



GREEN SKILL DEVELOPMENT PROGRAMME (GSDP)

Report on Course:

Laboratory Technicians / Technical
Assistants for Energy Efficiency, Star
Labelling and Other Electrical Testing
for Environmental Criteria

GOVERNMENT OF INDIA

MINISTRY OF ENVIRONMENT,
FOREST AND CLIMATE CHANGE (MoEF&CC),
NEW DELHI



A report on Laboratory Technicians/Technical Assistants for Energy Efficiency, Star Labeling and Other Electrical Testing for Environmental Criteria.

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(Lighting/Fans/Home Appliances, Motors & Pumps/ Energy cell)

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This training course was designed for technically qualified youth in the country for making them competent by imparting basic knowledge and requisite testing skills for products manufactured with green technology. The programme caters to the growing needs of the electrical industry and is especially oriented to serve the needs of the motor & pump industry.

The aim of the course is to provide training in CERC's NABL accredited, BIS recognized Electrical product testing laboratory on the concepts of star labeling criteria & eco friendly practices adopted by the industry for sustainable future.

Training Manual:

A training manual was prepared as a handy tool of Knowledge on green skills for personnel that can be designated as Technical assistants for electrical product testing and Quality assurance.

The manual was prepared with photographs, names of safety equipments & tools for ease of understanding. It is written in a creative way to make the candidates understand every aspect of testing in a comprehensive way. It covers important topics on:

- Mandatory Safety requirements for electrical products testing laboratory.
- Quality system and Technical requirements
- Methods of up keeping of laboratory tools, instruments, equipments, test system.
- Details on Maintenance, Calibration, Cross verification techniques and formats for maintaining records of each.
- Relevant test methods in details for conformity assessment
- Methods of identifying eco-friendly star labelled electrical products.
- Details on electrical products covered under energy star labeling criteria by Bureau of Energy efficiency.
- Testing techniques for environmental criteria.
- Green Skills for sustainable development with tips & habits to be cultivated to save energy cost to contribute towards global challenges of climate change.

Syllabus:

Course syllabus was prepared by CERC's own qualified & experienced staff of Electrical Laboratory. The syllabus is designed keeping in mind the expectations industry has from job seekers. Suggestions were taken from industry experts & subject experts to make it comprehensive, which covers a broad category of competence levels in terms of professional knowledge, professional skills, core skills, responsibility & process.

Selection of Candidates:

CERC-ENVIS received a lot of applications from candidates all over the India after the announcement of the course by the Ministry of Environment, Forest & Climate Change, New Delhi in 'Times of India' dated 15-5-2018 & in 'Ahmedabad Express (Gujarati Newspaper)' dated 16-5-2018.

A written test and an interview were held on 11-6-2018 at CERC-ENVIS. A selection committee comprising of subject experts selected 15 candidates by judging their technical and core capabilities.

Inauguration of the training programme was held at 'Ahmedabad Management Association' on 3/7/18. Mr. Bharatbhai Patel, Managing Director, Waterman Industries Pvt. Ltd., Ahmedabad and Immediate Past President of Indian Pump Manufacturer's Association (IPMA) was the 'Guest of Honour.' The programme was attended by CERC's management, staff members, prominent industry experts, consultants and professors.



Training schedule:

'Training Schedule' planned by Training-In-Charge Ms. Shweta Mahajan for the months of July and August 2018 was given to all the candidates.



Training:

Training at CERC-ENVIS campus was started from 2/7/18 with orientation to various sections of CERC and the state of the art product testing laboratories.

All candidates were given bags with course material (covering important formulas used for analysis & solutions under various test conditions) stationary items, testers & safety helmets.



Internal and external faculty members:

Following Internal & External faculty members/experts have made the training programme interesting and successful with their presentations and On-the-Job Training (OJT) skills.

Internal Faculty:

Ms. Shweta Mahajan

External Faculty:

(Industry experts,
Subject experts)

1. Dr. Chetan Upadhyay
2. Mr. Mihir Vasavada
3. Mr. R.P. Singh
4. Mr. C.D. Shah
5. Mr. Devang Jhaveri
6. Mr. G.T. Panchal



Major topics covered were -

1. Energy Conservation Act & Bureau of Energy Efficiency (BEE)
2. Voluntary & Mandatory labeling schemes of BEE
3. Varieties of labels used on appliances as energy saving guides
4. Misuse of Energy Star labels, search & seizures by BEE
5. Checking the authenticity of star labels on various electrical products
6. Environmental pollution due to the noise created by electrical products, accessories, home appliances etc.
7. Energy efficient ceiling fans Quality assurance techniques
8. Inter laboratory comparisons & Z score analysis
9. Retesting & Replicate testing

10. Renewable energy
11. Energy efficient motors & pumps
12. Solar pump sets.

Demonstrations on testing of Submersible Pump sets by the following :

Mr. Shabbir Virdiwala



Mr. Arvind Sotha



Demonstrations on Electrical Products: Ms. Shweta Mahajan

Candidates were given 'Hands on Training' on a sample of submersible pump set, manual chain pulley system, spring balance, stop watch and temperature indicator procured under GSDP grant.

Candidates were explained about the methodology of interpretation of Indian Standards with other relevant references of main specifications and amendments.

Instrumental analysis was demonstrated to collect quantitative scientific data for analysis with graphs. They were given exposure to cyclic operations and D-section of products.



