companies, securities companies, merchant banks and mutual savings banks. And, there are five other deposit protection systems for cooperative financial institutions in Korea.

Finally, in Myanmar, deposit insurance is provided by Myanmar Insurance Agency, a state-owned enterprise. There are no rules

and regulations for deposit insurance; if bank goes bankrupt, the government reimburses the depositors.

Who enjoys the deposit insurance cover in India?

Well, all commercial banks, including branches of foreign banks functioning in India, local area banks, regional rural banks and all state, central and primary cooperative banks, also called urban cooperative banks, which have amended the local Co-operative Societies Act empowering the RBI to wind up a cooperative bank and supersede its committee of management through the Registrar of Cooperative Societies.

Let's look at the nuts and bolts of the deposit cover.

Every depositor in a bank is insured up to a maximum Rs 5 lakh for both principal and interest. If an individual opens more than one deposit accounts in one or more branches of a bank (savings/current accounts and/or fixed/recurring deposits), all these will be considered as one account and the aggregate insurance cover will be Rs 5 lakh.

But if a person opens more than one such account in her capacity as a partner of a firm or the guardian of a minor or director of a company or trustee of a trust or in a joint account, say with her husband, in one or more branches of a bank, each of these accounts will enjoy the insurance cover up to Rs 5 lakh, separately.

When it comes to the joint accounts, there is a catch.

If more than one deposit account (savings, current, recurring or fixed) are jointly held by say three individuals in one or more branches of a bank with their names appearing in the same order (A, B and C — three names, for three accounts) then all three accounts are considered held in the same capacity and the insured account will be capped at Rs 5 lakh.

To ensure Rs 15 lakh insurance coverage (Rs 5 lakh multiplied by three), the joint holders of three accounts should be shown as A, B and C; C, A and B; and A, C and B. Done in this fashion, the deposits held in these joint accounts are considered as held in the different capacities with different rights.

Accordingly, the insurance cover will be available separately to every such joint account (I repeat, provided the names appear in different order) to the tune of Rs 5 lakh. The depositors of

any bank that goes for liquidation or is merged with another after February 4, 2020, will get the cover.

However, the cover is not applicable to the depositors of those banks that have been already deregistered and whose licences have been cancelled before February 4. The deposit coverage of such banks remains up to Rs 1 lakh irrespective of whether the claims have been submitted or not. The new ceiling will cover around 93 per cent of all deposit accounts, up from 90 per cent earlier.

Barring government deposits, all other accounts are mandatorily covered. This will also raise the cover for deposits in terms of value from 29 per cent to 34 per cent. This is in sync with the norms laid down by the International Association of Deposit Insurers, of which India is a member.

Formed in 2002, IADI, a forum for deposit insurers from around the world, works in close coordination with the Basel Committee on Banking Supervision and produces research and guidance on deposit insurance. Going by its norms, 85 to 90 per cent of the deposit accounts and 25 to 30 per cent of the value of deposits should have insurance cover.

Argentina is probably the only country that went for 100 per cent deposit cover with government guarantee — a one-time measure when a financial crisis engulfed the country. A depositor's full exposure to a bank should not be guaranteed as there is a moral hazard — once the full amount enjoys insurance cover, a bank will not have any incentive for meticulous care in running it.

Earlier, the banks were paying 10 paise per Rs 100 deposit; now they will pay Rs 12 paise. The premium cost has been kept low keeping in mind the health of many banks, but the discussion of risk-based premiums is not off the table. If not today, tomorrow the weaker banks may have to pay higher premium for the cover.

(Rediff.com – 18/02/2020)

INDIA STANDS TO GAIN MOST FROM SUPPLY CHAIN DISRUPTIONS, FDI PIPELINE DOUBLES TO \$175 BILLION :UBS

The report said that high number of respondents looking to diversify continues, suggesting a manufacturing shift from China is more structural and longer term in nature.



India is expected to be a big beneficiary of the ongoing trade battle between US and China. Evidence of this trend is already visible from foreign direct investment (FDI) pipeline doubling to \$175 billion from last year's \$87 billion. Given the rise in protectionism and tariff barriers, corporations are looking at shifting supply chains. UBS, the world's largest wealth manager, in its US CFO survey found that 76% of the respondents have either shifted their supply chain or are planning to shift in response to protectionist policies such as trade tariffs and India continues to be among the top destinations in Asia for manufacturing shift.

