



# E-Newsletter

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In a meeting at CLRI, Chennai on 18th May 2015, Shri. Atul Chaturvedi, Joint Secretary, Department of Industrial Policy & Promotion, Ministry of Commerce & Industry, Government of India interacted with a wide cross section of the industry in Tamil Nadu on the contours of an Action Plan for Leather Sector under the ambitious 'Make in India' programme of Government of India. The Chairman-CLE, Regional Chairman (South), Chairman-Leather Sector Skill Council, industry representatives and officials of CLRI and CLE had enthusiastically participated in the deliberations. The general consensus was that the ambitious programme for expansion of the leather based industries in the country would depend to a great extent on the increased availability of leather. The outcome of the meeting, therefore, was to engage CLRI and CLE to prepare a Blueprint for a Technology Mission for Leather Sector, entirely focused on augmenting production and availability of leather in the country.

CLRI has begun the preparation of a draft blue print for the Technology Mission for Leather Sector. In this context, a stakeholder meeting was convened in Ranipet on 23 June 2015. The objective of the meeting was to present the main proposed components of the draft blue print to the stakeholders and to obtain their views and endorsement. The meeting was attended by representatives of the industry from all over Tamil Nadu, including, Padmashri M.Rafeeqe Ahmed, Chairman, Council for Leather Exports, Mr. M. M. Hashim, Chairman, ILIFO; Mr.R.Ramesh Kumar, Executive Director, CLE; Mr.A.Sahasranaman, Honorary Director, ILIFO; Mr.G.Sundaramurthi, Managing Director, CEMCOT; Dr.S.Rajamani, Executive Director, CEMCOT and Mr. K. V. Emmanuel, Executive Director-ILIFO.

Mr. M. Rafeeqe Ahmed, Chairman, CLE in his presidential address mentioned that the Technology Mission for Leather Sector was identified as a part of ongoing programme of 'Make in India' which was presented to Prime Minister of India. The Department of Industrial Policy and Promotion (DIPP) is the nodal agency for the Make in India programme while concerned line ministry was responsible for different sectors. In the case of leather sector, though, DIPP happened to be the line ministry as well.

Dr. C. Muralidharan, Chief Scientist, Tannery Division, CLRI and Dr. E. Ravindranath, Chief Scientist, Environment Division, CLRI made a presentation on the draft blue print for Technology Mission for Leather Sector. The following were the main components identified by CLRI in presentation:

- Vision document for Leather Sector 2025
- Systematic and large collection of hides and skins, with focus on reduced salt on preservation of hides and skins
- Fuller utilization of tanning capacity to augment finished leather
- Upgradation and expansion of CETPs to achieve complete environmental security of the industry
- Framework for quality bench marking / branding / certification / ecomark

Mr. A. Sahasranaman, Hony. Director, ILIFO mentioned that the market forces have already resulted in much improved collection of hides and skins, both of slaughtered and fallen animals. The focus should therefore be on alternative preservation methods, leading to reduced use of salt. The difficulty in implementation could be due to technological, cultural, practical and logistical issue. He also suggested that CLRI should make a well thought out Mission document, with proper focus on a suitable management system, drawing from earlier successful mission mode projects such as NLDP and LTM of CLRI.

Mr. M. M. Hashim, Chairman, ILIFO, in his address, said that the technologies demonstrated by CLRI in skins should be demonstrated in hide tanneries also. He has also mentioned that the alternative preservation technique had been much talked about in the past over 45 years but still the implementation had been poor due to resistance from both tanners and raw dealers.

Innovative methods of propagation of these green technologies should be identified and implemented. He also emphasized that the technologies of LTM should be applied all over the country and not limited to Tamil Nadu only.

Mr. P. R. Aqeel Ahmed, Regional Chairman, CLE, in his address, mentioned that the ILIFO headed by Mr. MM Hashim had done very useful field work and therefore it should be included in this programme.

