

# RENAC

## Ready-made Trainings

Online /Face-to-Face Trainings  
Academic Programmes 2020



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## Impressum

Content and layout:

Renewables Academy AG

Pictures:

RENAC: page 5, 6, 8, 10, 11, 18 small, 20 small, 22, 24, 30 small, 41, 42, 43, 46

Heidi Scherm: page 2, 3, 4, 7 small, 8 small, 9 small, 10 small, 11 small, 12, 14, 15, 16, 18, 21, 22 small, 23, 26, 28, 29 small, 30, 32, 33, 34 small, 35, 39, 40, 44

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Hiep Huynh, Vietnam: 36, 37

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# LEARNING WITH RENAC

## About RENAC

The Renewables Academy AG (RENAC), based in Berlin, Germany, is one of the leading international providers of training and capacity building on renewable energy (RE) and energy efficiency (EE). Our belief is that knowledge is one of the key factors for the sustainable development of clean and secure energy supplies.

Since its founding in 2008, RENAC has trained more than 17,000 participants from over 150 countries through a variety of different trainings.

## Learning concept

RENAC offers a variety of ready-made trainings on renewable energy technologies and energy efficiency.

Whether you are new to green energy technologies or wish to specialise further, the RENAC trainings will meet your professional needs.

## Value chain

To support the rapidly developing green energy markets, RENAC's educational services and trainings cover the whole value chains.

## Practice-oriented hands-on training

RENAC participants benefit from practice oriented hands-on training tailored to employment needs in the industry.

## Participatory learning

RENAC participants enjoy interactive learning rather than one-way teaching. A wide range of training methodologies are used in the design of our lessons.

## Registration

Further information and course registration:

[www.renac.de/ready-made-trainings](http://www.renac.de/ready-made-trainings)

## RENAC face-to-face trainings

RENAC face-to-face trainings in Berlin are a unique opportunity to gain more insight into RE and EE. Employing a blend of up-to-date theoretical lectures, state-of-the-art practical training, and field excursions, RENAC makes learning not only effective but also very exciting.



## RENAC online trainings

RENAC Online offers extensive support and an interactive learning platform. Participants can learn at any time and from any location and study with flexibility according to their own schedule.



## RENAC blended learning

Participants can register in a combination of online and face-to-face trainings to achieve the best learning outcomes. This method combines the advantages of both hands-on practical experience and in-depth theoretical study.



"RENAC is uniquely positioned to provide knowledge in RE and EE and it should continue its endeavours."

*Binod Kumar Srivastava, India, 2018*



## TRAININGS IN BERLIN

### Face-to-Face Trainings



RENAC trainings in RE technologies and energy efficiency (EE) provide the perfect opportunity to gain valuable insight into the expanding world of green energy.

#### Advantages and future prospects:

- Personal and professional development
- First class training from highly experienced experts
- Networking with other international participants
- Access to the green energy job market
- Skills and knowledge improvement for work

#### Location:

These trainings take place at RENAC's Training Centre, located in the heart of Berlin, one of Europe's most exciting and vibrant capitals.

#### Prices and discounts:

Price per course: **€1,500**

#### 10% discount for early bird registration!

Further **discount of 5%** if two or more participants from the same organisation join a training session, or if you attend more than one training! All prices include 19% VAT, course material, coffee breaks and field trips.

#### Benefit from our blended learning concept:

Before or after attending our face-to-face trainings, you can participate in one of our online trainings. We will recommend an online training that suits you best. Before your face-to-face training, you will receive the perfect preparation. After the seminar in Berlin, you will benefit from additional online training to deepen your knowledge.

Further information and course registration:

[www.renac.de/ready-made-trainings](http://www.renac.de/ready-made-trainings)





## Introduction to renewable energy technologies

Includes a site visit

### Content:

- Off-grid and grid-tied photovoltaics
- Solar thermal technology
- Wind power
- Bioenergy with focus on biogas
- Small hydropower
- Renewable energy project development
- Grid integration of RE



### After the training, you will be able to:

- Assess the appropriateness of each technology for different situations
- Undertake initial system designs
- Communicate with technology suppliers and customers
- Comprehend the latest RE market trends

### This training will suit those who:

- Are new to the subject of RE
- Would like to start a career in this exciting field
- Need to advise on the suitability of an RE technology

“It has been such a great opportunity to attend the RENAC training course on RE. I enjoyed the lecture delivered by experienced experts, the field trip as well as the company of classmates from different countries/backgrounds.”