The report also said that high number of respondents looking to diversify continues, suggesting a manufacturing shift from China is more structural and longer term in nature. While FDI in India has increased in the last one year, there has been interest from global companies to set up manufacturing facilities for not only electronics but also heavy manufacturing as well. India's current FDI pipeline has doubled and key focus sectors include construction, electronics, infrastructure, textiles, food processing, pharma among others. Even while analyzing the earnings transcripts of 44 global companies there has been increased references to 'India' and 'trade war' and spot nuances in language signify a potential relocation of manufacturing to India.

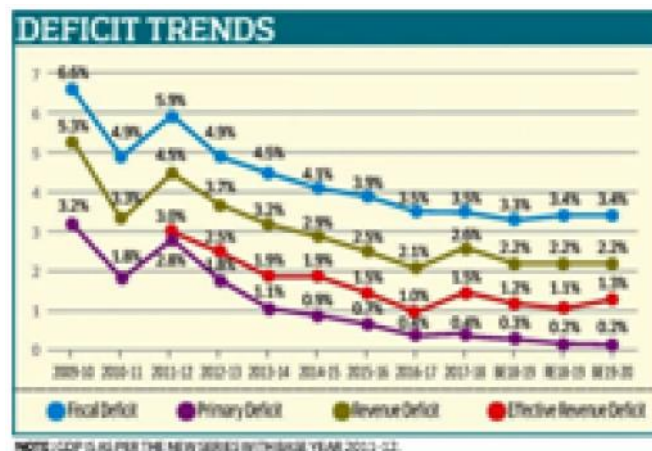
According to UBS, meetings with policymakers, UBS Evidence Lab results, trade data analysis, and newsflow, all point to early evidence of a pickup in manufacturing exports (including import substitution). "Exports is one of the keys in our '4 Keys framework' from which we expect an earnings cycle inflection. We expect a 15% earnings CAGR in Nifty over FY 21-23, compared with 6% over the past five years. Our Nifty target for end-December 2021 is 14,700," said UBS in its report. However it also stated that, it is too early to call whether India will have major success, but the next three years should be better than

the past five years. Also, exports are highly correlated with earnings and GDP growth.

Post the corporate rate tax and recent Budget incentives for exports have been ignored by investors, believes UBS. In the recent past, government has taken steps like easing customs duties, liquidity for exporters and higher credit availability to boost manufacturing and exports. "Local corporate commentary also suggests some pickup in mentions beyond the chemicals sector, including in contract manufacturing companies and consumer appliance companies," said UBS.

(Financial Express – 29/02/2020)

FISCAL DEFICIT TOUCHES 128.5% OF BUDGET ESTIMATE AT JANUARY END : GOVT. DATA



The government had targeted to restrict the fiscal deficit at Rs 7,66,846 crore during the year ending March 31, 2020.

India's fiscal deficit touched 128.5 per cent of the whole year budget target at January-end, said the Controller General of Accounts (CGA) on Friday. The deficit during the same period during 2018-19 was 121.5 per cent of that year's Revised Budget Estimate (RE).

In actual terms, the fiscal deficit or gap between the expenditure and revenue stood at Rs 9,85,472 crore. The government had targeted to restrict the fiscal deficit at Rs 7,66,846 crore during the year ending March 31, 2020.

While presenting the Union Budget to Parliament earlier this month, Finance Minister Nirmala Sitharaman had raised fiscal deficit target to 3.8 per cent of the GDP from 3.3 per cent pegged earlier for 2019-20 due to revenue shortage.



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As per the CGA data on monthly accounts, revenue receipts during April-January were at Rs 12.5 lakh crore or 67.6 per cent of the RE for 2019-20. This compares with 68.3 per cent of the RE in the previous fiscal.

Total receipts were at 66.4 per cent of RE as against 67.5 per cent in the year-ago period. The CGA further said that total expenditure at January-end was Rs 22.68 lakh crore or 84.1 per cent of RE, higher than 81.5 per cent in the corresponding period of the last fiscal.

