

The Leather Post

CSIR-Central Leather Research Institute

MoU between AISHTMA, CSIR-CLRI & CSIR-CSMCRI



for providing economically viable and environmentally sustainable solution for disposal of tons of recovered / accumulated salt



Dr B Chandrasekaran,
Director, CSIR-CLRI

Dear Doyens and Members of the Indian Leather Fraternity; Colleagues from CSIR; Mentors, Teachers and Friends! It gives us great pleasure in sending you our May 2017 edition of The LEATHER POST.

Since the Last week of April, 2017 we have been having back to back milestone programs that showcase our Institute's strengths. It all started with our Foundation Day – 70 years of service to the nation. An action packed MoU for servicing the Leather Sector by addressing the issue of recovered salts from RO assisted CETPs.

Another important event was the review of CLRI by the Vice President of CSIR, Hon'ble Minister for S & T, Dr Harsh Vardhan.

The institute is now on the verge of showcasing the entire world of our up abilities by performing with specific deliverables, we now have commitment for ensuring comprehensive deliverables in public, private, social and strategic goods.

We must walk hand-in-hand in our journey ahead!

I wish to thank you all for your unstinted support and kind co-operation at all times,

We will strive to make this magazine informative and interesting and welcome your feedback for improvement

24th May 2017

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No	Description	
1.	CLRI 70 : Commemoration year celebrations	3
2.	Cover Story: MoU between AISHTMA, CSIR-CLRI & CSIR-CSMCRI	8
3.	India Design Council and India Design Mark	13
4.	CSIR-CLRI congratulates Shri Nari Kalwani, Regional Chairman, FIEO	14
5.	Parliamentary Standing Committee for Science & Technology visited CSIR-CLRI	15
6.	MODEUROP Colour Card for the Autumn Winter 18/19 season released on 8th May 2017	15
7.	Business Meeting with Leather Chemical Manufacturers' Association (LCMA) held on 25th April 2017 at CSIR-CLRI	16
8.	Need for CAD for Shoe Designing	18
9.	Less-salt and salt-less curing – Technologies and strategies for implementation	19
10.	Miles Travelled	22
11.	Technology Award Winners: Congratulations	23



CSIR-CLRI
celebrating 70 Years of service in

“Enabling Leather”
Commemoration Year
24th April 1948-24th April 2018



CLRI 70 : Commemoration year celebrations were held on Monday, 24th April 2017 at 4:00 p.m. at CSIR-CLRI, Adyar, Chennai - 600020. The celebration of the Commemoration Year began with Invocation and lighting of lamp. Dr B Chandrasekaran, Director, CSIR-CLRI, welcomed the gathering with his address.

Dr. B. Chandrasekaran, Director, CSIR-CLRI extended a warm welcome to the gathering and expressed his gratitude to all for being a part of the celebrations. He recalled with profound happiness the contribution of stalwarts like Prof B M Das, Prof Y Nayudamma, Dr G Thyagarajan, Dr T Ramasami in building this great Institute to what it is today. He expressed joy over the participation of Dr T S Ranganathan, former scientist, CLRI, who was a student of B Tech (Leather) and had witnessed the laying of Foundation Stone for CLRI, and Shri O M Raju, former colleague who had been associated with CLRI since its inception. Director mentioned that the sustained success of CSIR-CLRI in all spheres through this journey of 70 years could not be possible without the support of Industry partners of CSIR-CLRI and thanked them profusely for the same. CSIR-CLRI

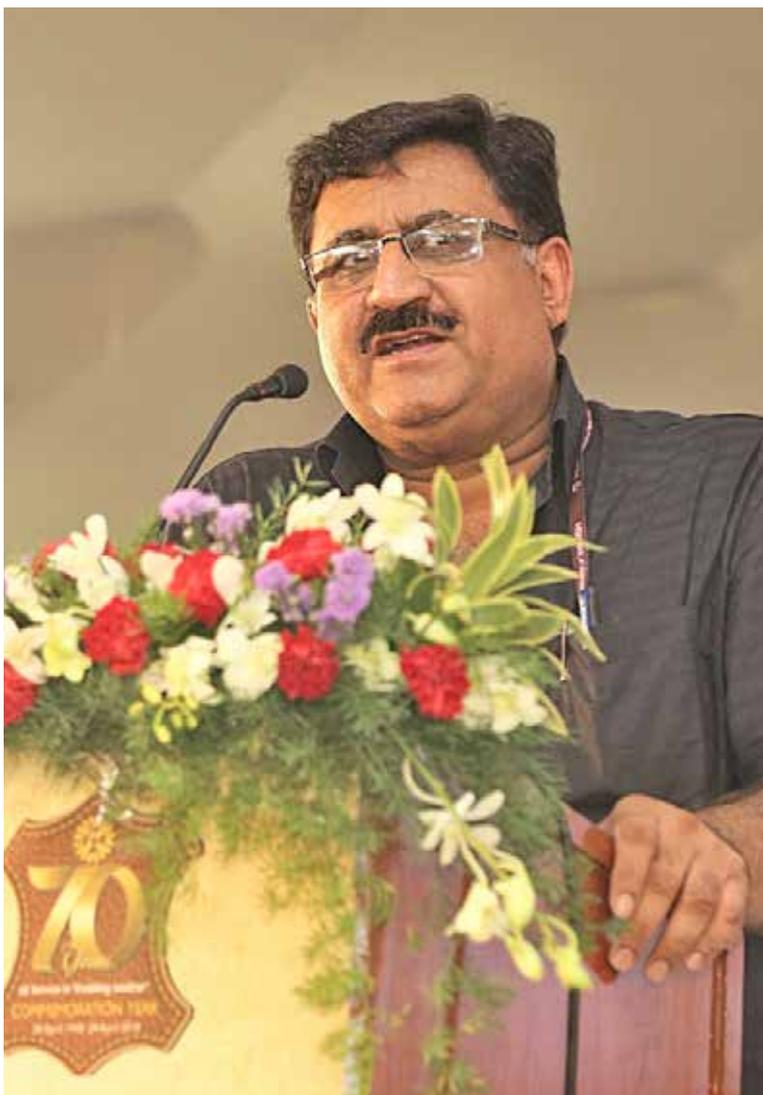
has spread its wings pan India via its regional centres thereby bringing all the major leather clusters of the country in to its purview. He shared with great pride that CLRI introduced the fatliquoring technology to the leather sector which is considered as the most successful one and establishment of Computer Aided Design in Footwear. CSIR-CLRI serves as the global hub for several innovative technologies and technological solutions that have brought about revolutionary changes in the leather industry. Director also elucidated about the collaborative work that is currently going on between CSIR-CLRI, CSIR-CSMCRI and AISHTMA as the co-ordinating agency for designing and developing a sustainable and economically viable solution for disposal of recovered and accumulated salt and RO reject management in a time bound manner.