Mr. R. Ramesh Prasad, Chairman, Ranitec CETP proposed a vote of thanks.

It was mentioned that there would be a series of stakeholder meetings in different parts of the country and all inputs will be evaluated and incorporated into the final version of the blue print for Technology Mission for Leather Sector.

## Leather Sector Skill Council aims training of CETP / IETP employees

During the visit of Mr. Atul Chaturvedi, IAS, Joint Secretary, Department of Industrial Policy and Promotion, Ministry of Commerce and Industry in Jun 2015, it was emphasized by the Industry that pollution norms were severely constraining the productivity and output of the Industry. It was opined by the Industry that there was a need to sensitise and train the entire staff of the Effluent Treatment Plants so that all employees became well conversant with the norms and would ensure that the productivity and output of tanneries is restored.

Leather Sector Skill Council (LSSC), an agency promoted by National Skill Development Corporation and the Leather

Industry, addressing the HR related activities and skilling of workers, took the initiative of preparing a plan for training of employees involved in environment related jobs in the leather industry. It is now estimated that more than 10,000 people are working in CETPs, IETPs, pre-treatment units of tanneries, and leather technicians and supervisors who have control in designing wet operations. CLRI and ILIFO provided technical support to LSSC in formulating a proposal on the same.

The programme is expected to address almost all tanneries, individual and common effluent treatment plants in India.

## Recent developments in Foreign Trade Association (FTA)

FTA is the agency which developed the Business Social Compliance Initiative (BSCI) Code of Conduct. The BSCI Code of Conduct specifies standards for social aspects for businesses. Some of the exporting companies in India, particularly in sectors of footwear, leather and granites have adopted the BSCI Code of Conduct. The compliance to BSCI is now increasingly accepted by buying houses / buyers, especially in the European Union.

FTA is the leading business association of European and international commerce, located in Brussels, commanding membership of more than 1300 leading buyers, importers, brand owners of the EU. It promotes the values of free trade and sustainable supply chains. FTA's Business Social Compliance Initiative (BSCI) supports companies to improve working

conditions in factories and farms worldwide. Its Business Environmental Performance Initiative (BEPI) also supports companies towards improved environmental performance in global supply chains.

Recently BSCI upgraded BSCI Code of Conduct and it is based on 11 principles. BSCI has revised the Code of Conduct to incorporate the latest international labour guidelines, including the UN Guiding Principles on Business and Human Rights (UNGPR).

FTA launched its new Business Environmental Performance Initiative (BEPI) after a successful test phase in Vietnam, and now counts over 40 participants, highlighting companies' need for transparency and environmental performance in supply chains.

## Stakeholders meeting on solar air drier / Space heating held in TEDA on 19 June 2015

A consultation meeting was held in Tamil Nadu Energy Development Agency (TEDA) on 19 June 2015 with the stakeholders of solar air drier / space heating equipment manufacturers, users and research institutions.

Mr. Sudeep Jain, IAS, CMD, TEDA welcomed the participants. During his welcome address, CMD, TEDA mentioned that India was currently leading other countries in the field of solar energy. The target of 100 GW of solar energy might be surpassed while looking at the pace of installations on solar energy. He mentioned that while the solar photovoltaic installation for generation of electricity was fast expanding, the application of solar thermal was progressing at a slower pace. The meeting was meant to understand the difficulties in promoting the solar thermal energy.

After self-introduction by each participant, Dr. R. Velraj, Professor & Director, Institute for Energy Studies, Anna University spoke on the general industrial applications of solar thermal energy, like hot water generation and hot air for several drying applications in industries. He emphasized that the efficiency solar driers should be developed in order to maximize the utilization of solar thermal energy. A survey conducted in 2009-10 has revealed the availability of biomass in the districts of Thuthukudi, Ramanadhapuram, Thirunelveli and Villupuram. But such biomass is transported to Karur and Tirupur for industries and Udhagamandalam for tea industries. He mentioned that 300 to 400 truckloads of biomass were transported to Udhagamandalam every day. The tea industry consumes about 1 to 2 tonnes of biomass every day and there are about 100 tea factories in Udhagamandalam. He mentioned that there was an acute need for development of efficient driers including drying of sludge in leather tanneries.

