

GE12 Photovoltaic Solar Electrical System

Part 1 Lesson

Solar Energy

EE117	Solar Electrical System
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K025+K132+K125

UEENEEK132A		Develop strategies to address environmental and sustainability issues in the energy sector
UEENEEK125A		Solve basic problems in photovoltaic energy apparatus and systems
UEENEEK140A		Develop engineering solutions to renewable energy (RE) problems

Page 491 to 501 of

http://www.filefactory.com/file/cf9bf8f/n/Video_Lessons.pdf

Renewable Energy+ Photovoltaic

K025 Lesson 1-PV Cell.zip

<http://youtu.be/KVxTNh71iis>

http://www.filefactory.com/file/c0b5615/n/K025_Lesson_1-PV_Cell.zip

K025 Lesson 2-PV Power.zip

<http://youtu.be/ZipUk0kc3GA>

http://www.filefactory.com/file/c0b566d/n/K025_Lesson_2-PV_Power.zip

K025 Lesson 3-Module derating.zip

<http://youtu.be/Cop7phatWss>

http://www.filefactory.com/file/c0b5675/n/K025_Lesson_3-Module_derating.zip

K025 Lesson 4-PV Module daily energy.zip

<http://youtu.be/nXMraW8oxak>

http://www.filefactory.com/file/c0b57b2/n/K025_Lesson_4-PV_Module_daily_energy.zip

K025 Lesson 5-PV daily energy accurate method.zip

http://youtu.be/kpyEpxVf_EA

http://www.filefactory.com/file/c0b5702/n/K025_Lesson_5-PV_daily_energy_accurate_method.zip

K025 Lesson 6-Solar insolation.zip

<http://youtu.be/z4W7pA2t3C4>

<http://youtu.be/dZVccq38xpE>

http://www.filefactory.com/file/c0b574b/n/K025_Lesson_6-Solar_insolation.zip

K025 Lesson 7-Solar geometry.zip

<http://youtu.be/R4-CLzHW5hE>

http://www.filefactory.com/file/c0b577a/n/K025_Lesson_7-Solar_geometry.zip

K025 Lesson 8-PV Semiconductor.zip

<http://youtu.be/sgK639n74ag>

http://www.filefactory.com/file/c0b58b5/n/K025_Lesson_8-PV_Semiconductor.zip

K025 Lesson 9-Solar irradiation and shading assessment.zip

http://youtu.be/TRg_83z6Zvw

<http://youtu.be/oBgqHGdZgOY>

http://www.filefactory.com/file/c0b58f7/n/K025_Lesson_9-Solar_irradiation_and_shading_assessment.zip

K025 Lesson 10-Irridation assessment.zip

<http://youtu.be/3empnl2Sm7w>

http://www.filefactory.com/file/c0b5823/n/K025_Lesson_10-Irridation_assessment.zip

K025 Lesson 11-Solar cell technology.zip

<http://youtu.be/f5M4XVOAqgE>

http://www.filefactory.com/file/c0b5850/n/K025_Lesson_11-Solar_cell_technology.zip

K025 Lesson 12-PV Power system.zip

<http://youtu.be/smLWJYcuT6w>

<http://youtu.be/nSu23xn9G08>

http://www.filefactory.com/file/c0b5887/n/K025_Lesson_12-PV_Power_system.zip

K025 Lesson 13-PV water pumping system.zip

<http://youtu.be/GV0nCaQj2lc>

<http://youtu.be/pD4DcQX6L3Q>

<http://youtu.be/qbsM7mKRh30>

http://www.filefactory.com/file/c0b59d6/n/K025_Lesson_13-PV_water_pumping_system.zip

K025 PV Software Video.zip

<http://youtu.be/i0XO9O1mG7A>

http://youtu.be/45bgWra7_70

<http://youtu.be/rMY8ffuT0bY>

http://www.filefactory.com/file/c0b5948/n/K025_PV_Software_Video.zip

The links contain the following lessons

K025 Lesson 1-PV Cell

K025 Lesson 2-PV Power

K025 Lesson 3-Module derating

K025 Lesson 4-PV Module daily energy

K025 Lesson 5-PV daily energy accurate method

K025 Lesson 6-Solar insolation

K025 Lesson 7-Solar geometry

K025 Lesson 8-PV Semiconductor

K025 Lesson 9-Solar irradiation and shading assessment

K025 Lesson 10-Irridation assessment

K025 Lesson 11-Solar cell technology

K025 Lesson 12-PV Power system

K025 Lesson 13-PV water pumping system

K025 PV Software Video

K035 Grid Connected Inverter

EE308	Sustainability	
UEENEEK148A		Install, configure and commission LV grid connected photovoltaic power systems
UEENEEK135A		Design grid connected photovoltaic power supply systems
UEENEEK139A		Design stand-alone renewable energy (RE) systems
UEENEEK140A		Develop engineering solutions to renewable energy (RE) problems