*Phuong Thao Nguyen, GESS: Introduction to Renewable Energy Technologies, 2019*

“The technical expertise of the instructors and varied experiences/ backgrounds of the other course participants led to interesting questions and discussions and knowledge that would not have been possible in my normal professional setting.”

*Matthew Wise, USA, Introduction to Renewable Energy Technologies, 2018*

“Worth every single penny. Very well organised course and professional trainers.”

*Mohamad Mneimneh, Lebanon, GESS IIa: Grid-connected and off-grid Photovoltaics, 2018*



“Definitely a worthwhile investment for anybody who is starting their journey into the world of renewable energy!”

*Mohamed Mohamoud, Introduction to Renewable Energy Technologies, 2019*



Date: 30<sup>th</sup> March – 03<sup>rd</sup> April 2020

Registration until: 22<sup>nd</sup> March 2020 | [www.renac.de/intro](http://www.renac.de/intro)

Price: €1,500 incl. 19% VAT | Duration: 5 days

Early bird price: 10% discount until 02<sup>nd</sup> February





The Green Energy Summer School (GESS) is a unique opportunity to gain insight into RE and energy efficiency technologies with participants from around the world.

Employing a blend of up-to-date theoretical lectures, state-of-the-art practical training, and field excursions, GESS makes learning not only effective but also very exciting.

GESS lasts for three weeks. Each week is dedicated to a different topic. You can choose to attend one, two or three weeks.

#### Prices and discounts:

All prices include 19% VAT, course material, lunch, coffee breaks and field trips.

Price per course: **€1,500**

Early bird price: €1,350 per week valid until:

- Week I: 21<sup>st</sup> June 2020
- Week II: 28<sup>th</sup> June 2020
- Week III: 05<sup>th</sup> July 2020

A **discount of 5%** is available if two or more participants from the same organisation join a training session or if you attend more than one training!

All prices include 19% VAT, course material, coffee breaks and field trips.

#### Benefit from our blended learning scheme:

Before attending the GESS training in Berlin, you can participate in one of our online introductory courses on RE and energy efficiency topics. Each participant will have access to parts of the RENAC platform and can learn or review the basic concepts.

Further information: [www.renac.de/gess](http://www.renac.de/gess)



## Week I: Introduction to renewable energy technologies

Includes a site visit

#### Content:

- Introduction to off-grid and grid-connected photovoltaics
- Solar thermal technology for water heating
- Wind power
- Bioenergy with focus on biogas
- Small hydropower
- RE project development
- Grid integration of RE

#### After the training, you will be able to:

- Assess the appropriateness of each technology for different situations
- Undertake initial system designs
- Communicate with technology suppliers and customers
- Understand the latest RE market trends

#### This training will suit those who:

- Are new to the subject of RE
- Would like to start a career in this exciting field
- Need to advise on the suitability of an RE technology



Date: 17<sup>th</sup> – 21<sup>st</sup> August 2020

Registration until: 05<sup>th</sup> July 2020 | [www.renac.de/gess](http://www.renac.de/gess)

Price: €1,500 incl. 19% VAT | Duration: 5 days

Early bird price: 10% discount until 21<sup>st</sup> June





## Week II: Grid-connected photovoltaics

Includes a  
site visit

### Content:

- Overview of relevant PV applications
- Current global market trends and numbers
- Main components of grid-connected PV systems
- Fundamentals of grid-connected PV system sizing
- Economic assessment of grid-connected projects
- Grid-connected PV project development

### After the training, you will be able to:

- Assess solar resource and yield
- Identify PV plant components
- Design a plant with PVsyst (basic design)
- Assess technical and economic feasibility
- Comprehend key stakeholders and project structures



### This training will suit those who:

- Are interested in on-grid PV and have little or no prior knowledge
- Need a comprehensive overview on PV systems and applications
- Are evaluating/developing their first PV projects

Date: 24<sup>th</sup> – 28<sup>th</sup> August 2020

Registration until: 12<sup>th</sup> July 2020 | [www.renac.de/gess](http://www.renac.de/gess)

