Bench Marking (Technology upgradation) Programme in Ethiopian Tanning Industry

The Ethiopian leather industry is an important strategic sector for the economic and industrial development of the country and significantly contributes to the nation’s export earnings with about 95 million USD. Ethiopian leather industry is endowed with one of the richest sources of raw material in terms of both quality and quantity in African continent and has been consistently figuring in the list of top 30 countries contributing to the raw material base for the global leather industry. The Ethiopian government considers that the leather industry, being the largest manufacturing industry has the potential to contribute significantly to the export earnings of the country on one hand and employment opportunities on the other. Hence, it is trying to catalyze the growth of the industry through policy interventions and intensive technology upgradation programmes through bench marking projects for tanning and footwear industries.

Ministry of Trade and Industry (MOTI) of Federal Democratic Republic of Ethiopia (FDRE) had enrolled the services of the CSIR-Central Leather Research Institute (CLRI) by invitation for the Bench Marking Program aimed at the Technology Upgradation of selected seven Ethiopian tanneries. CSIR-CLRI has taken up the bench marking program with the primary objective of transforming the Ethiopian tanning sector through capacity building to enable them to produce finished leathers for International market in competitive manner by improving the efficiency and effectiveness of these units through productivity enhancement. This mission in Ethiopia enables technological transformation necessary to bring about quantum jump in the export performance of the sector by five fold in the next five years.
The total cost of the I-phase of the project was US $ 5.5 Lakhs (consultancy fee to CSIR-CLRI is US $ 3.1 Lakhs) for a duration of 6 months during March-September, 2010. CLRI project team comprising 20 experts drawn from CLRI and Industry worked in the selected tanneries and made technological interventions aimed at transformation of the selected units in the production of finished leathers for international market. The progress in the project was monitored at the highest level by the Ministry of Industry and Trade and the monthly report on the project submitted to the Prime Minister of Ethiopia.

Based on the success achieved in the first phase of the Benchmarking Programme for the Technology upgradation of Tanning Sector in Ethiopia, the Government of Ethiopia through their Ministry of Industry has awarded another consultancy project to CSIR-CLRI for augmentation of efforts made in the first phase as well as to extending the programme to more number of tanneries. In the second phase, 11 tanneries were selected including the old seven tanneries involved in the I phase. The main objective of the second phase of the programme is capacity building in the eleven tanneries leading to self-sustainability in terms of competence building in the areas of research & development, technical upgradation, Product & Quality standardization and productivity enhancement with system formulation and implementation for production of finished leathers for export. The consultancy project has been commissioned with a total cost of US$ 9.2 Lakhs with involvement of 35 experts in the assignment over a period of six months.
The II phase of the project which commenced in the month of February, 2011 has been completed and the benefits of interventions already being visible with the establishment of the Ethiopian Tanning Industry as a reliable suppliers of quality finished leathers in the International Market. Now many buyers have started booking orders for finished leathers and products. The tanneries have graduated into exporters of finished leathers and some tanneries have now stopped exporting semi-processed leathers. With the success achieved in building technological capabilities for the production of quality finished leathers for Global Market through the programme, the Government is planning to introduce duty for restricting the export of semi-processed crust leathers to reap fully the benefits from the success of the programme. There is overall appreciation for CSIR-CLRI for the success achieved which has resulted in the award of another contract for the Institute for the Twinning arrangement for capacity building in the Ethiopian Leather Institute, Leather Industries Development Institute (LIDI).

Prior to the interventions, the tanneries were producing predominantly semi-processed leathers from sheep and goat skins for export and poor quality finished leathers from bovine hides for leather product industries catering to the local market. After the conclusion of the Phase-I consultancy project, the technology status in the selected tanneries got upgraded for producing finished leathers from sheep and goat skins with quality suitable for export markets and finished leathers from bovine hides with improved quality and value addition for local product industry to cater to local market as well as for export. After the end of six month of direct intervetions in the project, the Steering Committee chaired by the State Mindsiter for Industry and Trade has expressed satisfaction on the final outcome and recommended for the continuation of efforts in the second phase for strengthening and sustaining technological capitabilites in the seven tanneries and for extending the benefits to 4 more tanneries.
The basic objectives of the program includes transforming the Ethiopian Leather Sector through