Renewable Energy+ Photovoltaic Inverter

K035 Lesson 1-Inverter principle.zip

<http://youtu.be/-rdOuZBoCZI>

http://www.filefactory.com/file/c0b6a01/n/K035_Lesson_1-Inverter_principle.zip

K035 Lesson 2-Modified sine wave inverter.zip

<http://youtu.be/QOFpzhUq0I0>

http://www.filefactory.com/file/c0b6a26/n/K035_Lesson_2-Modified_sine_wave_inverter.zip

K035 Lesson 3-Pulse width modulation.zip

<http://youtu.be/NE95TgkrLQA>

http://www.filefactory.com/file/c0b6a33/n/K035_Lesson_3-Pulse_width_modulation.zip

K035 Lesson 4-PV Inverter.zip

<http://youtu.be/WcxxGQIxpGM>

<http://youtu.be/gkOA2T7qwGk>

http://www.filefactory.com/file/c0b6a6c/n/K035_Lesson_4-PV_Inverter.zip

K035 Lesson-5 MOSFET Driver.zip

<http://youtu.be/K4AzSAvFI6I>

http://www.filefactory.com/file/c0b5978/n/K035_Lesson-5_MOSFET_Driver.zip

K035 Lesson-6 PWM Inverter.zip

http://youtu.be/Lc_PC44IqLI

http://www.filefactory.com/file/c0b6ac2/n/K035_Lesson-6_PWM_Inverter.zip

K035 Lesson-7 Grid Connected Inverter.zip

<http://youtu.be/5m4SzA2CeRA>

<http://youtu.be/pWQMLkaUfhQ>

http://www.filefactory.com/file/c108253/n/K035_Lesson-7_Grid_Connected_Inverter.zip

K035 Lesson-8 Inverter Power Flow Model.zip

<http://youtu.be/wctgCnecrZw>

http://www.filefactory.com/file/c0b6aff/n/K035_Lesson-8_Inverter_Power_Flow_Model.zip

The links contain the following lessons

K035 Lesson 1-Inverter principle

K035 Lesson 2-Modified sine wave inverter

K035 Lesson 3-Pulse width modulation

K035 Lesson 4-PV Inverter

K035 Lesson-5 MOSFET Driver

K035 Lesson-6 PWM Inverter

K035 Lesson-7 Grid Connected Inverter

K035 Lesson-8 Inverter Power Flow Model

CLASS LESSONS

[Renewable Energy-K025+K035.zip](#)

http://www.filefactory.com/file/c0b7c5e/n/Renewable_Energy-K025_K035.zip

Exercise

Do UEENEEK025B+UEENEEK025C+K035 Page 262 to 271 of the following link

http://www.filefactory.com/file/c0b7da3/n/Advanced_Diploma_in_Electrical_Engineering_Exercises.zip

Part 2 Reference

K025 Note

K025 Note 1.zip (7.36MB)

http://www.filefactory.com/file/4w2lric900vz/n/K025_Note_1.zip

K025 Note 2.zip (8.74MB)

http://www.filefactory.com/file/6bskamy0qpep/n/K025_Note_2.zip

System_Installation_Examples_-_NUER02_version.pps (6.85MB)

http://www.filefactory.com/file/7i7n1idvvg4r/n/System_Installation_Examples_-_NUER02_version.pps

PV_System_installation_Overview_-_PV_Power_Systems.pps (7.59MB)

http://www.filefactory.com/file/6re03f5pap3n/n/PV_System_installation_Overview_-_PV_Power_Systems.pps

SPS_Components.pps (3.2MB)

http://www.filefactory.com/file/6jfyq81pi0rh/n/SPS_Components.pps

K025_Tutorials.zip (0.73MB)

http://www.filefactory.com/file/7kcjco9kxtw9/n/K025_Tutorials.zip

Part 3 Practical

Practical-K035-Pulse Width Modulator

Practical-K035-Pulse Width Modulator.pdf (0.16MB)

http://www.filefactory.com/file/5fsffgej3t9n/n/Practical-K035-Pulse_Width_Modulator.pdf

ELV_Cable_termination.pps (3.54MB)

http://www.filefactory.com/file/625kh4r0vrg1/n/ELV_Cable_termination.pps

ELV_Accessories_-_SPS_Components.pps (1.35MB)

http://www.filefactory.com/file/47zmcj0rpf8h/n/ELV_Accessories_-_SPS_Components.pps