Price: €1,500 incl. 19% VAT | Duration: 5 days

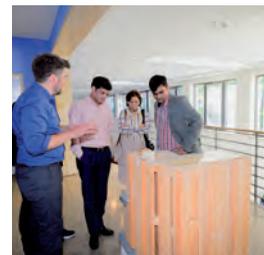
Early bird price: 10% discount until 28<sup>th</sup> June

## Week II: Overview of energy efficiency in industry and buildings

Includes a  
site visit

### Content:

- Energy analysis and auditing in industry and buildings
- Energy management standards and ISO 50001
- Energy efficient processes and technological solutions for industry
- Economic feasibility of energy efficiency projects
- Energy standards and efficiency solutions for buildings
- Energy certification
- Legal framework and government instruments for EE
- Energy efficient procurement and contracting



### After the training, you will be able to:

- Understand the potential of EE measures in buildings and industry
- Assess the energy performance of buildings and industrial processes
- Propose governmental instruments to enhance EE
- Evaluate the economic feasibility of EE measures

### This training will suit those who:

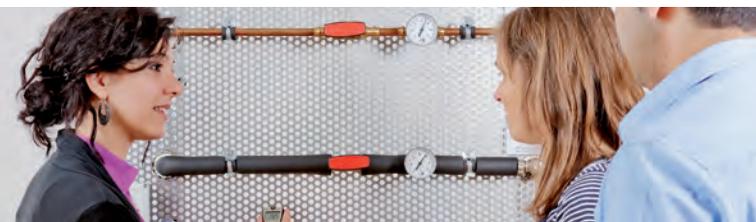
- Want to be able to evaluate the risks and benefits of EE
- Plan to enhance the level of EE in their organisation

Date: 24<sup>th</sup> – 28<sup>th</sup> August 2020

Registration until: 12<sup>th</sup> July 2020 | [www.renac.de/gess](http://www.renac.de/gess)

Price: €1,500 incl. 19% VAT | Duration: 5 days

Early bird price: 10% discount until 28<sup>th</sup> June





## Week III: PV Off-grid systems – from stand-alone to hybrid mini-grids

Includes a site visit

### Content:

- Rural electrification with PV off-grid systems
- PV-diesel hybrid mini-grids (with and without energy storage)
- Project risk analysis, mitigation strategies
- Financial analysis and business models

### After the training, you will be able to:

- Evaluate suitable applications for PV off-grid systems
- Evaluate options to replace an existing (diesel) generator with a PV off-grid system
- Size a solar PV array and battery storage (lead-acid and Li-Ion) to meet the energy demand of a rural electrification project
- Wire up a small off-grid system and test its functionality
- Assess key success factors for rural electrification projects

### This training will suit those who:

- Work for international development cooperation organisations, REAs, development banks, or private companies with or without an engineering degree
- Want to be involved in rural electrification projects using solar PV
- Seek a solid knowledge base in solar PV

Date: 31<sup>st</sup> – 04<sup>th</sup> September 2020

Registration until: 19<sup>th</sup> July 2020 | [www.renac.de/gess](http://www.renac.de/gess)

Price: €1,500 incl. 19% VAT | Duration: 5 days

Early bird price: 10% discount until 05<sup>th</sup> July

## Introduction to grid integration of variable renewable energy

Includes a site visit

### Content:

- Frequency and voltage control
- Residual load approach
- PV/wind short-term power forecasts for system operation
- Reliable capacity of PV and wind power
- Balancing power capacity for system operation
- Grid and system integration studies
- PV and wind grid integration laboratory

### After the training, you will be able to:

- Apply short-term PV and wind power forecasts for grid operation and energy market transactions
- Calculate the reliable capacity of PV and wind power
- Dimension balancing power needs for system operation/planning
- Explain frequency and voltage control with PV inverters and wind turbines
- Set up a grid and/or system integration study for variable RE

### This training will suit those who:

- Are responsible for power system planning and strategy development
- Plan or operate distribution and transmission grids

Date: 09<sup>th</sup> – 13<sup>th</sup> November 2020

Registration until: 27<sup>th</sup> Sept. 2020 | [www.renac.de/grid](http://www.renac.de/grid)

Price: €1,750 incl. 19% VAT | Duration: 5 days

Early bird price: 10% discount until 13<sup>th</sup> September





## Online Trainings



### ONLINE TRAININGS

## RENAC ONLINE

The Renewables Academy Online (RENAC Online) offers a variety of trainings that are officially certified by the "ZFU". The language of instruction is English. Most of the trainings are also available in Spanish.

