



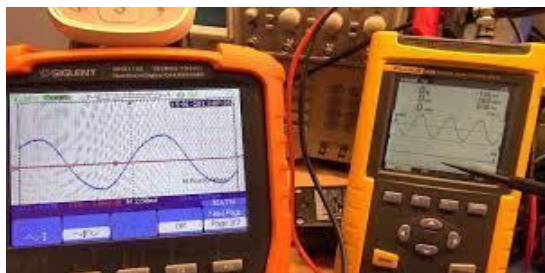
## AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, Permanently Affiliated to JNT University Kakinada,  
ACCREDITED BY NAAC and Recognized under 2(f) & 12 (b) by UGC, New Delhi)  
Tamaram, Makavarapalem, Narsipatnam (RD), Visakhapatnam-531113

*Certificate Course  
on*

### **POWER QUALITY ANALYSIS OF VARIOUS POWER ELECTRONIC CONVERTERS**

*From 2<sup>ND</sup> DEC 2019 TO 7<sup>TH</sup> DEC 2019*



#### **ORGANIZED BY**

**DEPT. OF ELECTRICAL & ELECTRONICS ENGINEERING  
AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY,  
TAMARAM (V), MAKAVARAPALEM (M),  
VISAKHAPATNAM-531113**

## AVANTHI EDUCATIONAL SOCIETY

Avanathi Educational Society under the Leadership of Sri M.Srinivasa Rao garu as chairman was started in the Year 1991. Within a short span of its establishment, the group has made a remarkable stride in the field of education offering various courses at Under Graduate, Post Graduate, Pharmacy & Engineering levels. This milestone is achieved as the institution carved itself to impart quality and career oriented education, countering the challenges of the modern world through planning, dedication, determination, prompt execution and with the innovative ideas of our advisory board. Today, Avanathi Educational Society is proud to have a strength of over 16000 students with 15 institutions under its ambit. It is the path of glory towards the success during the last 19 years. The institution has been adjudged many times as the second best educational institutions in the twin cities and 16th best in all over India through the impartial survey made by the renowned magazine "India Today".

## AVANTHI INSTITUTE OF ENGINEERING & TECHNOLOGY

AIET started in the year 1999 and offers various courses at Engineering and PG level. The college is providing with rooms, computer centre, laboratories and seminar hall with audio-visual equipments. Industry Institute interaction is conducted regularly to emphasize on the latest trends in the present market.



It is very near to Narsipatnam. Frequent bus facilities are available both from and to Visakhapatnam and Narsipatnam. Very safe and secure hostel facility is

available for Girl students. These are the additional facilities besides excellent academic atmosphere in the college campus.

## **DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

The department of Electrical & Electronics Engineering was established in the year 2001 along with the MECHANICAL, ECE and CSE departments. The department has an intake of 60 students. Commencing the academic year 2011, a post-graduate course in Power Electronics and 2014 in Power Systems was started. The department has full fledged laboratories, workshops and P.G. labs. The department is staffed with qualified, experienced and dedicated members who engage in research activities.. The department with active support from the management is aiming to expand its research activities and industrial consultancies.

### **ABOUT COURSE**

This course is intended to provide tools to classify, quantify, and analyze the power quality problems and to provide practical engineering solutions to mitigate these problems. The objectives of this course are as follows.

- To understand the various power quality issues.
- To understand the concept of power and power factor in single-phase and three-phase systems supplying nonlinear loads.
- To understand the conventional compensation techniques used for power factor correction and load voltage regulation.
- To understand the active compensation techniques used for reactive power compensation, load balancing, power factor correction, and load voltage regulation.
- To understand the active filter techniques used for harmonics elimination.