Post the welcome address, Director, CSIR-CLRI felicitated the Chief Guest and Guests of Honour with floral bouquets and angavastrams. The Chief Guest for the day were Dr. Girish Sahni, DG, CSIR & Secretary, DSIR and Shri M Rafeeqe Ahmed, President, AISHTMA.



The Guests of Honour were Shri R. Ramesh Kumar, Dr.K.V. Raghavan, Dr. G. Thyagarajan, Shri Nari Kalwani, Shri Pradyumna Vyas, Smt. Revathi Roy, Shri J Prabhakar Rao & Shri G. Vijaykumar.



Dr. Girish Sahni, DG, CSIR & Secretary, DSIR in his presidential address, expressed his happiness to be a part of the 70 years commemoration celebration. He mentioned it as an honour to be present in the celebration as the first servant of CSIR. Excerpts from his speech are given below: CSIR-CLRI is known for its deep seva and service to the common man. CSIR-CLRI is a distinguished and shining star in the CSIR horizon. CSIR remains relevant to the country and no other organization in the country serves with a similar mandate and functioning. Scientists of CSIR face great challenges with huge expectations from the society. CSIR-CLRI is a role model to many other labs. CSIR's knowledgebase is second to none which is evident from the publication ranking worldwide and also CSIR occupies 12th position globally in the publically supported organization . Today the challenge is to become technology superpower not only in the country but in the whole world. Our R&D efforts should be oriented towards making affordable technologies. Today CSIR is marching towards skill development and CSIR-CLRI stands as a role model for all the labs in generating quality manpower for the industry. He expressed his heartfelt wishes to CSIR-CLRI for the upcoming years and to reach the 100th year milestone with much more achievements.



Dr. G. Thyagarajan, Former Director, CSIR-CLRI in his address to the gathering, said that in response to Mahatma Gandhi's plea for building science for the benefit of the public, it was Mr. Lakshmanaswamy Mudaliar who mooted the idea of Central Leather Research Institute in 1945. He also mentioned that Dr. Y. Nayudamma played a stellar role in the symbiotic growth of CSIR-CLRI and the leather industry through his able leadership. He also provided 4 solutions for growth of CSIR-CLRI and the Leather industry - Establishing off shore tanneries for tackling pollution problems. CSIR-CLRI may seek the help of CSIR-NIO for the same; Incorporating the advances of modern biology in the structure and functions of collagen to make it less polluted; Use of materials like carbon fibre, graphene, nano advent; 3D printing processes (CSIR-CLRI may collaborate with CSIR-NML and CSIR-NCL for the same).

These key solutions will play a major role in expanding the horizon of CSIR-CLRI to high science and technology with a promising future.

Dr. K.V. Raghavan, Chairman, Research Council, CSIR-CLRI addressed the gathering on the topic "Reaching the unreachable". Excerpts from his speech are : Unreachable today is reachable tomorrow. CSIR-CLRI started its journey with zero base. In 80's and 90's CSIR-CLRI was confronted with Environment problems, Need for high quality leathers and Technologies to make this happen. CSIR-CLRI addressed the above issues through several initiatives such as advanced process control system,



CETPs, deploying modernization techniques, CAD/CAM solutions, Fashion Studio and MODEUROP endeavour, Quality control techniques and National Leather Development Programme. Few measures for improvement viz. Multidisciplinary expertise for leather making beyond boundaries; Unconventional methods to break the thermo dynamic equilibrium in leather making (i.e.) chemical process intensification of leather processes; Generating global brand image for transferring cutting edge technologies globally; establishing Centre for excellence in Leather Products. Integrating the efforts of fashion designing and style for the entire leather products.

Dr. T. Ramasami, Former Secretary, DST & DSIR wished CSIR CLRI for its 70 years of dedicated service in Enabling Leather. The Institute was born on 24.4.1948. The seed was sown and what we see now is a fruit yielding tree. Scientists of this country got wedded to the cause of leather industry and enriched the country through the power of knowledge and converted the relatively low value material into value added products. The leather industry flourished in the West during the 70s and then there was a migration from West to East. He mentioned that the Indian leather industry will sustain and continue to flourish because the technologies that are brought in to existence are Environmentally and Energetically sustainable and Economically viable. India is way ahead of the US in even thinking about the concept of Zero liquid Discharge 12 years before. He suggested 3 keys for building our strength in developing Leather sector - Knowledge for process, Enterprise System & Youth. The present generation should not stop with enjoying the fruits of the trees grown by the forefathers of CSIR-CLRI, they should also plant trees to build the future of this nation as a whole to make India environmentally sustainable.

Prof. Dr. A.B. Mandal, Former Director, CSIR-CLRI wished CSIR-CLRI on its commemoration year celebrations. He shared his experiences as former Director, CSIR-CLRI and wished CSIR-CLRI for many more accolades in the future.

Shri M Rafeeqe Ahmed, President, AISHTMA in his address mentioned that it is not only the celebration of CSIR-CLRI but also the celebration of the entire leather sector. He stated that CSIR-CLRI has made excellent contributions for the development of the industry. He requested DG to visit CSIR-CLRI more often to bring Industry and CSIR-CLRI more closer. He mentioned that Industry is 30 years ahead of CSIR-CLRI since Industry had its centenary celebration last month.

He recalled the services rendered by CSIR-CLRI to the industry for so many years and the dark days when Supreme Court judgement led to the closure of tanneries and how CSIR-CLRI came to the rescue of the industry by playing a pivotal role in solving



the environment related issues. Currently, CSIR-CLRI is collaborating with AISHTMA for providing an economically viable solution for disposal of tons of recovered / accumulated salt and the industry is thankful to CSIR-CLRI for the unrelenting support during times of crisis. In the coming years, 2017-2022, the industry will be facing challenges from the market, the fashion houses, leather like material as well as new materials upgradation of chemicals as per EU standards, etc. and he stressed the need for CSIR-CLRI to help industry in meeting these challenges.