#### Highlights:

- Flexibility to study at any time and from any location
- Extensive support and live virtual classrooms
- Multimedia learning material and self-evaluation tests
- Certification: *Staatliche Zentralstelle für Fernunterricht - ZFU* (German Authority for Distance Learning)
- RENAC certificate upon successful completion of the training

#### Features:

- Interactive learning platform
- Cross-browser and mobile compatible
- Stream and download videos, self-tests, online exams
- Forum for participants
- Integrated glossary and feedback questionnaires

#### Ongoing training offer:

- Two course intakes each year: 1<sup>st</sup> April and 1<sup>st</sup> October

Further information and course registration:

[www.renac.de/online](http://www.renac.de/online)



CERTIFIED EUROPEAN E-LEARNING MANAGER

"Very informative and interesting course material, backed by the excellent support of a team of professionals who are always available to answer our questions."

*Sameer Mehta, India, Applying Renewable Energy, 2018*





## Applying Renewable Energy

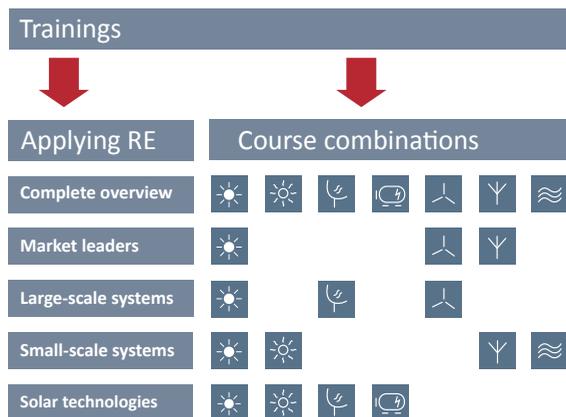
The "Applying Renewable Energy" trainings provide fundamental knowledge on the most widely used renewable energy technologies. No previous knowledge of electricity or RE is required.

### Content:

Each "Applying Renewable Energy" online training comprises a combination of 3, 4 or 7 courses focused on the most widely used renewable energy technologies.

Additionally, each participant will have access to short introductory courses on energy and electricity topics to learn or revise the basics. These courses are not mandatory, and will not be covered in the exam.

### Technologies



## Applying Renewable Energy – Complete Overview



In this training you learn the fundamentals of seven technologies: their distinct differences, their principal applications, and their key benefits.

### Content:

- Photovoltaics | solar thermal | CSP
- PV-diesel hybrid systems
- Wind power | small hydro | biogas

### After the online training, you will be able to:

- Assess resources/suitability of sites for each technology
- Decide which components are to be used for which purpose
- Roughly calculate system size and energy yield and determine key parameters
- Explain the general functioning of each technology

### This online training will suit those who:

- Need an overview of renewable energy technologies
- Would like to refresh their technical knowledge
- Want to make the first step towards implementing RE projects

Date: 1<sup>st</sup> April – 30<sup>th</sup> Sept. / 1<sup>st</sup> Oct. – 31<sup>st</sup> March  
 Registration until: 31<sup>st</sup> March / 30<sup>th</sup> Sept. 2020  
 Price: €760 incl. 19% VAT depending on the course combination | Duration: 140 hours | [www.renac.de/online](http://www.renac.de/online)  
 Early bird price: 10% discount until 20<sup>th</sup> Feb. / 20<sup>th</sup> Aug.





## Applying Renewable Energy – Market Leaders



This training provides fundamental knowledge of the technologies with the biggest shares in RE markets.

### Content:

- Photovoltaics
- Wind power
- Biogas

### After the online training, you will be able to:

- Assess resources and suitability of sites for each RE technology
- Decide which components are to be used for which purpose
- Roughly calculate system size and energy yield and determine key parameters
- Explain the general functioning of each technology

### This online training will suit those who:

- Need an overview of RE technologies
- Would like to refresh technical knowledge
- Want to make the first step towards implementing RE projects



Date: 1<sup>st</sup> April – 30<sup>th</sup> Sept. / 1<sup>st</sup> Oct. – 31<sup>st</sup> March

Registration until: 31<sup>st</sup> March / 30<sup>th</sup> Sept. 2020

Price: €460 incl. 19% VAT depending on the course combination | Duration: 60 hours | [www.renac.de/online](http://www.renac.de/online)

Early bird price: 10% discount until 20<sup>th</sup> Feb. / 20<sup>th</sup> Aug.