Dr. C. Palaniappan, Sunbest, Theni made a presentation on the solar hot air driers installed under his technical knowledge in a variety of industries across the country. It was noted that industries like agri-processing, fishery, latex rubber, laundry, leather, textile, etc. could use solar thermal power. The applications in leather industry included the leather drier at KH Exports Ltd in Ranipet, R. M. Deva & Co., Vaniyambadi and ATH Leader Fabrik, Ranipet.

Subsequent to presentation of Dr. C. Palaniappan, Mr. Nayar, of Kraftwork Solar Pvt Ltd, Cochin made a presentation on solar air driers installed by the company in several industries including fisheries, fruits drying, spices drying, etc.

Mr. Sohail Akhtar, Senior Director, Ministry of New and Renewable Energy, Government of India made a presentation on the currently ongoing programmes. He mentioned that

worldwide, of the solar energy use in all categories, about 49.2% is used for heating applications. He mentioned that currently the subsidy for solar water heaters had been withdrawn mainly due to already widespread adoption of this technology. While the budget for subsidy was only about Rs.200 crores, there were requests for more than Rs.424 crores of subsidy. However, the other solar thermal applications are eligible upto Rs.2400/- per square meter of solar collectors. He mentioned that the subsidies should not be considered as a regular feature, these are given initially to encourage wider adoption of a technology but once the technology and its benefits were appreciated and widely adopted, naturally, its purpose would have been served and hence it would be withdrawn. The market based mechanism should be prevailing in normal situations. He advised the manufacturers to provide and improve the technology so that the users reaped the benefits, like in the case large corporates, and not expect to thrive on subsidies.

Mr. Sohail Akhtar mentioned that he had received a communication from Council for Leather Exports to work together to address the solar thermal energy needs of the leather industry.

During the discussions, the following points emerged:

1. Dr. K. V. Emmanuel, Executive Director, ILIFO opined that the solar thermal energy applications in leather industry were relevant in two stages. While the first one is in leather processing for drying of leather, the other important requirement is in effluent treatment for evaporation of saline reject streams. It was noted that a research proposal may be sent to MNRE in collaboration with Anna University, ILIFO and CLE for application of solar thermal energy for evaporation of effluent in tannery effluent treatment plants.
2. He also mentioned that the subsidy for leather drying application amounted to only about 20% on the cost of the system. The return on investment on such installations is beyond 6 years, which is not financially viable. Thus there is need to increase the subsidy amount. In addition, if the subsidy scheme can be eligible over and above the subsidy under tannery modernization scheme, then it would be encouraging for the tanneries to install solar thermal systems.
3. A meeting with Joint Secretary, MNRE for leather industry representatives may be organized by Mr. Sohail Akhtar to formulate an outline of applying the schemes of MNRE in leather industry.

4. The manufacturers of solar driers mentioned that the subsidy amount was established 9 years ago. Of late, the cost escalations of materials have increased the cost of driers. Hence there is immediate need to increase the subsidy to Rs.3900/- per square meter of solar collectors.
5. The testing facilities for solar thermal applications are now very limited, only about 7 labs. The same are only available at two places in case of concentrating solar technologies. Mr. Sohail Akhtar mentioned that the research institutions like Anna University could promote such labs, for which a separate scheme is available.
6. To the query of Mr. Srikanth, Country Representative of Emsol Innovations, it was clarified that the registration in MNRE and State Nodal Agencies like TEDA is mandatory for availing subsidies and participation of Government tenders. Otherwise registration is not required for direct sales without subsidy.

The meeting ended with a Vote of thanks proposed by Mr.S.Rajaram, Consultant Bio-division/R&D, TEDA.