#### **CHIEF PATRON**

Smt.M.Gnaneswari  
President, Avanthi Educational Society

#### **PATRON**

Dr. C P V N J Mohan Rao  
Principal,  
Avanthi Institute Of Engineering And Technology

#### **CHAIRMAN**

Dr. T Srinivasa Rao  
Head of the Department  
Electrical & Electronics Engineering

#### **COORDINATORS**

Mr P Varahala Dora  
Asst. Professor  
Mr S Rishikesh,  
Asst. Professor

- To understand the power quality improvement in SMPS, drive systems, and renewable energy systems.

### **TOPICS TO BE COVERED**

**DAY-1:** Introduction Power Quality and Power Quality Analysis of Single Phase semi controlled converters

**DAY-2:** Power Quality Analysis of Single Phase fully controlled converters and Power Quality Analysis of Single Phase AC controllers

**DAY-3:** Power Quality Analysis of 3-Phase AC controllers and Power Quality Analysis of 1phase PWM AC controllers

**DAY-4:** Power Quality Analysis of 3phase PWM AC controllers

**DAY-5:** Power Quality Analysis of Selective Harmonic Elimination Technique for Single phase Inverters

**DAY-6:** Various power quality improvement techniques for harmonic current mitigation and reactive power compensation

For any further information Contact Mr P VARAHALA DORA, Assistant Professor, EEE, and Mr. S RISHIKESH Assistant Professor, EEE



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### **DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

*Dt. 28<sup>th</sup> Nov, 2019*

#### **CIRCULAR**

A Short term Course on *Power Quality Analysis of Various Power Electronic Converters* for all the IV Year II Semester & III Year II Semester students of Electrical & Electronics Engineering Department is scheduled from 2<sup>ND</sup> DEC 2019 to 7<sup>TH</sup> DEC 2019. All the students should attend the course without fail. For any further information Contact Course Coordinators Mr. P Varahala Dora and Mr S Rishikesh, Assistant Professor, EEE Department.

Resource person Details: 1. Dr. P. Sekhar

Associate Professor  
Department of EEE  
Vignan's Institute of Information Technology  
Visakhapatnam

2. Dr. G. V. Nagesh Kumar

Professor  
JNTUA  
Anantapur

  
T Srinivasa Rao

Head of the Department  
**Head of the Department**  
Department of Electrical & Electronics Engg.  
Avanthi Institute of Engg & Tech.  
Makavarapalem, Visakhapatnam - 531113.

Copy to: Principal, AIET



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### **Power Quality Analysis of Various Power Electronic Converters**

**Duration: 02-12-2019 to 07-12-2019**

#### **SYLLABUS**

**DAY-1:** Introduction Power Quality and Power Quality Analysis of Single Phase semi controlled converters

**DAY-2:** Power Quality Analysis of Single Phase fully controlled converters and Power Quality Analysis of Single Phase AC controllers


**DAY-3:** Power Quality Analysis of 3-Phase AC controllers and Power Quality Analysis of 1phase PWM AC controllers

**DAY-4:** Power Quality Analysis of 3phase PWM AC controllers

**DAY-5:** Power Quality Analysis of Selective Harmonic Elimination Technique for Single phase Inverters

**DAY-6:** Various power quality improvement techniques for harmonic current mitigation and reactive power compensation

  
**COORDINATOR**

  
**HOD**  
**Head of the Department**  
**Department of Electrical & Electronics Engg.**  
**Avanthi Institute of Engg & Tech.**  
**Makavarapalem, Visakhapatnam - 531113.**



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Tamaram, Makavarapalem, Narsipatnam (RD), Visakhapatnam-531113