## Applying Renewable Energy – Large-Scale Systems



This training provides fundamental knowledge of large-scale grid connected RE systems for electricity production.

### Content:

- Photovoltaics
- Wind power
- CSP

### After the online training, you will be able to:

- Assess resources and suitability of sites for each technology
- Decide which components are to be used for which purpose
- Roughly calculate system size and energy yield and determine key parameters
- Explain the general functioning of each technology



### This online training will suit those who:

- Need an overview of renewable energy technologies
- Would like to refresh technical knowledge
- Want to make the first step towards implementing RE projects

Date: 1<sup>st</sup> April – 30<sup>th</sup> Sept. / 1<sup>st</sup> Oct. – 31<sup>st</sup> March

Registration until: 31<sup>st</sup> March / 30<sup>th</sup> Sept. 2020

Price: €460 incl. 19% VAT depending on the course combination | Duration: 60 hours | [www.renac.de/online](http://www.renac.de/online)

Early bird price: 10% discount until 20<sup>th</sup> Feb. / 20<sup>th</sup> Aug.





## Applying Renewable Energy – Small-scale Systems



In this training, you will learn about small-scale systems used for the provision of hot water/electricity in households, and in remote rural areas without access to the electricity grid.

### Content:

- Photovoltaics | solar thermal
- Small hydro | biogas

### After the online training, you will be able to:

- Assess resources/suitability of sites for each technology
- Decide which components are to be used for which purpose
- Roughly calculate system size and energy yield and determine key parameters
- Explain the general functioning of each technology

### This online training will suit those who:

- Need an overview of renewable energy technologies
- Would like to refresh technical knowledge
- Want to make the first step towards implementing RE projects



Date: 1<sup>st</sup> April – 30<sup>th</sup> Sept. / 1<sup>st</sup> Oct. – 31<sup>st</sup> March

Registration until: 31<sup>st</sup> March / 30<sup>th</sup> Sept. 2020

Price: €570 incl. 19% VAT depending on the course combination | Duration: 80 hours | [www.renac.de/online](http://www.renac.de/online)

Early bird price: 10% discount until 20<sup>th</sup> Feb. / 20<sup>th</sup> Aug.

## Applying Renewable Energy – Solar Technologies



Solar technologies can be used to produce electricity or to provide hot water. In this training you will gain a solid understanding of 4 key solar technologies.

### Content:

- Photovoltaics | solar thermal | CSP
- PV-diesel hybrid systems

### After the online training, you will be able to:

- Assess resources/suitability of sites for each technology
- Decide which components are to be used for which purpose
- Roughly calculate system size and energy yield and determine key parameters
- Explain the general functioning of each technology

### This online training will suit those who:

- Need an overview of renewable energy technologies
- Would like to refresh technical knowledge
- Want to make the first step towards implementing RE projects

Date: 1<sup>st</sup> April – 30<sup>th</sup> Sept. / 1<sup>st</sup> Oct. – 31<sup>st</sup> March

Registration until: 31<sup>st</sup> March / 30<sup>th</sup> Sept. 2020

Price: €570 incl. 19% VAT depending on the course combination | Duration: 80 hours | [www.renac.de/online](http://www.renac.de/online)

Early bird price: 10% discount until 20<sup>th</sup> Feb. / 20<sup>th</sup> Aug.





## Applying Energy Efficiency



### Content:

- Overview of technical and economic aspects of energy efficiency (EE) measures
- Support mechanisms for energy efficiency projects and energy savings in the industrial sector and in the built environment

### After the online training, you will be able to:

- Identify drivers and barriers in energy efficiency projects
- Select appropriate energy efficiency technologies
- Evaluate energy efficiency finance options
- Propose energy management systems and energy audits

### This online training will suit those who:

- Develop strategies for implementing energy efficiency projects
- Want to assess the savings potential of cross-sectional technologies
- Are planning to set up energy management systems and/or energy audits



Date: 1<sup>st</sup> April – 30<sup>th</sup> Sept. / 1<sup>st</sup> Oct. – 31<sup>st</sup> March

Registration until: 31<sup>st</sup> March / 30<sup>th</sup> Sept. 2020

Price: €760 incl. 19% VAT | Duration: ca. 100 hours

[www.renac.de/online](http://www.renac.de/online)