## Forced Natural Evaporator installed in TAW Tanneries Pvt Ltd, Ambur

A forced natural evaporator has been installed in TAW Tanneries Pvt Ltd, Ambur and it has been functioning for about a month. The plant is manufactured, supplied, erected and commissioned by M/s. Kings Industries, Coimbatore. Based on the initial encouraging results, the tannery organized a presentation and visit of leather industrialists and experts on 4 May 2015 to disseminate the experiences of the company with the new technology.

### **Scheme of evaporation (Technology adopted in the evaporator)**

A large volume of ambient air is passed through a stainless steel tower in which the saline effluent is dispersed to a fine mist. The air and mist are mixed within the chamber and the effluent gets evaporated. Sufficient space and time are provided for the mist to get evaporated. The evaporation is primarily based on ambient temperature and humidity of air. The moist air is sent outside from the top of the chamber after mist eliminator. The concentrated saline effluent falls at the bottom and it is recirculated until it reaches desirable concentration.

The effluent, i.e., reject from RO plant is collected in a sump and it is pumped from the sump to a fan operating at very high speed of about 11000 rpm. The effluent is fractured mechanically into a very fine mist, reportedly of size 4 to 5 micron in a chamber. Very high volume of ambient air is injected into the chamber from the bottom. The air mixed with the effluent is pushed to the top and this travel to the top of the tower helps complete the evaporation. A mist separator, made of polypropylene baffles, traps the salt carried by the air and only the moist air is sent outside the tower. The temperature inside the chamber becomes less than ambient temperature because of evaporation. The slightly higher temperature of the ambient air aids the evaporation. The chamber is also fitted with a diesel burner in order to increase the temperature of the chamber during winter and low-evaporation-days.

The liquid falling down is sent to a conical bottom settling tank. The cycle is repeated until the salt concentration reaches about 150,000 to 200,000 mg/l. Then the effluent drawn from the bottom of the conical bottom settling tank is sent to solar tunnel driers for solidification. The supplier claimed that they could increase the concentration to 350,000mg/l, but the percentage of evaporation becomes less, i.e., about 20% as the concentration increased.

### **Main features of the plant installed in the tannery is provided below:**

- Capacity: 20 m<sup>3</sup>/d
- Material of construction: SS 304 for the towers, SS316L for the high speed motor and PP for mist separator
- Installed power: 15 HP (11 kW) in each tower
- Installed in 2 towers, each tower has inlet flow rate 500 l/h
- Speed of the fan to fracture the effluent: 11,000 rpm
- Average evaporation achieved so far is 75%, i.e., 15,000 litres in two towers per day out of inlet of 20,000 litres
- Increase in relative humidity of fresh air inside the tower: 20% (April / May)
- Air flow rate: 18000 cfm in each tower
- Cost of the system: Rs.55 lakhs
- Each tower is provided with a diesel burner, if the diesel burner is operated the consumption of diesel is 34 litres per hour

### **Difficulties faced in developing and operating the evaporator**

- Initially the mist eliminator was not provided and the salt carried over were deposited around the evaporator. The mist eliminator was provided and this needed more pressure for ambient air fans. Hence these fans have been redesigned and new fans were provided.
- However, even after installation of mist eliminator, loss in dissolved solids is about 10%.
- The salts present in the mist eliminator has to be cleaned by spraying clean water on top of it. This requires about 600 l/d of freshwater which adds to the effluent to be evaporated.
- Increasing the concentration beyond 200,000 mg/l takes longer time. The evaporation is only about 15 to 20% if the concentration goes beyond this level, i.e., 5000 litres of effluent becomes only 4000 litres in one day, whereas the same is reduced from 20,000 to 5000 litres in one day, if the starting concentration is at 60,000 mg/l.
- Clogging of fan nozzle requires cleaning once a week
- Though the reject does not have any settleable solids, a settling is required in order to remove the settleable solids.