## Power Quality Analysis of Various Power Electronic Converters

Duration: 02-12-2019 to 07-12-2019

### SCHEDULE

DAY/DATE	Live Session - 1 09.00 AM to 12Noon	Live Session - 2 1.00 PM to 4.00 PM
<b>Monday</b> 02/12/2019	Introduction Power Quality	Power Quality Analysis of Single Phase semi controlled converters\
<b>Tuesday</b> 03/12/2019	Power Quality Analysis of Single Phase fully controlled converters	Power Quality Analysis of Single Phase AC controllers
<b>Wednesday</b> 04/12/2019	Power Quality Analysis of 3-Phase AC controllers	Power Quality Analysis of 1phase PWM AC controllers
<b>Thursday</b> 05/12/2019	Power Quality Analysis of 3phase PWM AC controllers	Power Quality Analysis of 1phase PWM AC controllers
<b>Friday</b> 06/12/2019	Power Quality Analysis of Selective Harmonic Elimination Technique for Single phase Inverters	Power Quality Analysis of Selective Harmonic Elimination Technique for Single phase Inverters
<b>Saturday</b> 07/12/2019	Various power quality improvement techniques for harmonic current mitigation and reactive power compensation	Various power quality improvement techniques for harmonic current mitigation and reactive power compensation

  
COORDINATOR

  
HOD  
Head of the Department  
Department of Electrical & Electronics Engg.  
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**Power Quality Analysis of various Power Electronic Converters**

*From 02<sup>nd</sup> Dec 2019 to 07<sup>th</sup> Dec 2019*

**4<sup>th</sup> & 3<sup>rd</sup> Year Students Attendance**

S.NO	ROLL NUMBER	STUDENT NAME	02 Dec	03 Dec	04 Dec	05 Dec	06 Dec	07 Dec
1	16811A0201	ANTHARVEDI LAKSHMI BHAVANI SOWMYA	✓	✓	✓	✓	✓	✓
2	16811A0202	CHEKURI HEMANTH KUMAR	✓	✓	✓	✓	✓	✓
3	16811A0203	CHODAY BHANU TEJASWINI	X	✓	✓	✓	✓	✓
4	16811A0204	KALAGA VARAHA VENKATA RAM PRASAD	✓	✓	✓	✓	✓	✓
5	16811A0205	KARANAM SREENU	✓	✓	✓	✓	✓	✓
6	16811A0206	MOLUGU BHARADHWAJ	✓	✓	✓	✓	X	✓
7	16811A0207	NEELAGIRI LOKESH VENKATA SAI GANESH	✓	✓	✓	✓	✓	✓
8	16811A0208	PASALAPUDI MOHANA PRIYA	✓	✓	✓	✓	✓	✓
9	16811A0209	PEDAPATI HARIKRISHNA	✓	✓	✓	✓	✓	✓
10	16811A0210	PETLA VISHNU VARDHAN	✓	✓	✓	✓	✓	✓
11	16811A0211	PYLA RAMESH	✓	✓	✓	✓	✓	✓
12	16811A0212	SHAIK KHAJA BASHEER	✓	✓	✓	✓	✓	✓
13	16811A0213	VANUGU RENU PRASANTH KUMAR	✓	✓	✓	✓	✓	✓
14	16811A0214	YAKA SALMANRAJU	✓	✓	X	✓	✓	✓
15	17815A0202	CHITIKELA MANASA	✓	✓	✓	✓	✓	✓
16	17815A0203	DANIMIREDDI NOOKESH	✓	✓	✓	✓	✓	✓
17	17815A0204	EARLA V S G RAMARAO	✓	✓	✓	✓	✓	✓
18	17815A0205	GANDREDDY LAZAR	✓	✓	✓	✓	✓	✓
19	17815A0206	GOPISETTI LAKSHMI VINOJ KUMAR	✓	✓	✓	✓	✓	✓
20	17815A0207	KAARUKONDA TARUN KUMAR	✓	✓	✓	✓	✓	✓
21	17815A0208	KALLA SRAVANI	✓	✓	✓	✓	✓	✓
22	17815A0209	KILAPARTHI PRASAD	✓	✓	✓	✓	✓	✓
23	17815A0210	KUNDRAPU REVATHI	✓	✓	✓	✓	✓	✓
24	17815A0212	LEKKALA SRI RAM SIVA KUMAR	✓	✓	✓	✓	✓	✓
25	17815A0213	MADDU CHANDRA SEKHAR	✓	✓	✓	✓	✓	✓
26	17815A0214	MAKIREDDI AYYAPPASWAMY	✓	✓	✓	✓	✓	✓
27	17815A0216	MOTURI BHAVAN ANIL	✓	✓	✓	✓	✓	✓
28	17815A0218	PASUPULETI BHASKARA SIVA GANESH	✓	✓	✓	✓	✓	X
29	17815A0219	PATCHARA NAGESWARARAO	✓	✓	✓	✓	✓	✓
30	17815A0220	PINAMAREDDI OOHAA	✓	✓	✓	✓	✓	✓
31	17815A0221	POLUPARTHI GANGA BABU	✓	✓	✓	✓	✓	✓