CSIR-CLRI's intervention in MODEUROP made the Indian Leather industry to stay ahead of competitions in colour / fashion forecasting in LEATHER. He summed up his speech by quoting that the Leather Industry is happier about this celebration than CSIR-CLRI.

In connection with the commemoration celebrations, a special edition of "The Leather Post" a monthly magazine of CSIR-CLRI was released by Shri Rafeeqe Ahmed.



Felicitation of Industry Partners :
The CSIR-CLRI go hand in hand with the Leather Industry at every stage of its development. CSIR-CLRI took this opportunity of its commemoration of 70 years to felicitate the industry partners who have always been its pillar of support.



COVER STORY

MoU between AISHTMA, CSIR-CLRI & CSIR-CSMCRI collaborating for finding an economically viable solution for disposal of tons of accumulated/ recovered salt.



In TamilNadu, currently tannery wastewater is subjected to Reverse Osmosis (RO) based desalination and the reject water is evaporated to dryness. Solid residue is a mixture of sodium chloride, sulfate, calcium salts, magnesium salts and other insoluble and soluble impurities.

CSIR-Central Leather Research Institute (CSIR-CLRI), Chennai, Tamil Nadu and CSIR-Central Salt and Marine Chemicals Research Institute (CSIR-CSMCRI), Bhavnagar, Gujarat signed an MoU with All India Skin and Hide Tanners and Merchants Association (AISHTMA), Chennai on 24th April 2017 during the celebration of 70th Foundation day of CSIR-CLRI to develop and implement a sustainable and economically viable solution for disposal of recovered and accumulated salt and RO reject management.

CSIR-CLRI and CSIR-CSMCRI will provide technological solution for separation and purification of sodium chloride and sodium sulphate from the recovered and accumulated salts of RO based ZLD. Business Opportunities would be explored for sale of purified salts in industrial applications as to find remunerative reuse of salts recovered and accumulated from the implementation of ZLD by AISHTMA.

CSIR-CLRI and CSIR-CSMCRI will put in R&D efforts and validation of alternative techniques towards elimination of mechanical evaporation and associated unit operations and provide a holistic and an environmentally, energetically and socially sustainable solution with economic viability for the tanners.

As an outcome of the joint initiative of CSIR and AISHTMA, AISHTMA would submit to the Government of Tamil Nadu, a well-researched and implementable action plan for secure management of salt recovered and accumulated to the tune of 100000 tons within the next 6 months.



Shri Nari Kalwani in his speech quoted that CSIR-CLRI, today, is a central hub in Indian leather sector with direct roles in education, research, training, testing, designing, forecasting, planning, social empowerment and leading in science and technology relating to leather. He told that providing skill development solution to the leather industry is a very big challenge and he suggested CSIR-CLRI to work in tandem with LSSC to address this issue as it is the need of the hour.



Mr. R. Ramesh Kumar, Executive Director, CLE in his address said that it was indeed a great pleasure for him to be present in this wonderful occasion. He appreciated the contribution of CSIR-CLRI for the development of leather sector - domestic & global. Whenever he visited countries like Vietnam, Cambodia, Kenya, Ethiopia, Sudan, etc. he was able to visualize the presence of CSIR-CLRI in some form or other and also these countries are very much interested in technologies and services of CSIR-CLRI. He mentioned that Government of India has identified leather sector as one of the potential sector for employment, growth and exports and thrust has been given by Prime Minister by allocating 2500 crores as a package for leather sectors development. He insisted to follow the 3 forms as mentioned by PM viz. Reform, Perform and Transform for the continual improvement and growth of the industry.



Mrs. Revathi Roy, Chairperson, FDDI in her speech praised CSIR-CLRI for playing a vital role in the development of leather sector and invited CSIR-CLRI to collaborate with FDDI which will enable FDDI to utilize the expertise of CSIR-CLRI to bridge the skill gap in Footwear Sector.



Mr. Pradyumna Vyas, Director, NID in his speech said that Institutions are always built by students and staff. Glories of the Institute is due to the hard work of forefathers and new generation should inherit the same. India is a global leader of innovation. It is our duty to see that innovations are socially relevant. In countries like Japan and Korea, Design Innovations played an important role in their development. He also said that the Fourth Industrial Revolution fuse the physical, digital and biological worlds, and impact all disciplines, economies and industries. He also quoted about the "National Design Policy formulated in 2007 to have a "design enabled Indian industry". In India, there are more number of incremental Innovations than breakthrough Innovations.

Shri Jupudi Prabhakar Rao, Chairman, Andhra Pradesh Scheduled Castes Co-operative Finance Corporation Ltd. (APSCCFC) in his speech said that it is honored to be associated with CSIR-CLRI for the social and economic development of the needy candidates in Andhra Pradesh. He also told that CSIR-CLRI will empower the candidates skillfully and will light up their lives as well as their generations.



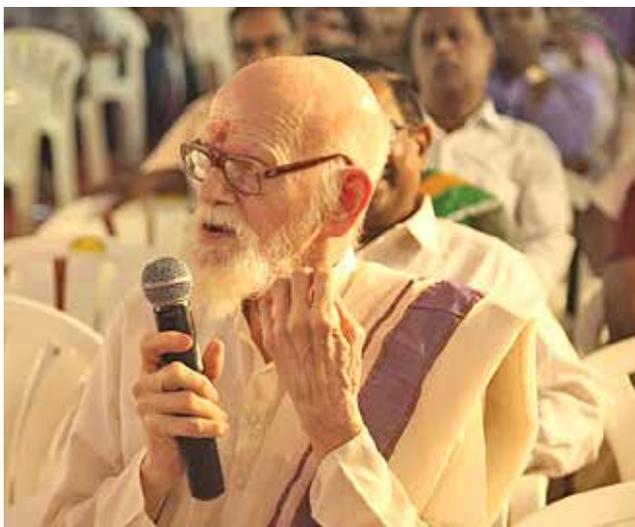
In view of this, training would be given to 10,000 families on making and marketing leather products in the next three years in Andhra Pradesh by CSIR-CLRI. He also invited industries of Tamil Nadu Leather Sector to start ventures in Prakasam, Rayalaseema, Anantapur, Kadapa and Guntur districts in Andhra Pradesh.