- Implementation of technology up gradation program (Benchmarking) in the selected tanneries to achieve global competitiveness in the production of finished leathers
- Development of system in the respective tanneries for continual improvement and sustaining the growth

The various action modules includes the following

- Selection of new products/Development or standardization of process technology/ Market linkage / Production
- Upgradation of lower ends and full exploitation of splits
- Strengthening of technological capabilities for the production of glove and suede leathers
- Strengthening of Machinery system
- Training of Machine operators (buffing and polishing)
- To ensure implementation of an integrated system for efficiency & profitability enhancement in tanneries
- Capacity building in the finished leather production
- Article specific quality control, machine operation, planning

The various activities towards the implementation of bench marking in various tanneries includes

- Weekly review meeting to evaluate the progress of the work
- Planning for scheduling the system and machine experts
- Facilitate the progress through timely intervention
- Consolidation of biweekly reports
- Organising the work elements of CLRI scientists
- Enabling the experts for proper documentation
Details of the work carried out under the project

As a part of this consultancy project, a detailed gap analysis in the individual tanneries has been carried out and time-bound unit-specific action plans prepared for all the seven tanneries to transform their performance.

The important aspects considered in gap analysis

- Materials
- Man power – Skill and discipline
- Machine including maintenance
- Technology know-how
- Quality of the products
- Quality/process control system
- Production system and practices
- ETP and
- Safety aspects.

Based on the action plan, the experts from CLRI carried out the interventions in various areas and the tasks completed successfully over a period of six months. The interventions made can be grouped under the following categories.

- System Development Efforts
- Product Development including upgradation of lower end
- Training and Capacity building
- Documentation and manual
- Maintenance Management system
- Environment Management system Development
Major System development efforts completed

- Raw material segregation and trimming
- Process restandardization in raw yard, beam house and tanning operations
- Quality control system in all operations/yards
- Assortment/before and after retanning
- Development of article-specific machinery operations protocols
  - process control parameters/setting of parameters
  - sequence of operations
- Good trimming systems in all stages to get better shape/area yield/saving in chemicals
- Development of good piling/handling systems in different sections
- Production planning (article specific)
- Excel sheets for Chemical calculation and costing system
- Software for Chemical inventory control
- System for productivity improvement/better capacity utilization
- Infrastructure building/layout management
- House keeping

Product Development activities

- Identification of unit-specific product mix
- Development of new products with systems
- Upgradation techniques suited to the lower ends/stocks/rejections
- Demonstration on larger scale/bulk production and trouble shooting
- Process Technology Documents

**Training Activities**

- Training of supervisors/workers in different yards/sections in technology/culture change
- Training of machinery operations for specific products/increasing productivity/quality improvement
- Training of supervisors in quality control/process control
- Training in colour matching in dyeing and finishing
- Training in product development
- Training of personnel for overall capacity building
- Machinery Management System
- Assessment of Existing machinery and lay out
- Development of Maintenance system
- Training of TWG Maintenance team
- Documentations

**Environment Management System**

- Assessment of Existing Treatment methods
- Assessment of Solid waste disposal systems
- Training of TWG Members in the existing treatment methods
- Preparation of Blue Print for ETP

**Documentations and Manuals**

- Process technology Documents for the products developed (In Addis Ababa and Batu tanneries completed)
- Quality/process control manuals
- Training Manuals for workers and supervisors in different yards/sections/machine operations
- Manuals for trimming and assortment/selection
- Manual for colour matching and ModEroup Shade cards
- Manual for maintenance of machinery
- Blue print for ETP and Training manual for ETP supervisors/workers

**Review Meetings for Progress Evaluation**

The Monitoring Committee conducted regular weekly review meetings for each tannery. The committee comprises of CLRI coordinator, LIDI team and PIT leader. During the meeting, discussions were held on the work carried out and products developed during the week and also the planning for the subsequent week as per the suggested action plan. The industry expert briefed the committee about the progress vis-a-vis the action plan and displayed the samples for evaluation and discussion. The meetings were conducted regularly and the feedback of all the meetings was discussed with the industry and CLRI experts for necessary follow up measures. The intervention of system expert for the implementation of various elements of system at each tannery was discussed and the importance of system for increased productivity and value addition emphasized. The team also reviewed the number of trainings provided and the extent of awareness generated through this. Various manuals on the training to floor level personnel as well as technical personnel were prepared and submitted. Some of them were translated to Amharic language for easy understanding.

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