32	17815A0222	RAVADA SREENU	✓	✓	✓	✓	✓	✓
33	17815A0223	REDDI MANISHA	✓	✓	✓	✓	✓	✓
34	17815A0224	S MAHALAKSHMI NAIDU	✓	✓	✓	✓	✓	✗
35	17815A0225	SUNKARA JYOTHSNA	✓	✓	✓	✓	✓	✓
36	17815A0226	THANGELLA RAMU	✓	✓	✓	✓	✓	✓
37	17815A0227	VEGI SRINU	✗	✓	✓	✓	✓	✓
38	17815A0228	EARLA MAHESH	✓	✓	✓	✓	✓	✓
39	17811A0201	AMARAPALLI NAGA SAI	✓	✓	✓	✓	✓	✓
40	17811A0202	BABBOTHI RAMYA	✓	✓	✓	✓	✓	✓
41	17811A0203	BAVIRISETTY PESALAYA	✓	✓	✓	✓	✓	✓
42	17811A0204	CHINTAKAYALA BINDU MADHURI	✓	✓	✓	✓	✓	✓
43	17811A0205	GOLLU VARALAKSHMI	✓	✓	✓	✓	✓	✓
44	17811A0206	KURACHA SAI SOWJANYA	✓	✓	✗	✓	✓	✓
45	17811A0207	LALAM SWAMY	✓	✓	✓	✓	✓	✓
46	17811A0208	LALAM VENKATA NOOKAMBIKA	✓	✓	✓	✓	✓	✓
47	17811A0209	MATHIREDDY SHIVAKUMAR	✓	✓	✓	✓	✓	✓
48	17811A0210	MEDISETTI DURGAPRASAD	✓	✓	✓	✓	✓	✓
49	17811A0212	RAJANA RAMACHANDRA RAO	✓	✓	✓	✓	✓	✓
50	17811A0213	RAVADA PAVAN GANESH	✓	✓	✓	✓	✓	✓
51	17811A0214	RAVADA PRAKASH RAO	✓	✓	✓	✓	✗	✓
52	17811A0215	YEDDU PREETHI	✓	✓	✓	✓	✓	✓
53	18815A0201	ADAPA SRINIVAS	✓	✓	✓	✓	✓	✓
54	18815A0203	AKULA AMARTHYA	✓	✓	✓	✓	✓	✓
55	18815A0204	AMIREDDI SREEDHAR	✓	✓	✓	✓	✓	✓
56	18815A0205	BADAPU BHUVANESWARI	✓	✓	✓	✓	✓	✓
57	18815A0206	BARNIKALA CHIRANJEEVI	✓	✓	✓	✓	✓	✓
58	18815A0207	BEESETTI PAVAN SAI	✓	✓	✓	✓	✓	✓
59	18815A0208	CHAPPA RAMA KRISHNA PRASAD	✓	✓	✓	✓	✓	✓
60	18815A0210	DARLA THARAKA NAGA SAI KUMAR	✓	✓	✓	✓	✓	✓
61	18815A0211	DARLA VENKATESH	✓	✓	✓	✓	✓	✓
62	18815A0212	DHARA KAIYAN	✓	✓	✓	✓	✓	✓
63	18815A0213	GARAGA SAI DURGA	✓	✓	✓	✗	✓	✓
64	18815A0214	GATTA KOTI RAJESH	✓	✓	✓	✓	✓	✓
65	18815A0215	GORLE POLAMAMBA DEVI	✓	✓	✓	✓	✓	✓