**Performance and cost of evaporation**

- The evaporator is able to evaporate about 15000 litres per day from the initial reject volume of 20,000 litres. The TDS is increased from about 60,000 to 175,000 mg/l.
- The operating cost is Rs.0.27/l, i.e., Rs.270/m<sup>3</sup> of effluent, without use of diesel
- If the diesel burners are operated the diesel consumption is about 34 litres per hour and cost is about Rs.20,000 litres per day.

- It is too early to arrive at a proper O&M Cost. The system has to be operated at least for three months before the firm O&M cost could be arrived at.

The preliminary results are encouraging. However it is necessary that the plant is studied in detail for at least three months in order arrive at firm conclusions.

## Brainstorming session on O&M of Zero Liquid Discharge Systems

A brainstorming session was conducted by Chennai Environmental Management Company of Tanners on Operation and Maintenance of Zero Liquid Discharge (ZLD) systems in tanneries and common effluent treatment plants during December 2014 under the Chairmanship of Mr. M. M. Hashim, Chairman, ILIFO and CEMCOT. Mr. M.M. Hashim, Chairman, at the outset, welcomed all the participants to the meeting and provided a brief background of the session and the need for it. Shri. A. Sahasranaman, Vice Chairman, CEMCOT highlighted the issues to be discussed in the session. Speaking on the occasion, Mr. M. Rafeeqe Ahmed, Chairman, AEDOL mentioned that the ZLD had been thrust on tanneries in Tamil Nadu but under the given circumstances there was no alternative to operating the ZLD systems.

Then Shri. K.V. Emmanuel, Technical Director, CEMCOT made a power point presentation on the subject. Similarly Shri. Abdur Rahman, Plant Manager, Vanitec has made a power point presentation on the issues involved.

The following key points emerged from both the presentations:

1. The cost of O&M of the ZLD system was anywhere in the region of Rs. 280 to Rs. 400 per cubic meter of waste water treated. The higher the capacity utilization, the lower the rate.
2. Evaporator operating cost accounted for 50% or more of the cost of operation of the ZLD system.
3. Water conservation was resorted to by tanners resulting in increased pollution load. In some instances such as in Ranipet, there was a tendency to increase production within the allotted volume of water discharge, somewhat offsetting the impact of O&M cost. It has been tentatively estimated that the actual production per day in Ranipet has increased to 200-220 tonners per day against approved capacity of 130 tpd capacity.
4. Fuel for evaporator was a major expenditure; power was the next.
5. Actual capacity realized in evaporators was around 70% or so in best run units. Steps towards increasing it to 100% and more were required.
6. Biological treatment of effluent accounted for about Rs. 50 per cu.m.; RO operation accounted for Rs. 75-80 per cu.m. Conveyance of raw effluent and of treated water to tanneries, about Rs. 20 per c u.m. And the rest of Rs. 130 to

Rs. 150 per cubic meter was accounted by the evaporators.

7. Continuous operation of evaporators was required as any stoppage in between resulted in some niggling new problems when restarted.
8. MVRE used in Vaniyambadi had reportedly resulted in increasing the concentration of salt upto 17%. This operated as a preheater, thus reducing the load on MEE.
9. The fans used by MVRE in Vaniyambadi were not good; being replaced. However Amburtec had different experience with regard to the fan in MVRE; their fans worked well.
10. Overall, the focus for reduction of cost of operation should be chemicals, power, evaporator.

Dr. P. Shanmugam, Principal Scientist, Central Leather Research Institute (CLRI) said that the achievement of ZLD in Vellore district had been acknowledged and well received by CPCB in a recent meeting at New Delhi. He presented a new method of disposal issue of salt. VC, CEMCOT suggested that CLRI may first try the technology in the institute on a bench scale and then try it in a pilot project in the field.

Thereafter, a presentation was made by M/s. Kemco technologies, a middle east based company. Shri. Kabir Jerath and Shri Jun Sod Sod made a power point presentation about the role of chemicals and the importance of having trained personnel at CETPs in reducing the cost.