The candidates' learning was regulated & examined through practical tests performed by them, presentation of conclusions and everyday interactions with individual candidates. They were also given group studies.

Faculty members invited to give exposure to entrepreneurship:

1. Mr. Chandramauli Pathak
2. Mr. Kashyap Vachcharajani (Expert on finances for startups)



Presentation on Consumer complaints and role of CERC was given by the Head, Complaints Department and presentation on Misleading Advertisements was given by Education & Research Department.

Field visits & Exposure to industries:

1. Visit to M/s. Waterman Industries Pvt. Ltd., Changodar on July 16, 2018

The field visit to M/s. Waterman Industries Pvt. Ltd., Changodar was very educative and informative. The candidates learnt production side techniques, listed below :

- Unidirectional processing of product
- Burnishing of rotor
- Atomization for calculation of turns
- Process of winding in stator slots
- Painting of motor using ring type conveyor belt
- Use of hydraulic press for compressing stator laminations.



2. Visit to T-Square Motors on August 10, 2018:

This field visit provided the candidates with exposure to a start up. Candidates gained knowledge on three requirements (3M) for start up.

- Money power
- Manpower
- Marketing power

Candidates gained important technical knowledge on how to manufacture frictional HP motors. They learnt concepts of:

- Centrifugal switches used for CSCR motors.
- Knowledge of eddy current losses
- Knowledge on proper poles and slots.
- Pull out and pull up torque



3. Visit to Shalin pumps on July 10, 2018:

Candidates received complete knowledge on manufacturing of submersible pumpsets.

- Exposure to balancing test on impellers and rotors
- Epoxy painting on rotors as per requirement of standard.
- Assembling of different parts of pump
- Identification of parts.

Thus visit to small scale industry like Shalin gave them an actual idea about the product development and design.



4. Visit to M/S La-Gajjar Machineries Pvt. Ltd. on August 28, 2018:

- Exposure to machinery with new technology like automatic winding machine.
- Automatic Insulating machine
- Cable joint process with monoplast.
- Assembling of upper housing & Rotor Housing in Motor.
- Varnishing on turns.
- Method of finding leakage in stator body.
- Construction of oil filled submersible motor.



Visit Of ENVIS Secretariat

ENVIS Secretariat Dr. Anandi Subramaniam and National coordinator Shri. Kumar Rajnish visited CERC on 14/8/2018 and had interactions with management and laboratory heads on training programme, future course of actions, and discussed with candidates under training for their feedback on the ongoing course.



Final evaluation of trained candidates:

Exam paper of 100 marks was prepared to decide on skills of level 6 NSQF qualifications, including a written test and practical. After final evaluation, certificates were issued to 15 candidates through Mr. Chandan Bahl, Director, Bureau of Indian Standards, Ahmedabad, Mr. Bharatbhai Patel, Chief Guest and Mr. P.R. Amin, Chairman TORCH during The valedictory function held at AMA Hall on August 31, 2018.



Efforts made for Career counseling and placement of candidates:

A database of candidates was prepared. Personal phone calls were made and emails were sent to HR departments of following industries and laboratories. Candidates were thus provided with opportunities for interviews.

- Waterman Industries, Changodar
- La-Gajjar Machineries Pvt. Ltd., Ahmedabad
- ERDA, Baroda
- TESLA, Gandhinagar
- Star Labs, Himmatnagar
- Krishna Instruments, Rajkot
- Aarohi Embedded Systems, Rajkot
- RETARC Lab, Rajkot
- Angel Pumps, Rajkot
- Kirloskar Brothers Ltd., Sanand & Pune
- Chiripal Group of Industries, Ahmedabad
- Duke Pumps, Himmatnagar
- Plugra Franklin, Baroda

Placement Opportunities:

Candidates were supported with career counseling and placements. With our placement efforts, we were successful in giving job opportunities to twelve candidates out of fifteen.

Fresh Diploma/Degree candidates were placed with a salary of 2.88 lacs/annum and about 2 lacs per annum, with an annual increment of 20 to 30%. ITI candidates were placed with about 1.5 lacs per annum. Four candidates have joined the companies.

Other selected candidates did not accept the job due to following reasons:

1. Exams for Government jobs. (in October)
2. Exams for Higher studies (in October)
3. Long distance from their home town.
4. Offered a job, but it was not as per their salary expectations.

Training for Master Trainers:

Selected four candidates out of fifteen trained during July-August 2018 for training as 'Master Trainers' as per requirements of MoEF&CC.

- Organized training for Master Trainers from September 17, 2018 to September 23, 2018.
- Conducted Theory and Practical Examinations for Master trainers. The assessment was carried out on the basis of lab data sheets, Viva-voce test and individual excellence in performing relevant tests with interpretation of standards.



Testimonials:

1. The training was good enough to learn the various equipments practically. We also got the knowledge of energy efficiency and star labeling. Also studied various standards.
– **Er. Ghanshyam Mirani**
2. In this course, I have learned how to save the environment through technical skills. I have also gained the knowledge about NABL. - **Lokesh Jain**
3. My knowledge has been increased on Green Technology as well as on Energy Saving technology by this GSDP Course. - **Subha Ghosh**
4. I do not have any idea about the energy efficiency of the electrical products. After getting training, I got the knowledge how energy efficient products not only protects the environment, but also increases the efficiency and longevity of the products.
- **Amit Bhunia**



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