PV Software

<http://www.filefactory.com/file/6fg7s0oz0ymj/PVSoftware.zip>

ONLINE PRACTICALS

8.Renewable Energy Practicals

Circuit Connection Assessment Number 8.1 PWM

http://www.filefactory.com/file/39qgeyi402tv/n/8-1_pdf

http://www.filefactory.com/file/5mdsys9uaj2l/n/Practical-K035-Pulse_Width_Modulator_pdf

http://www.filefactory.com/file/23b6yytib91n/n/K025_pdf

http://www.filefactory.com/file/i6h4b7nbqwl/n/8_1_doc

Circuit Connection Assessment Number 8.2 Renewable Energy Practicals

http://www.filefactory.com/file/2xlox5ofwxtz/n/K025_pdf

http://www.filefactory.com/file/y867u3qt0mv/n/8-1_jpg

http://www.filefactory.com/file/56ep19j1w3id/n/8_2_doc

EE308 Sustainability (Grid Connected PV Inverter)

Tutoring Lessons

[EE308 Part 1](#) [EE308 Part 2](#) [EE308 Part 3](#)

Test & Assessment

http://www.filefactory.com/file/59rpcqogl8ux/n/K035_Answer_sheet_doc

http://www.filefactory.com/file/6uye10nst3ad/n/K035_Test_pdf

Do the tests and send the answer sheet in soft copy by e-mail to **iqytechnicalcollege@gmail.com**

Password- **[iqytechnicalcollege](#)**

K035 Tests

Ref 605

Inverter is

- (a) Electrical device that converts direct current to alternating current
- (b) Electrical device that converts alternating current to direct current
- (c) Electrical device that converts alternating current to another level of alternating current
- (d) Electrical device that converts direct current to another level of direct current

A		B	
C		D	
Answer			

Ref 606

By switching the DC current rapidly, it can form

- (a) Wave with higher value
- (b) Alternating wave

- (c) Nothing coming out
- (d) Constant wave

A		B	
C		D	
Answer			

Ref 607

PWM-Pulse width modulating is to provide

- (a) The regulated out put voltage
- (b) To fix the output value at constant
- (c) To regulate the width of a square wave pulse to regulate or adjust the inverter's output voltage
- (d) To amplify the voltage

A		B	
C		D	
Answer			

Ref 608

Which type of oscillator is utilized in sine wave inverter

- (a) Budbba oscillator
- (b) Wien bridge oscillator
- (c) Butterworth oscillator
- (d) Carrier wave oscillator

A		B	
C		D	
Answer			

Ref 609

Which type of switch is mostly utilized in PWM inverter driver circuit?

- (a) H Bridge MOSFET switch
- (b) Change over switch

(c) Cascaded transistor switches

(d) By pass switch

A		B	
C		D	
Answer			

Ref 610

Which order is correct to arrange the solar inverter system?

(a) Solar array, ac filter, inverter, line

(b) Solar array, inverter, ac filter, line

(c) Solar array, inverter, dc regulator, line

(d) Solar array, dc regulator, line

A		B	
C		D	
Answer			

Ref 611

What is the correct operating of islanding protection?

(a) Detect the position of sun and rotate the solar arrays to face the direction of sun

(b) Detect the shadow and regulate the current flow into solar array

(c) Detect the grid voltage when the grid voltage is zero, it switches off the inverter circuit

(d) Detect the grid voltage, when the grid voltage is zero, it switches on the inverter circuit

A		B	
C		D	
Answer			

Ref 612

MOST FET driver circuit is connected to operate

- (a) MOSFET Switches
- (b) Filter
- (c) Oscillator
- (d) Voltage regulator

A		B	
C		D	
Answer			

Ref 613

Which operation is the one that best describes the operation of filter

- (a) In order to optimize the frequency, a switching frequency must be chosen which is low enough to keep the switches in line but high enough to make sure the filter inductor is not unnecessarily large
- (b) In order to optimize the voltage, a switching voltage must be chosen which is low enough to keep the switches in line but high enough to make sure the filter inductor is not unnecessarily large
- (c) In order to optimize the frequency, a switching frequency must be chosen which is high enough to keep the switches in line but high enough to make sure the filter inductor is not unnecessarily low
- (d) In order to optimize the current, a switching current must be chosen which is low enough to keep the switches in line but high enough to make sure the filter inductor is not unnecessarily large

A		B	
C		D	
Answer			

Ref 614

Which type of filter is suitable for inverter filter design

- (a) High pass filter
- (b) Band pass filter

(c) Band stop filter

(d) Square wave low pass two pole filter

A		B	
C		D	
Answer			

Ref 615

Which is the correct arrangement of Grid connected PV inverter system?

- (a) PV Modules, Inverter, AC isolator, DC isolator, meter/outlet, power grid
- (b) PV Modules, DC isolator, inverter, ac isolator, meter/ outlet, power grid
- (c) PV Modules, DC isolator, power grid
- (d) PV modules, DC Isolator, Battery charger, Inverter, AC isolator, power grid