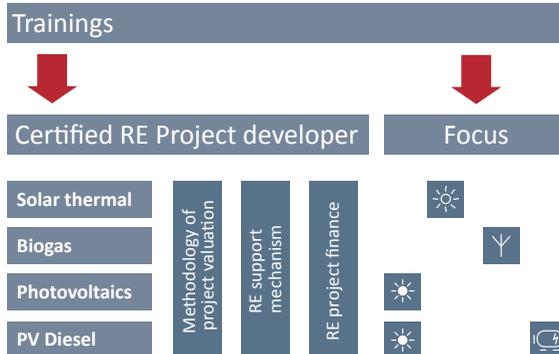
Early bird price: 10% discount until 20<sup>th</sup> Feb. / 20<sup>th</sup> Aug.

## Certified Renewable Energy Project Developer

This online training explains the most important economic aspects of renewable energy project planning. It describes the methodologies of different support mechanisms and conveys an understanding of legal and regulatory frameworks. Participants will learn which parameters are used to assess the bankability of renewable energy projects, and to understand a banker's view on risks related to PV, wind and biogas projects. The course includes a checklist for the project developer to ensure that all data that a bank would require is ordered and complete. Insights into the project planning process are illustrated via a chosen technology focus through an elective course.

Additionally, each participant will have access to short introductory courses on energy and electricity topics to learn or revise the basics. These courses are not mandatory, and will not be covered in the exam.

### Technologies





## Certified Renewable Energy Project Developer – Photovoltaics



With a focus on photovoltaic technology, this online training provides insights into the planning process for a medium to large-scale PV grid-connected system - from the earliest stages to final implementation.

### Content:

#### Three economics courses:

- Methodology of project valuation
- Policy Frameworks for RE Power Generation
- RE finance projects

#### One project planning course:

- Project planning with a PV focus

#### After the online training, you will be able to:

- Calculate relevant economic parameters for a RE project
- Decide which support mechanisms are applicable
- Prepare the data required for a bankability assessment
- Define the necessary steps from planning to O&M

#### This online training will suit those who:

- Are charged with setting the scene for an RE project
- Need to deal with various stakeholders in a project appraisal process
- Will supervise the implementation of a power plant of a chosen technology

Date: 1<sup>st</sup> April – 30<sup>th</sup> Sept. / 1<sup>st</sup> Oct. – 31<sup>st</sup> March

Registration until: 31<sup>st</sup> March / 30<sup>th</sup> Sept. 2020

Price: €1,190 incl. 19% VAT | Duration: ca. 130 hours

[www.renac.de/online](http://www.renac.de/online)

Early bird price: 10% discount until 20<sup>th</sup> Feb. / 20<sup>th</sup> Aug.



## Certified Renewable Energy Project Developer – PV-diesel hybrid systems



With a focus on PV-diesel hybrid technology, this online training provides insights into the planning process of this system – from the earliest stages to implementation.

### Content:

#### Three economics courses:

- Methodology of project valuation
- Policy frameworks for RE power generation
- Renewable energy project finance

#### One project planning course:

- Project planning with a PV-diesel focus

#### After the online training, you will be able to:

- Calculate relevant economic parameters for a RE project
- Decide which support mechanisms are applicable
- Prepare the data required for a bankability assessment
- Define the necessary steps from planning to O&M

#### This online training will suit those who:

- Are charged with setting the scene for an RE project
- Need to deal with various stakeholders in a project appraisal process
- Will supervise the implementation of a power plant of a chosen technology

Date: 1<sup>st</sup> April – 30<sup>th</sup> Sept. / 1<sup>st</sup> Oct. – 31<sup>st</sup> March

Registration until: 31<sup>st</sup> March / 30<sup>th</sup> Sept. 2020

Price: €1,190 incl. 19% VAT | Duration: ca. 130 hours

[www.renac.de/online](http://www.renac.de/online)

Early bird price: 10% discount until 20<sup>th</sup> Feb. / 20<sup>th</sup> Aug.





## Certified Renewable Energy Project Developer – Solar thermal



With a focus on solar thermal technology, this online training provides insights into the planning process of a solar thermal system – from the earliest stages to implementation.

