

MASTER COPY



Gujarat Council of Vocational Training
Gandhinagar



1. Name of Course:

Switchgear Manufacturing & Assembly

N.C.O. No. for Skills Covered:
(Please refer National Classification of
Occupations -2004 available
on www.dget.nic.in)

2. Engineering OR Non-engineering: Engineering

3. No. of students per batch: 20

4. Duration in Hours. : 6912

5. Duration in Month: 36 @ 48 hours/Week.

Duration in Month: NA @ 22 hours/Week.

6. Examination Scheme:

No.	Name of Subject	Teaching Hours during full course.	Maximum Marks. (Excluding Sessional)	Minimum Marks required for Passing (Excluding Sessional).	Sessional Marks if any.
1	Theory		100	40	
2	Practicals		300	180	

7. Entry qualification for Trainee:

Minimum entry qualification (Essential):	SSC + ITI Certificate in Fitter, Electrician, Tool & Die Maker, PPO, Machinist
Desirable:	

8. Minimum qualification for Trainer:

Minimum qualification (Essential):	Diploma Engineering in any Discipline
Desirable:	Supervisor in respective area

9. Syllabus Committee Member:





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Sr. No.	Name	Organization	Designation	Technical Qualification	Exp.in Years	Signature
1.	B M Chauhan	CET - Gujarat	Dy.Dir Trg	DAE	30	
2.	Girish Deodhar	L&T - E&A Vadodara	Sr. DGM - Mfg.	BE - Mech	25	
3.	Paresh Shah	L&T - E&A Vadodara	DGM - Training	Mech / Electronics Engg.	23	
4.	Sanjog Rele	L&T - E&A Vadodara	AGM - Mfg.	DME	19	
5.	Bharat Bharadva	L&T - E&A Vadodara	Manager - Ind Engg.	BE Ind. Engg	8	
6.	Nisarg Chhaya	L&T - E&A Vadodara	Safety Officer	Mst. Ind Heigene & Safety	3	
7.	Sanjeev Kumar	L&T - E&A Vadodara	Manager- HR		15	
8.	Rajender Singh	L&T - E&A Vadodara	HR/Pers/ Admin		40	

10. Terminal Skills of trainee: (Should be well defined and having reference to NCO):

The trainee, after successful completion of training, will have following skills...

1. Know about component manufacturing, Presses, Press tools and tool settings
2. Know about secondary operations like Drilling, Tapping, Riveting
3. Know about joining processes like Spot Welding and Brazing, Induction Brazing etc.
4. Know Moulding Processes, Thermoplastic Injection moulding machine
5. Assembly operations and testing of products
6. Working on Automatic assembly, testing and packing Lines synchronizing the production cycle with other operations
7. Total Productive Maintenance, OEE
8. Good manufacturing practices i.e. Lean, Six sigma
9. Workshop safety and safe working practices to be followed
10. Electronic Soldering and assembly techniques





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11. Approximate cost of Tools
/ Equipments / Machinery for
starting one batch of the course:

Rs. 20.0 L

Reference Year
2013

12. Area required for practical / Workshop for one batch.

....80... Sq. Meter

13. Minimum Power connection required

.....NA..... K.W.

14.1 No of items in Standard list of Machinery :

Attached

14.1.1. Page NO from _4_ to _4_.

14.2 No of items in Standard list of Shop outfit :

Attached

14.2.1. Page NO from _04_ to _04_.

14.3 No of items in Standard list of Trainee Toll-Kit :

Attached

14.1.1. Page NO from _04_ to _04_.

***** FOR OFFICIAL USE *****

Approved by GCVT in ^{Executive} ~~Governing~~ Body meeting on

21/06/2013

Syllabus implemented w.e.f. admission session

Next session

Revision History :

1. Revision No..... Revision Date.
2. Revision No..... Revision Date.
3. Revision No..... Revision Date.





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Standard List of Machinery - Equipment / Shop-outfit / or Trainee Toolkit
for Trade of L&T switchgear Component Manufacturing and Assembly Skill
Development Programme .

Sr. No.	Description of Item with detailed specifications	Item type i.e. Machinery / Equipment OR Shop Outfit OR Trainee Toolkit	Quantity Required per one Batch of Students	Quantity Required per one Batch of Students for Instructor	Total Quantity Required (Total of previous two columns)
1.	20T Press	Machinery	1 No	-	01 No
2.	Riveting Machine	Machinery	1 no	-	1 no
3.	Brazing Station	Machinery	2 nos.	01 nos.	3 nos.
4.	Spot Welding Machine	Machinery	2 nos		2 nos
5.	Injection Moulding Machine	Machinery	1 no		1 no
6.	CNC Machining centre	Machinery	1 no		1 no
7.	Electrical Screw drivers	Machinery	2 nos		2 nos
8.	Assembly operation kit	Trainee Toolkit	1 no		1 no
9.	Torque wrenches	Trainee Toolkit	1 no		1 no
10.	Computer with Video display Kit	Trainee Toolkit	1 set		1 no
11.	Soldering stations	Trainee Toolkit	1 set		1 set
12.	Test Benches	Machinery	1 set		1 set
13.	Packing Tools	Trainee Toolkit	1 set		1 set
14.	Hand gloves	Shop Outfit	20 set		20 set
15.	Safety Glasses	Shop Outfit	5 set		5 set
16.	Safety Shoes	Shop Outfit	20 set		20 set
17.	Small Tools	Trainee Toolkit	5 set		5 set
18.					
19.					



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Module	Theory	No of Hrs	Practical	No of hrs
1	Introduction to Workshop Safety, EHS (Environment, Health and safety) standard, 5S , Workshop planning and science, Reading component and assembly drawing	68	Safety equipment Demonstrations, 2S on the job, Knowing Tools, On the Job training	1084
2	Introduction to Basic Assembly Process and use of Tools, Operation of Power press, Riveting m/c, CNC Machining, Test Benches and Inspection tools	48	Practice on Assembly Kit, Test Benches, Soldering stations, Use of Torque wrenches, Electrical screw / Nut drivers	1104
3	Introduction to switchgear products, Reading Engineering drawing and SOPs, Study of Assembly Parts and Process, Advanced Assembly tools and Test Benches	48	Component manufacturing, Assembly, Testing and packing of various products in switchgear, Qualification on brazing process	1104
4	Critical Assembly and Basic breaker assembly, Tools, Jigs and fixture settings, SPM operation and Maintenance, Debugging and rework of assemblies. TPM / Autonomous Maintenance	48	Assembly of Basic breakers, Debug the assemblies and Rework the issues , do small maintenance of machines	1104
5	Introduction to GMP (Good manufacturing practices), TOTT (Target oriented technical Training), CNC M/c Programming, Introduction to surface treatment and plant operation	68	Sample programming, Case studies and projects	1084
6	Introduction to Six sigma Quality, yellow belt training and evaluation, Controlling critical parameters, operating Advanced machines like Induction brazing, SPM on brazing , Introduction to LEAN Philosophy, Understand OEE and contribute to improve the same,	68	Sample programming, Case studies and projects	1084

