

ENGINEERS REGISTRATION BOARD

PRACTICAL TRAINING GUIDELINES FOR TEXTILE ENGINEERS

A: INTRODUCTION

- (a) Subject to the contents of these practical training guidelines, every trainee in the Textile engineering discipline shall complete training in the types of works specified for a minimum period of three years or as specified in the Engineers Registration Board Regulations 1999.
- (b) In the case of research workers and other specialists, where the nature of work renders it impracticable to adhere to the requirements set out in the contents of these practical guidelines, the Board shall evaluate each individual's case separately having due regard to the practical training approved for the time being by the Board.
- (c) The main thrust for professional and technician engineer trainees is as follows:-

(i) ***Professional engineers:-***

The main thrust is on knowledge, understanding subject matters, analysis and methods. Professional engineers must have analytical capabilities, adaptability to varying situations, ability to identify, rectify and design solutions, management capabilities, power and communication skills, adherence to the professional ethics and conduct as specified in the Engineers Registration Board Regulations 1999 and as amended from time to time.

(ii) ***Technician engineers:-***

The main thrust is on know-how of subject matters. Technician engineers must have independent judgement within the field, top class engineering applications, development of cost effective systems and safe procedures, applications of appropriate mathematics, science and related subjects, team and resource management.

B: CONTENTS OF PRACTICAL TRAINING

(a) **General Workshop Practice:**

Every trainee shall work under the supervision of a registered professional Textile engineer for a minimum period of 6 months or as determined by the Board in

accordance with the Engineers Registration Regulations during which time knowledge and experience should be acquired in most of the following areas:

- Foundry work (including casting, pattern making and knowledge material composition of the castings)
- Bench work
- Machine shop practice i.e drilling, shaping, turning, milling, grinding etc.
- Wood work (carpentry)
- Welding both gas and electric
- Plumbing
- Leather works such as stitching and glueing
- Finish work such as panel beating, shot-blasting, painting metal joining and forging

(b) Process Plant Work

Every trainee shall work under the supervision of a registered professional Textile engineer for a minimum period of two years or as determined by the Board in accordance with the Engineers Registration Regulations during which time knowledge and experience should be acquired in most of the following areas:

(i) Production line

{NB. Although the pack of machineries may differ from mill to mill the technological processes remain the same}

- In spinning the trainee should be acquainted with the functioning of the scutcher (in Blowroom), cards, Draw frames, combers, speed – frames, ring – frames and cone winders, as well as central waste collection centre.
- In weaving he (she) should be knowledgeable in warping, sizing pirn winding, looms, knotters, drawing – in and in inspection and batching frames including shearing machines.
- In processing (Dyehouse) he (she) should be familiar with the operations on singeing, desizing, bleaching, washing, mercerizing, steam ageing, soaper, dyeing, printing, pre-shrinking, calendaring, folding, baling and packing, etc.

In all these departments the aspects to be considered should include:-

- Knowledge of the functioning of the mechanisms of each machine
- Process flowsheeting and drawings which involve the preparation of detailed flowsheets and engineering drawings
- Trouble – shooting, identifying and resolving operational problems of a technical nature
- Planning, preparation of planned maintenance, scheduling it and making follow up of the schedule
- Data collection of power consumption per metre of grey fabric of a given product (in weaving)

- Data collection on power dyestuff and chemicals consumption per metre of a given shade dyed or printed (in dyehouse)
- Data collection on spares, accessories and lubricant consumptions
- Familiarize with the internal transportation modes and in process material storage

(ii) Utilities

In textile mill utilities include steam and Thermal boilers, water system, air compressor, air conditioning plant and the power house.

Aspects to be considered in this sub-paragraph include:

- Operation of steam and thermal boilers, air conditioner and air compressors and their efficiencies
- Data on water, Air steam, fuel and power consumptions
- Installations and insulations of steam pipes and electrical cables
- Layout of water and compressed air pipes
- Data collection on Air, steam, water and power wastage as well as on Maximum (power) Demand (MD) and power factor.
- Data collection on the ratio of fuel, air, steam and power consumptions against total production
- Controlling the standards of water (i.e water treatment)
- Treatment of the effluent.

(iii) Quality management

Aspects to be covered are:

- Being in touch with the laboratory, the maintenance mechanics (fitters) and the management
- Familiarization with the relevant test procedures and standards
- Conducting tests on raw materials, intermediates and finished products with appropriate laboratory practice and advise for appropriate measures
- To formulate, implement and monitor the quality control procedures

(iv) Commissioning of New equipment

Aspects to be covered are:

- Conditions of storage of equipment prior installation
- Installation
- Start up
- Operational and test data
- Performance and evaluation
- Assessment of environmental hazards such as noise level, floor vibrations, illumination etc
- Assessment of machine guarantee periods

(c) Plant and equipment design

Every trainee shall work under the supervision of a registered professional Textile engineer for a minimum period of 6 months or as determined by the Board in accordance with the Engineers Registration Regulations during which time knowledge and experience should be acquired in most of the following areas:

- Preparation of preliminary plant design and equipment specification
- Component design
- Preparation of cost estimates
- Evaluation and award of tenders, contracting and tendering (contract management)

(d) Plant Management

Every trainee shall work under the supervision of a registered professional Textile engineer for a minimum period of 6 months or as determined by the Board in accordance with the Engineers Registration Regulations during which time knowledge and experience should be acquired in most of the following areas:

- Familiarization with the plants MIS (Management Information System) and Organization structure
- Organizations of labour work schedules, stock control, etc.
- Production planning
- Realization of the production plans
- Evaluation of work load, and work assignment (labour utilization)
- Costing and cost centres
- Waste and Energy control measures
- Stores and stores management
- Procurement and budgeting
- Tendering and contract administration
- Communication skills
- Plant safety.