Mr. G. Vijaykumar, Managing Director, APSCCFC in his speech quoted that CSIR-CLRI brought a footprint in the country under the aegis of CSIR for the past 70 years. CSIR-CLRI has become one of the landmarks for the city of Chennai. India is producing best stream of Scientists and best research through CSIR. He also stated that whatever R&D is taking place finally it should enable the common man to come out of poverty. He also told that this is a competitive world and those who perform will survive and only the fittest will survive.



Dr.T.S. Ranganathan, former Scientist, CSIR-CLRI recalled in his speech that he was a student of B.Tech (Leather Technology) and had witnessed the laying of foundation stone of CSIR-CLRI. He told that he felt proud for having grown along with CSIR-CLRI. He reminisced the visit of eminent personalities like Mr. T.T. Krishnamachari and Sir.C.V. Raman to CSIR-CLRI.



Shri O.M. Raju, former and one of the oldest staff of CSIR-CLRI who had been associated with CSIR-CLRI since its inception also recalled his fond memories during his tenure with CSIR-CLRI.





India Design Council is an autonomous body of Government of India established under the aegis of Department of Industrial Policy & Promotion, Ministry of Commerce & Industry. It is a national strategic body for multi-disciplinary design and is involved in the promotion of design to ultimately make India a design enabled country.

In the year 2007, India became one of the few countries to adopt a National Design Policy. To enable the policy implementation, the Indian Government announced establishment of Indian Design Council (IDC) in March 2009.

The India Design Council is spearheading the national design direction and is working with other government agencies, the design community, industry and education institutions to promote design in business, society and public services and developing design excellence.



The India Design Council is a national strategic body for design in India. It is committed to establish India as a center for design excellence. It constantly endeavors to increase knowledge, develop design capability, encourage businesses to use design, and drive value creation through design.

In pursuance of the National Design Policy announced by the Government of India on 8th January 2007, the Central Government constituted the India Design Council on 2nd March 2009.

The council is presided over by Mr. Anand Mahindra, Chairman and Managing Director of Mahindra & Mahindra Ltd. Prof. Pradyumna Vyas, Director of National Institute of Design, Ahmedabad is the member secretary.

The council is formed of 32 eminent people from the field of design, academia, media, industry organizations and Government departments.

Mr. Anand Mahindra while summarizing the role of India Design Council said "Design has always been a key element of the overall production process, irrespective of industry or sector and the IDC can provide a suitable platform for Indian design to

enhance its competitiveness on the global stage.

I am sure the Council will also play an important role in fostering closer ties between industry and academia, and showcasing India's rich design heritage, which is most apparent in our monuments and traditional textiles."

India has the talent and passion of a leading design destination. In the years to come, we hope to develop India into a vibrant, unique international design platform for the world. India is well positioned to take the design leadership role because of its unique and diverse intersection of cultures and businesses. The India Design Council is committed to placing India on the world map of design by developing a thriving, multi-disciplinary design industry that has a global impact.

The council has started working on a number of initiatives for developing Indian Design Sector. It is working with other government agencies, the design community, industry and education institutions to promote design in business, society and public services. The council is spearheading the national design direction and is coordinating the resources of various agencies, institutions and industry in promoting and developing design excellence.

Objectives of the Council

Design Awareness & Design Promotion

- Creating public awareness on quality design & its effectiveness: Use of design as strategic element for business excellence and as a key factor for innovation, to improve people's quality of life.
- Promoting design awareness and effectiveness programs in private & public sectors-Country based Brand building - Design Promotion/ Exhibitions/ Conferences/ Seminars.
- Promoting Design as a tool for innovation, productivity and economic competitiveness in business and industry.
- Encouraging Micro, Small & Medium industries to follow the best design practices.
- Promoting the concept of environment friendly designs and promote designers and industry to work towards environment friendly design.

Design Development

- Promoting design investment in Industry & research organizations - work towards tax benefits for design research.
- Assisting industries in appreciating the importance of quality and effective design management in product manufacturing to upgrade market competitiveness
- Initiating Educational Institution - Industry Partnerships to impart both design knowledge and business knowledge such as marketing/entrepreneurship
- Promoting best design practices & innovation in Design- India Design Mark
- Promoting design investment in Industry & research organizations - work towards tax benefits for design research.
- Encouraging Design Research and Establish National Grants for design research.
- Building a common platform for integrating design resources of the government, the manufacturing and academic circles.
- Acting as a primary knowledge management body for design in India- integrate domestic cultural and creative design information, building a platform to share and exchange knowledge, exploring creativity - Operate a design database.
- Undertaking awareness programs in IPR in the Design Industry - Provide workshops on Intellectual Property management and design

Positioning India as a Top Design Destination

- Setting up a museum/design centre to showcase the role of design in everyday life to visitors from India and abroad.
- Building a smooth mechanism and channels of international cooperation, promoting exchange of Indian design and Indian designers

Department of Industrial Policy & Promotion

The Department of Industrial Policy & Promotion was established in 1995 and has been reconstituted in the year 2000 with the merger of the Department of Industrial Development. Earlier separate Ministries for Small Scale Industries & Agro and Rural Industries (SSI&A&RI) and Heavy Industries and Public Enterprises (HI&PE) were created in October 1999.

Department of Industrial Policy & Promotion is responsible for formulation and implementation of promotional and developmental measures for growth of the industrial sector, keeping in view the national priorities and socio-economic objectives. While individual Administrative Ministries look after the production, distribution, development and planning aspects of specific industries allocated to them, Department of Industrial Policy & Promotion is responsible for the overall Industrial Policy.