66	18815A0216	GULIMI VASU	✓	✓	✓	✓	✓	✓
67	18815A0217	INDHALA SANDEEP	✓	✓	✓	✓	✓	✓
68	18815A0218	KANDULA CHANDRAMOULI	✓	✓	✓	✓	✓	✓
69	18815A0219	KONDRA DIVYASREE	✓	✓	✓	✓	✓	✓
70	18815A0220	LAKKIDAPU ADVILA	✓	✓	✓	✓	✓	✓
71	18815A0221	MALLA VENKATESH	✓	✓	✗	✓	✓	✓
72	18815A0222	NEMALA NAGALAKSHMI	✓	✓	✓	✓	✓	✓
73	18815A0223	PANDURI VENKATA SAI KUMAR	✓	✓	✓	✓	✓	✓
74	18815A0224	PEDAPATI DIVYA PRACHOTHAN	✓	✓	✓	✓	✓	✓
75	18815A0226	PRODDUTURI RAJA SEKHAR	✓	✓	✓	✓	✓	✓
76	18815A0227	R SARAT SATEESH	✓	✓	✓	✓	✓	✓

*pnole*  
Coordinator

*[Signature]*  
H O D  
Head of the Department  
Department of Electrical & Electronics Engg.  
Avanthi Institute of Engg & Tech.  
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**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

A Certificate course on  
**Power Quality Analysis of various  
Power Electronic Converters**

From 02nd Dec 2019 to 07th Dec 2019

**Dr. P. Sekhar**



**Dr. G V Nagesh Kumar**



*P. Dora*  
**Coordinator**

**Head of the Department**  
Department of Electrical & Electronics Engg.  
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## *Certificate of Participation*

This is to certify that Mr./Ms. \_\_\_\_\_ of \_\_\_\_\_ has participated in the Certificate Course entitled on **POWER QUALITY ANALYSIS OF VARIOUS POWER ELECTRONIC CONVERTERS** during from 2<sup>ND</sup> DEC 2019 to 7<sup>TH</sup> DEC 2019 was organised by the Department of **ELECTRICAL AND ELECTRONICS ENGINEERING** at Avanthi Institute of Engineering and Technology.

**Coordinator**

**HOD**

**Principal**



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### Department of Electrical and Electronics Engineering

Dt: 11-12-2019

#### **BRIEF REPORT**

Department of Electrical and Electronics Engineering, Avanthi Institute of Engineering and Technology had organized a certificate course on "**POWER QUALITY ANALYSIS**" during 02-12-2019 to 07-12-2019

The speaker Dr. P. Sekhar, Associate Professor, Electrical and Electronics Engineering Vignan's Institute of Information Technology, Visakhapatnam, explained Advanced PQ solutions, compensator topologies, detection methods, control algorithms. He said that PWM techniques are the key driven force to achieve the goal of power quality enhancement in power grid or microgrids., and he also explained Three-Level Inverter based on VPWM for PV Application and the speaker compare different multilevel grid-connected inverter topologies for PV applications and propose a hybrid T-type inverter topology, which can reduce the harmonic content and the power loss of the converter and improve the conversion efficiency of the system.

Dr. G. V. Nagesh Kumar, Professor JNTUA explained the space vector pulse width modulation (SVPWM) method is applied for the proposed topology and the power quality analysis of selective elimination techniques for single phase inverters and various power quality improvement techniques. He also explained about single phase fully controlled converters. The students satisfied by the direct interaction with the speakers.

  
Coordinator

  
Head of the Department  
Head of the Department  
Department of Electrical & Electronics Engg.  
Avanthi Institute of Engg & Tech.  
Makavarapalem, Visakhapatnam - 531113.