After the discussions, Shri. M.M. Hashim, Chairman, CEMCOT summed up the deliberations as follows, after thanking the participants for their effective interaction and suggestions:

- (i) In the given situation, all CETPs appreciated the need for ZLD system and were operating the same, despite difficulties faced in the field from time to time. With regard to PTIETC, Pallavaram, he said that if the tanners wanted to relocate, they were free to do so but in the given circumstances, there was no alternative to ZLD in Tamil Nadu.
- (ii) Dr. Shanmugam, CLRI would take up his concept for reducing the O&M on evaporators as a pilot project, using the Biomethanation plant in Melvisharam, to which he conveyed his agreement.
- (iii) The writing on the wall seemed to be that ZLD would be mandated at all India level
- (iv) The issue of O&M cost could be taken up with State and Central Governments. In this connection, he recalled the views of Dr. T. Ramasami, Former Secretary, Department of

Science & Technology for making the CETPs eligible to get subsidy on the count of water conservation.

(v) Following measures may be actively pursued to manage the cost:

- To reduce the O&M, CETPs may consider tapping solar energy
- Wherever now power is available and offered by the private power producers that may be considered.
- Since chemicals play a vital role, what type of chemicals could be used can be discussed and decided.

(vi) A white paper may be prepared on the ZLD technology, its advantages, problems and measures to tackle those problems

(vii) TNPCB's commitment on salt and sludge disposal should be taken up with the Board.

(viii) Experts on evaporator to identify the problems and to

suggest measures to tackle them as also steps to reduce the cost could be roped in.

(ix) In order to exchange experiences on a regular basis and also to discuss on ways of reducing the cost of operation of the ZLD systems, it was decided to constitute a group consisting of Shri.Abdul Rahman and Shri.Fayaz Ahmad of AEDOL, Shri.Zafarullah and Shri Amirthakatesan of SIDCO-I, Dr.S.Rajamani and Shri.KV Emmanuel of CEMCOT. This group could meet once in a month, preferably with a predetermined agenda. MD, CEMCOT could act as the convener of this group; he could also finalise the agenda for the meetings after drawing suggestions of the members.

Shri.Rafeeqe Ahmed said members should follow some discipline to make the ZLD system work. He also suggested a meeting with the Association of Tiruppur and Karur to exchange views, experiences and problems.

With a vote of thanks to the Chair and the participants, the meeting was concluded.

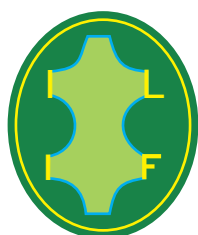


### Third Stage RO plant commissioned in Ranitec CETP

Ranitec CETP has just commissioned the third stage RO plant to reduce the volume of reject sent to the mechanical evaporator while at the same time recovering greater volume of permeate for leather processing. The plant has been supplied, installed and operated by Rochem Separation Systems, Mumbai, on DBOO (Design, Build, Own, Operate) basis. The capacity of the plant is 500 m<sup>3</sup>/d. Results obtained during the month of May have been encouraging. The plant has produced an average of 38% of permeate from the reject generated from 2 stage RO plant. The energy consumption is around 5 kWh /m<sup>3</sup> of permeate. The plant is now being monitored closely.

### ILIFO's support to tanneries for LWG Certifications

- ◆ Alina Pvt Ltd, a tannery assisted by ILIFO to upgrade the level of environmental performance to the requirements of Leather Working Group (LWG), has obtained Gold certification from BLC Leather Technology Centre.
- ◆ Florence Shoe Company, another tannery assisted by ILIFO in monthly monitoring of operation and maintenance of the effluent treatment plant, has been recommended for Gold certification by Central Leather Consultants.
- ◆ Few more companies are being assisted by ILIFO for improved environmental compliance and obtaining LWG certification.



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