Department of Industrial Policy and Promotion monitors the industrial growth and production, in general, and selected industrial sectors, such as cement, paper and pulp, leather, tyre and rubber, light electrical industries, consumer goods, consumer durables, light machine tools, light industrial machinery, light engineering industries etc., in particular. Appropriate interventions are made on the basis of policy inputs generated by monitoring and periodic review of the industrial sector. The Department studies, assesses and forecasts the need for technological development in specific industrial sectors. On this basis, it plans for modernization and technological upgradation of the Indian industry so that, it keeps pace with the international developments in industrial technology on a continuous basis. More details on www.dipp.nic.in



Objectives of India Design Mark

- To recognize good design based on clearly established parameters and by following a transparent process of recognition
- To augment the competitiveness of Indian industrial output for domestic consumption and export markets
- To promote an industrial value system, which has regard for reducing waste, being eco-friendly, produce sustainable products; produce products that are reusable, repairable and recyclable
- To serve as a reference for purchase decision as it signifies good design not only in terms of how good the product looks, but also the product quality, functionality, quality, usability and social responsibility
- To communicate the inherent value proposition of the product and hence act as a brand extension for the product
- To increase design awareness and promote value of design in the industry and society by promoting India Design
- Acting as a primary knowledge management body for design in India- integrate domestic cultural and creative design information, building a platform to share and exchange knowledge, exploring creativity - operate a design database
- Undertaking awareness programs in IPR in the Design Industry - Provide workshops on Intellectual Property management and design

Benefits of India Design Mark

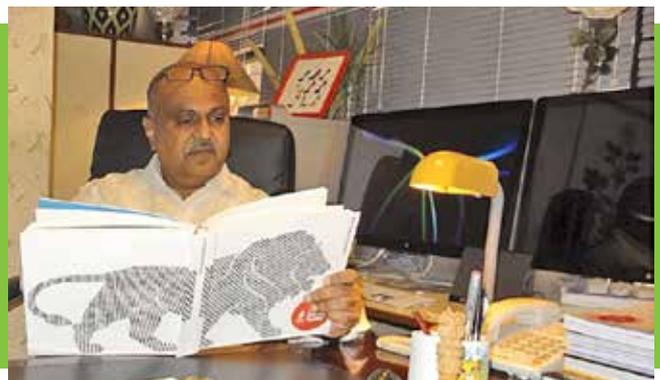
- India Design Mark is the highest design recognition from the Indian Government through India Design Council
- India Design Mark provides credibility to the quality and excellence of the product through an independent and third party assessment
- India Design Mark provides good reputation for the company in both trust and assurance.
- India Design Mark provides businesses with a strong point of differentiation from their competitors.
- When making a choice between two similar products, customers are more likely to choose a product bearing India Design Mark
- India Design Mark symbolizes excellence in form, function, quality, safety, sustainability and innovation and communicates that the product is usable, durable, aesthetically appealing & socially responsible.
- India Design Mark provides international leverage by exemplifying the export worthiness of the product.
- India Design Mark is an excellent launch pad for new products launched in the market
- India Design Mark communicates the inherent value proposition of the product and hence acts as a brand extension.

Positioning India as a Top Design Destination

Setting up a museum/design centre to showcase the role of design in everyday life to visitors from India and abroad.

Building a smooth mechanism and channels of international cooperation, promoting exchange of Indian design and Indian designers

Vide a Government of India notification,
Shri Mohamed Sadiq,
Chief Scientist is appointed as a
Member of the India Design Council.



Shri Nari Kalwani
Managing Director, Asian Leather Pvt Ltd, Kolkata
elected as
Regional Chairman
Federation of Indian Export Organisations (Eastern Region)



PROFILE OF MR. NARI KALWANI

Mr. Nari Kalwani a Founder Chairman and Managing Director, Asian Leather (A Government of India recognized Star Export House) serving the prestigious leather goods brands throughout the world mainly in the USA and Europe.

Mr. Kalwani, having exceptional business acumen, firm conviction, unfailing commitment and long years of rich experience, is a well-known personality in the leather world and served the industry as -

- **President**, Indian Leather Products Association, (ILPA)
- **Vice Chairman**, Council for Leather Exports, (CLE)
- **Chairman**, Task Force, Leather Technology Mission, CLRI
- **Chairman**, Leather Products Committee ISO TC/120 SC-3 at International Standard Organisation, Geneva.

Presently serving as: -

- **Chairman** – Eastern Region, Indo German Chamber of Commerce (IGCC)
- **Chairman** – Eastern Region, Federation of Indian Export Organisations (FIEO)
- **Board Member**, Committee of Administration, Council for Leather Exports (CLE)
- **Board Member**, Leather Sector Skill Council, under National Skill Development Corporation of India (NSDC).
- **Board Member**, Sectoral Monitoring Committee, Council of Scientific & Industrial Research (CSIR), Government of India.
- Executive Member in various Committees and Sub-Committees of Industry Associations, Councils, Chambers and Federations.

Under his leadership, Asian Leather has emerged as one of the largest manufacturing and exporting companies in Eastern India. Moreover, his rich contribution to the overall development of SME Sector in the region is praiseworthy.

Parliamentary Standing Committee for Science & Technology visited CSIR-CLRI on 8th May 2017



MODEUROP

Colour Card for the Autumn Winter 18/19 season released on 8th May 2017



The MODEUROP Colour Card for the Autumn Winter 18/19 season was released in CSIR-CLRI on Monday, 8th May 2017 by Hon'ble Member of the Parliament & Chairperson of the Parliamentary Standing Committee on S&T and Environment & Forests, **Smt Renuka Choudhary** in the august presence of the eminent Parliament delegation to CSIR-CLRI and **Dr B Chandrasekaran, Director, CSIR-CLRI**.

The MODEUROP Colours are presented in three colour groups namely: **Performance, Passion and Reflection** explained Shri Md Sadiq to the guests adding that the Colour Card was released 1st globally and Members of the Indian Leather Fraternity could benefit from such endeavours of CSIR-CLRI.

Business Meeting *with* *Leather Chemical Manufacturers' Association (LCMA)* *held on 25th April 2017 at CSIR-CLRI*



Technologies for the manufacture of four chemical products have been developed at laboratory scale earlier. Aiming the translation of these knowledge products, the need for upscaling, validating and evaluating the products was imminent. After having done the aforesaid works, the technical literatures for the products, samples and leathers produced by using these products have been made ready. Then a business meeting with Leather Chemical Manufacturers Association has been arranged on 25th April 2017 at CSIR-CLRI.