(Business Standard / PTI – 28/02/2020)

DIRECT TAX MOP UP AT RS. 7.5 LAKH CRORE IN APRIL – DECEMBER; GOVT. CUTS REVENUE RECEIPTS ESTIMATE



The government has collected over Rs 7.52 lakh crore as direct taxes till January 31 of the current fiscal, Parliament was informed on Tuesday. The Revised Estimate (RE) has pegged the target for collection of direct taxes for the current fiscal, which ends on March 31, at Rs 11.70 lakh crore. "The total amount collected under direct tax collection, as on 31st January, 2020 is Rs 7,52,472 crore," Minister of State for Finance Anurag Thakur said in a written reply in the Rajya Sabha. Direct Tax includes corporate and income tax. He said the last advance tax instalment is due in March 2020, and hence it is little premature to predict the final collection of direct taxes for the current year at this stage.

In a separate reply, Thakur said RE for current fiscal has projected revenue receipts at Rs 18.50 lakh crore, lower than Rs 19.62 lakh crore projected in the Budget. "Lower estimated RE 2019-20 in respect of corporation tax, taxes on income, customs duty, excise duty and Goods and Services Tax have resulted in the revenue receipts being lower than the budget targets," Thakur said. The fiscal deficit estimated for the current fiscal has been revised upwards to 3.8 per cent of GDP, from the budgeted 3.3 per cent.

Read and Let Read :-

-: JILTA :-

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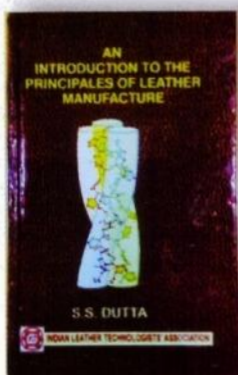
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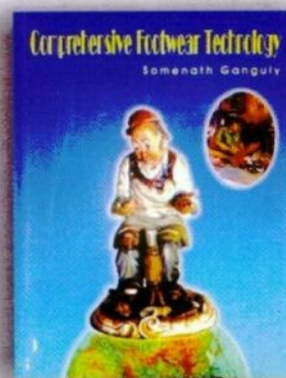
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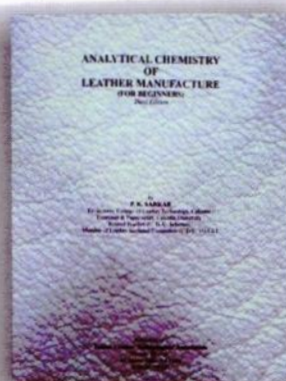
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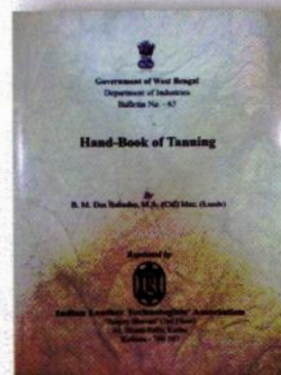
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Website : www.iltaonleather.org

History and Activities of Indian Leather Technologists' Association

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

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

- ❖ To bring all concerned with the broad spectrum of the leather industry under one umbrella.
- ❖ To organize seminar, symposium, workshop in order to create information, knowledge and latest development for the benefit of all concerned. To offer a common platform for all to interact with each other in order to understand each other's problems and prospects.
- ❖ To publish monthly journal as a supplement to those above objectives. The monthly journal of ILTA is known as journal of Indian Leather Technologists' Association and is the most widely circulated technical journal concerning leather technology.
- ❖ To publish 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.
- ❖ As the part of many social activities ILTA has donated Rs. 1 lac to Consul General of Nepal towards relief of earthquake effected of Nepal on 15th Sept, 2015.

INTERNATIONAL & NATIONAL SEMINAR

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

SEMINAR & SYMPOSIUM

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

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

It has also organized:

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

PUBLICATION

ILTA have published the following books:

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

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

AWARDS OF EXCELLENCE

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

LEXPOs

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

MEMBERS

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

ESTABLISHMENTS

In order to strengthen its activities, ILTA have constructed its own six storied building at 44, Shanti Pally, Kasba, Kolkata - 700 107 and have named it "Sanjoy Bhavan". This Association is managed by an Executive Committee duly elected by the members of the Association. It is absolutely a voluntary organization working for the betterment of the Leather Industry. None of the Executive Committee members gets any remuneration for the services rendered but they get the satisfaction of being a part of this esteemed organization.



68 YEARS OF SERVICE TO THE INTERNATIONAL LEATHER FRATERNITY



ILTA

Since 1950

Indian Leather Technologists' Association

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

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