

The maxx-solar-online-academy

Solar Power Designer - Backup power

Learning Goals and Content of the Course

Course Content as per Modules	Learning goals / Short description
Module 1 – Introduction	<p>You will get an introduction to the maxx-solar-online-academy and the course itself.</p>
Module 2 <ul style="list-style-type: none"> ● Recap of the Basic course <ul style="list-style-type: none"> ○ Electrical concepts ○ Basic overview of PV technology ○ Solar resource ○ System performance and yields ● Solar industry update <ul style="list-style-type: none"> ○ Latest industry trends, technology developments and price developments 	<p>You are reminded of the key concepts of solar PV technology as shared during the Basic course.</p> <p>You are informed of what your anticipated level of understanding should be.</p> <p>You have a perspective of the current state of the industry and future direction and goals.</p>
Module 3 – On-grid system configurations <ul style="list-style-type: none"> ○ Different system configuration options ○ Embedded generation ○ Exporting energy ○ With diesel generators 	<p>Know which different system configurations are possible.</p> <p>You will understand the solar PV system in relation to the electricity grid.</p> <p>The energy flows in the systems will be explained.</p> <p>Operation of PV systems in conjunction with diesel generators will be clarified.</p>
Module 4 – Components and their functions <ul style="list-style-type: none"> ○ Solar PV modules <ul style="list-style-type: none"> ▪ Electrical characteristics ▪ Temperature performance ▪ Warranties ○ Rooftop mounting system <ul style="list-style-type: none"> ▪ Penetrating systems 	<p>You will understand the components and their functions in more detail.</p> <p>The PV module and its overall characteristics will be explained in detail.</p> <p>You will understand how to integrate the different PV system components.</p>

<ul style="list-style-type: none"> <ul style="list-style-type: none"> ▪ Non-penetrating ▪ Integrated ○ PV inverters <ul style="list-style-type: none"> ▪ MPPT ▪ Grid following/forming ▪ Inverter classes ▪ Inverter loading ○ Battery inverters <ul style="list-style-type: none"> ▪ Types ▪ Functions ○ Batteries <ul style="list-style-type: none"> ▪ Technologies ▪ Features and functions. ▪ Sizing and selection ○ Charge controllers <ul style="list-style-type: none"> ▪ Features and functions. ▪ Sizing and selection 	
<p>Module 5 – Electrical design and protection</p> <ul style="list-style-type: none"> ○ Interconnected electrical system ○ DC cabling ○ DC combiners ○ Inverter input protection ○ Inverter output protection ○ Metering ○ Monitoring ○ Earthing 	<p>You will be able to determine and calculate the DC cable requirements.</p> <p>You will understand the key protection elements in a PV system.</p> <p>Safety in a PV plant is paramount. The participant will learn about safety.</p>
<p>Module 5 – Desktop assessment and on-site visit</p> <ul style="list-style-type: none"> ○ Energy and tariffs ○ Desktop assessment ○ Site assessment 	<p>You will understand the energy impact that a PV system will have.</p> <p>You will learn about the key aspects of a site visit to allow you to design the PV system post visit.</p>
<p>Module 6 - Design</p> <ul style="list-style-type: none"> ○ Energy needs assessment ○ Step by step design <ul style="list-style-type: none"> ▪ Specific yield ▪ Design target ▪ PV inverter ratio ▪ PV string design as function of temperature and a PV inverter ○ Design exercises ○ Rules of thumb 	<p>All the knowledge that has been shared will be utilised to perform a step-by-step design.</p> <p>The manual design approach will make it clear how the various pieces of information are used in a design.</p> <p>You will design your own PV system.</p> <p>You will be given rules-of-thumb for quick assessments.</p>

<p>Module 7 – Simulation tool overview</p> <ul style="list-style-type: none"> ○ Solar information resources online ○ Calculation and Design Tools commercial ○ Calculation and Design Tools from manufacturers 	<p>You know now what tools and resources are available online</p> <p>You know which design and simulation tools to use for which application.</p> <p>You know about the simulation tools that are available from specific equipment manufacturers.</p>
<p>Module 8 – Software-based system design</p> <ul style="list-style-type: none"> ○ Entering Project/Site Data ○ Dimensioning Solar Panels array ○ Adding Keep Outs and Shadows ○ Selecting the Inverter ○ Single Line Diagram ○ Final Report 	<p>You are able to use an online design and simulation tool to design a grid-tied solar system.</p> <p>You are able to create solar panel layouts on roofs according to the size, orientation and inclination of the roof.</p> <p>You are able to generate energy yield simulation reports for a specific solar system.</p>
<p>Module 10 – Best practices</p> <ul style="list-style-type: none"> ○ PV modules ○ Mounting system ○ PV inverter ○ Combiner boxes ○ Cable routing 	<p>You will understand critical and detailed aspects of why best practices for each of the components and interconnecting equipment need to be observed.</p> <p>You will learn about the negative impact of not following best practices.</p> <p>You will understand how the best practices will achieve the lowest Operation and Maintenance costs for a PV system that has a 20-year operating horizon.</p>

Do you have any questions? Please write to:

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