The members of LCMA present during the meeting were Shri B D Bhaiya (Chairman, LCMA and Managing Director, C & E), Shri P K Sinha (General Manager-Technical Marketing, C & E), Shri Ramesh Iyengar (Secretary, LCMA and Chairman & Managing Director, Zsivira Chemie Merk Private Limited), Shri S T A Kabeer (Technical Manager (LF Division), STAHL), Shri Ramakrishnan (Technical Manager (WE Division), STAHL), Shri Maduri Prasanna (Manager – Business Development South Asia, Leather Chemicals, BASF), Dr Sivasamy (Manager - Production) and Shri Vivek Anand (Manager – Marketing, Leather – Enzyme & Auxiliaries) of Synchromax Biotech Private Limited, Shri Diganta Ghosh (Head of Marketing) and Shri Susant Patnaik (DGM-Sales (finishing – South)) of TFL Quinn and Shri Arun Janaki Ram (Country Manager – India, Smit & Zoon).

Dr B Chandrasekaran, Director, CSIR-CLRI extended a warm welcome to the members of LCMA. **Shri B D Bhaiya, Chairman, LCMA** appreciated the efforts of CSIR-CLRI and expressed that Chemical Manufacturers and Research Institute collaboration is essential to sort out the issues of the industry.

Leather Auxiliaries based on Nano-chemistry and those out of the solid wastes of leather industry developed by CSIR-CLRI as briefed below were showcased to the community of LCMA. Shri P Saravanan, CSIR-CLRI presented the business modality for translation of these knowledge products.

- **Nanotan NP:** Water based nano-polymeric agent that could improve the functional properties of leather such as fullness and tightness. As a retanning agent, it enhances the roundness and belly filling of leather with flat and smooth grain and as a finishing agent; it augments the grain pattern and glaze properties
- **Protan KH:** Protein hydrolysate grafted with acrylic copolymer to improve the strength and organoleptic properties of leather. The Protein hydrolysate is prepared using one of the solid wastes from tanneries. As a retanning agent, it improves fullness and softness of leather with excellent grain smoothness
- **Dermatan RT:** Modified polypeptide based syntan prepared using hydrolyzed biopolymers, which offers improved mellowness with high dye intensity, fine grain and short and fine nap. The polypeptide used in the preparation of this auxiliary is sourced from proteinous wastes from tannery.
- **Crostan EA:** Protein based polymeric retanning agent for enhancing tightness in belly region, fullness and smoother grain with excellent exhaustion of dye and post-tanning auxiliaries. Its dispersion power improves the penetration of anionic retanning agents without overloading of grain. Also used as a chrome exhaust aid in chrome tanning.



Need for

CAD

for Shoe Designing

From its advent way back in the 80s to the present time, Computer Aided Designing has been making tremendous impact both in the design and manufacture of footwear. A stage has come wherein the complete process can be automated and executed with ease using modern technology. The need for higher quality and faster process of new designs is placing extra pressures on every company making footwear. Being the first to have a new style on the shelf is often the difference between its success and failure. With a range of advanced CAD/CAM software, footwear manufacturers can cut their time to market dramatically and so increase market share and profitability. In addition, the power and flexibility of the software can overcome restrictions to the designer's creativity imposed by traditional methods.

To help the Indian footwear industry take advantage of this technology and stay a step ahead of competition, the CSIR-Central Leather Research Institute through its Shoe and Product Design Centre is offering specialized CAD courses for the industry personnel. The schedule and syllabus has been tailored especially for beginners to include all functions, one will need in order to design and engineer 2D designs and patterns. Organised into a manageable daily schedule, one will be gradually introduced to all relevant functions that will help them work with the Shoemaster CAD system.



CURRICULUM OUTLINE

- **CAD - Digitizing a Standard:** This module is designed to introduce all functions required to digitize a 2D standard and style lines into the Shoemaster system. This will enable pattern engineer of styles for production.
- **CAD - Style Line Modifications:** This module covers all the basic modification tools, enabling effective modifications to enhance style lines, create new style lines and manipulate them.
- **CAD - Pattern Creation:** Basic functions used to create a set of Net Patterns are introduced in this module. The patterns can later be used for design and/or engineering purposes.
- **CAD - Pattern Engineering:** This module introduces all the basic pattern engineering functions needed to prepare a style for production. This includes adding allowances, details, markers, text to arcs, notches etc.
- **CAD - Grading:** Grading is the scaling of a model size pattern to different sizes based on a particular sizing system. This module covers grading patterns, holding patterns and grouping grading.
- **CAD - Style Transfer and Plotting/ Cutting:** The Style Transfer function enables the transfer of a complete style from one standard to another. The module covers transfer of a style, creation of a cut file and interfacing the cutter.

For further details, please contact
Shoe and Product Design Centre, CSIR-CLRI
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Less-salt and salt-less curing – Technologies and strategies for implementation

N K Chandra Babu, Chief Scientist, Tannery Division



Preamble

Indian leather industry includes all stages in the supply chain, from the recovery of skins and hides from slaughtered and fallen animals through to the tanning process to produce semi-finished and finished leather and the manufacture of final leather products such as shoes and other apparel. Cattle, goats and sheep are the most common sources of raw hides and skins for the tanneries in India.

India has about 3000 tanneries with the total processing capacity of 700,000 tonnes of hides and skins per year. Major clusters of tanneries in India are located in Tamil Nadu (52%), West Bengal (36%), Uttar Pradesh (12%) and Punjab (5%). Around 40-50% salt on raw weight basis is applied for preservation. It is to be noted that primary salt preservation is not done in the tanneries but mainly in primary collection centres which are highly decentralized. The salt used in curing contributes to around 40% TDS and about 55% Chlorides in the composite tannery effluents and affects the biodegradability of waste-water in ETPs and CETPs.

This paper reviews current preservation practices, the alternative technologies available for preservation, the result of lab tests of various technologies, technical and economic feasibility in Indian context.

Salt Pollution: Current Scenario

Nearly 8 million tons of raw hides and skins are processed worldwide annually. Based on this figure, it can be estimated that about 3 million tons of salt are discharged during leather processing annually. The discharge of untreated spent soak liquor into land leads to significant addition of salinity to the soil. The transport of salt through ground water affects the water bodies in the region posing a major environmental challenge. Salt used in curing contributes to more than 40% TDS and about 55% chlorides in the composite tannery effluent. In arid regions, TDS is turning into the main adversary of tanning industry. The discharge limit for TDS is quite stringent in India. In Tamil Nadu, which accounts for more than 50% of the tanning activity in India, the Tamil Nadu.

Pollution Control Board (TNPCB) has fixed the norm for TDS as 2100 mg/L as the state is a water-starved one. The tanneries have been ordered by the judiciary to install Reverse Osmosis (RO) plants to recover water from the treated wastewater and reuse it in processing again and also put in place an efficient reject management system. Zero wastewater discharge has become mandatory and it is being recommended for other clusters in the country to avoid discharge of treated wastewater. However, the operative cost of system has proven to be expensive and the disposal of the salt from the mechanical evaporator still remains a problem. As a result of various efforts by CLRI and the industry, most of the discharge requirements are being met by tanneries especially in Tamil Nadu, one major exception being the total dissolved solids (TDS) norm of 2,100 ppm. CLRI has many technologies for reducing TDS loads in the tannery effluents on its own as well as working with International agencies and Institutes on collaborative mode. Due to huge contribution to TDS by the common salt used in curing, salt-less and less-salt curing methods have been developed and trials done on large scale. Other major contributor to TDS is the salt used in pickling and recently two tanning technologies based on salt-less chrome tanning systems, viz., dry tanning and water-less tanning have been implemented which have received overwhelming response from the industry. This paper primarily focusses on efforts towards cleaner curing methods.

Technologies from CLRI to overcome the problem due to salt used in curing

Due to the pollution related problems associated with the salt curing methods, many research groups all over the world are actively involved and developed many alternative curing methods. But most of these methods would not be able to replace the conventional salt based methods due to several reasons. The alternative technologies chosen must be simple and easily accessible for decentralized applications in villages by flayers from rural India and recovering hides from fallen animals. In the Indian context, one single alternative preservation method will not be sufficient and a basket of technologies suitable to Indian raw material supply chain system should be chosen. The attractive options suitable for pilot studies to different Indian conditions are listed below.

Low salt preservation

Currently, skins are treated with salt amounting to around 50% of the weight of the skin. The trials have found that preservation for 21 days could be achieved using 20% salt with an appropriate additive. In partnership with a large tannery house in Ambur, the technology has been demonstrated on large scale and technical and economic viability of the system has been well established.

Curing by Silica Gel

In place of the salt which functions as a curing agent mainly because of its ability to dehydrate the hide/skin below critical moisture content apart from its bacteriostatic property, a dehydrant silica gel has been used to preserve the raw hide/skin alone or with reduced offer level (5%) or in combination with a preservative. The efficacy of the systems were analyzed by the moisture content, total extractable nitrogen content, bacterial count and pollution load generated during leather processing. The

results showed that the leather obtained was comparable in properties with a potential to reduce pollution load in terms of TDS by 70-75% and chlorides by 80-85% compared to salt curing system. Recently, neutralized silicate formulation has been successfully exploited for the preservation of skins and hides in Indian subcontinent and in Europe.

Chilling

Chilling as a method of preservation is a good alternative to salt preservation. As there is no pollution, no contamination of by-products, it is suitable for all hides and skins and there is no hair-loosening as well. The temperature at which hides and skins should be chilled depends on the required time of preservation. The system is particularly suitable to situations where the tanneries are directly sourcing material from slaughter houses and the leather processing commences within 10 days after the flaying. The system has been validated in Indian condition by closely working with a large Tannery at Erode and logistics are being worked out for implementation of the technology.

Recommendations for Way Forward

The following suggestions are made for implementation and adoption of cleaner curing methods suitable to Indian supply chain:

- Selection of Alternative technological options from Indian and International experience suitable to different situations in Indian social context and Raw material supply chain
- Commissioning of Pilot studies with the selected Options in appropriate situations in different locations in the country for a period of 1 year
- There should be active participation of CPCB, CLRI on one hand and Slaughter houses, Primary collectors of raw hides and skins, Mundis and the Tanneries on the other as required by the context chosen.
- The projects may be sponsored by MoEF, DIPP and cost sharing by Meat and Tanning Industry
- Outcome of the pilot studies carefully analysed and techno-economic and social viability of the systems well established before the recommendation for adoptions in Indian conditions.
- Based on the technologies chosen based on the Pilot studies, the strategies for propagation and extension and cost sharing mechanism needs to be worked out.

Strategies to be followed for selection of Technologies for Salt-free preservation methods Relevant to Indian conditions

In India, both slaughtering and collection and preservation of hides and skins are carried out in unorganized sector in a decentralized way. It is to be noted (Raw Material Survey Report, 2005) that only limited number of mechanized abattoirs (less than 10) are operating in India with the contribution of less than 10% of the raw hides (mostly buffalo hides) and skins being sourced from them. About 60% of the raw hides and skins emanate from about 2500 urban oriented slaughter places where about 8000 traders are involved in the collection and preservation of

hides and skins. There is also a considerable contribution from rural based slaughter places which are much more decentralized and many times individuals are involved in the chain. Moreover, nearly 4.5 million hides and skins are collected from dead animals (mostly cow hides) annually in the country.

Another aspect to be considered is the sourcing of raw hides and skins by the tanneries. Some tanneries are directly sourcing from slaughter houses (small %) and some from primary collection centres. In most of the cases, the raw hides and skins change hands through small traders, mundies and big merchants before reaching the tanneries. The distance between the primary source and the tanneries and the time taken for collection, preservation and transportation before the commencement of Leather processing in the tannery are the other considerations for the selection of alternative technologies.

The alternative methodologies chosen must be simple and easily accessible for decentralized applications in villages by flayers from rural India and recovering hides from fallen animals. Sociological implications of alternative methodologies for preservation of hides and skins involving more than 1.6 million people from weaker sections of the society engaged in the collection of raw hides and skins should be carefully analyzed and the methods to be chosen for adoption in Indian condition.

In Indian context, one single alternative preservation method will not be sufficient and a basket of technologies suitable to Indian raw material supply chain system as well as the social fabric associated with the raw material collection systems should be chosen.

Suggestions on Alternative Preservation methods for Pilot studies appropriate to different conditions

Alternative Technologies suitable for different situations in supply chain in Indian context and based on Indian and International experience are as follows

1. Organized abattoirs and Primary Collection centres (sourcing from Corporation slaughter houses in big cities) – For short term holding less than a week – where the tanneries are directly sourcing from slaughter houses and the duration of collection and transportation is not more than 1 week and the transportation is by overnight
 - Chilling method (CLRI)
2. Primary collection centres sourcing hides and skins from Corporation and Municipal slaughter houses for Long time storage
 - Low salt method (20% salt+2% additive)
 - Silicate based preservation
3. Small Traders and Mandis in rural areas
 - Low salt method (20% salt+2% additives)
 - Air drying techniques

Suggestions for sharing of Additional costs involved in the adoption of Alternative preservation methods

The additional costs involved may depend on the alternative curing option and location in the country where it is going to be adopted. The reason for the location being an important factor for comparison is with

the low cost input as salt, the transportation cost decides the ultimate price of the input.

However, while doing the costing for any alternative curing system, it is necessary to take into consideration the following aspects.

- Prices of curing materials/operational and maintenance costs of equipment (Chilling)
- Transport costs of curing materials of hides and skins
- Costs of labor for applications
- Costs of storage of cured hides and skin
- Costs of waste treatment systems
- Costs of waste disposal systems
- Environmental costs in terms of salinity addition and remediation

The additional cost involved should be distributed across the stakeholders in the supply chain, the tanner bearing the major proportion of the cost and the small primary collection agents, the least. The proportion can be decided based on the discussions with all the stakeholders. However, more than the cost, it is the motivation that will be the driving force for the change and the initiative should be led by the tanning sector which is the worst hit by the pollution problem.

Suggested strategy for propagation and adoption of Alternative Technologies in Indian Context

Based on the outcome of the suggested pilot study, the alternative technologies suitable to different social contexts in India can be selected for propagation and adoption. The unorganized slaughter of animals and the decentralized collection system are the main bane of the country and posing problem in technology extension and propagation. The options chosen should be easy to adopt in such a decentralized system of collection and the alternative chemicals and materials chosen should be available in remotest rural areas or should be made available through well co-ordinated network for supply of the chemicals/materials.

The regulators and the Common Effluent Treatment Plants may have to play an important role in the promotion of cleaner curing options. In the case of methods like chilling, special subsidies may be introduced for the procurement of refrigeration systems and a transport subsidy for the additional cost involved for the operation of refrigerated trucks.

There should be incentives for the adoption of cleaner curing methods on one hand and penalties and disincentives for discharges of highly saline streams by the tanneries for the promotion of alternative technologies. A mechanism should be evolved for sharing the additional cost involved in the adoption of cleaner curing system among various stakeholders involved in the supply chain.

Efforts should be made to popularize the cleaner curing methods in rural areas through awareness campaign and educational programs. The role of NGOs may be necessary as there is a practical difficulty in propagation and extension of technology in such vast areas of the country.



Miles Travelled!

BIO-BRIEF OF Dr NK CHANDRA BABU

Dr NK CHANDRA BABU is currently the Cluster Chairman, Engineering Sciences Division of CSIR-CLRI. After his post graduation in leather technology from Anna University, he had a stint of 4 years in the industry. He joined CLRI as a Research Associate in 1986 and became a scientist in the Tannery Division in the year 1989. He has been the coordinator for many R&D projects, notable being Chrome Management In Leather Processing under TNO(Netherlands)-CLRI Cooperation Program, Salinity Reduction in Leather Processing under CSIRO(Australia)-CLRI Collaborative Project, European Commission Funded

5-Nation Collaborative Project on Application of Silicates in Leather Production for Pollution Reduction. Salt-Free Preservation, Mineral-Free Tanning, Cleaner Leather Processing, Processing of Newer Types of Leathers, Biotechnology for Leather, Computer Color Matching in Leather Dyeing, Bench Marking for Tanning Industry are the research areas close to his heart. He has published more than 100 research papers in the area of Leather Science and Technology. He has coordinated many sponsored and consultancy projects in CLRI and sub-contracts from UNIDO, UNDP and GTZ and the Bench Marking Consultancy Projects in Ethiopia for the Technology Upgradation of Tanning Industry in that country. He has been honorary faculty in Anna University for Leather Technology for more than 25 years. He has worked closely with Govt. agencies and Industry associations for revision of Finished Leather Norms for certification for Exports and Standard Input output Norms (SION) for the Finished Leathers. He has visited many countries including USA, United Kingdom, Germany, Italy, Australia, Thailand, Bangladesh, Kyrgyzstan, Sudan, Ethiopia, Botswana, Kenya, Brazil and South Africa.

Dr NK Chandrababu, Chief Scientist, CSIR-CLRI superannuates on 31st May 2017 after an illustrious career in CSIR-CLRI's Leather Process Technology & Environmental Science & Engineering Departments



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Dr Naidu R B
Principal Technical Officer
Biochemistry & Biotechnology



Shri Kumar P
Finance & Accounts Officer
Finance & Accounts Section

TECHNOLOGY AWARD WINNERS: CONGRATULATIONS!



Know-how on
Dispersing Agent for Dry Tanning
to M/s. NS Eco Solution Private Limited, Vellore



Know-how on
Manufacturing the Bioadhesive (A novel bioadhesive
and a process for the preparation thereof)
to M/s. Jaramed Healthcare Private Limited, Chennai



Know-how on
Waterless Chrome Tanning Technology to the Tanneries of
Leather Clusters at Erode, Kanpur, Jalandhar, Ranipet, Ambur
& Vaniambadi and M/s. Synkromax Biotech Private Limited,
Chennai towards marketing for WCTT licensing and
Know-how on Chrome Melamine Syntan
to M/s. Sellam Chemicals Pvt Ltd., Chennai



Know-how on
Fluidized Immobilized Carbon Catalytic Oxidation (FICCO)
reactor for treatment of sewage and condensate from multiple
effect evaporator to M/s. Nigzam Nigeria Limited, Nigeria
M/s. Econo services (India) Private Limited, Chennai,
M/s. Malladi Drugs & Pharmaceuticals Limited (MDPL), Chennai
& M/s. Pristine Enviro Technologies (PET), Chennai



Know-how on
Chrome Melamine Syntan
to M/s. Sellam Chemicals Pvt Ltd., Chennai



Know-how on
Zero Wastewater Discharge Process for Leather Making
to M/s. Jasper Concept, Bangalore



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