### Content:

#### Three economics courses:

- Methodology of project valuation
- Policy frameworks for RE power generation
- Renewable energy project finance

#### One project planning course:

- Project planning with a solar thermal focus

#### After the online training, you will be able to:

- Calculate relevant economic parameters for a RE project
- Decide which support mechanisms are applicable
- Prepare the data required for a bankability assessment
- Define the necessary steps from planning to O&M

#### This online training will suit those who:

- Are charged with setting the scene for an RE project
- Need to deal with various stakeholders in a project appraisal process
- Will supervise the implementation of a power plant of a chosen technology

Date: 1<sup>st</sup> April – 30<sup>th</sup> Sept. / 1<sup>st</sup> Oct. – 31<sup>st</sup> March

Registration until: 31<sup>st</sup> March / 30<sup>th</sup> Sept. 2020

Price: €1,190 incl. 19% VAT | Duration: ca. 130 hours

[www.renac.de/online](http://www.renac.de/online)

Early bird price: 10% discount until 20<sup>th</sup> Feb. / 20<sup>th</sup> Aug.



## Certified Renewable Energy Project Developer – Biogas



With a focus on biogas technology, this online training provides insights into the planning process for a medium to large-scale biogas plant – from the earliest stages to implementation.

### Content:

#### Three economics courses:

- Methodology of project valuation
- Policy frameworks for RE power generation
- Renewable energy project finance

#### One project planning course:

- Project planning with a biogas focus

#### After the online training, you will be able to:

- Calculate relevant economic parameters for a RE project
- Decide which support mechanisms are applicable
- Prepare the data required for a bankability assessment
- Define the necessary steps from planning to O&M

#### This online training will suit those who:

- Are charged with setting the scene for an RE project
- Need to deal with various stakeholders in a project appraisal process
- Will supervise the implementation of a power plant of a chosen technology

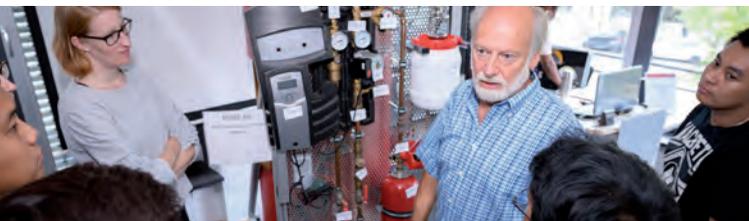
Date: 1<sup>st</sup> April – 30<sup>th</sup> Sept. / 1<sup>st</sup> Oct. – 31<sup>st</sup> March

Registration until: 31<sup>st</sup> March / 30<sup>th</sup> Sept. 2020

Price: €1,190 incl. 19% VAT | Duration: ca. 130 hours

[www.renac.de/online](http://www.renac.de/online)

Early bird price: 10% discount until 20<sup>th</sup> Feb. / 20<sup>th</sup> Aug.





## Certified Renewable Energy Project Developer – Wind power



With focus on Wind Power technology, this online training allows insights in the planning process for a medium to large-scale wind farm - from the earliest stages to implementation.

### Content:

#### Three economics courses:

- Methodology of project valuation
- Policy frameworks for RE power generation
- Renewable energy project finance

#### One project planning course:

- Project planning with a wind power focus

### After the online training, you will be able to:

- Calculate relevant economic parameters for a RE project
- Decide which support mechanisms are applicable
- Prepare the data required for a bankability assessment
- Define the necessary steps from planning to O&M

### This online training will suit those who:

- Are charged with setting the scene for an RE project
- Need to deal with various stakeholders in a project appraisal process
- Will supervise the implementation of a power plant of a chosen technology

Date: 1<sup>st</sup> April – 30<sup>th</sup> Sept. / 1<sup>st</sup> Oct. – 31<sup>st</sup> March

Registration until: 31<sup>st</sup> March / 30<sup>th</sup> Sept. 2020

Price: €1,190 incl. 19% VAT | Duration: ca. 130 hours

[www.renac.de/online](http://www.renac.de/online)

Early bird price: 10% discount until 20<sup>th</sup> Feb. / 20<sup>th</sup> Aug.



## Certified PV Professional



### Content:

- Photovoltaic (PV) technology and applications
- PV-diesel hybrid systems
- Off-grid systems
- Small-scale PV grid-connected systems
- Planning of PV-diesel hybrid systems

### After the online training, you will be able to:

- Determine the optimal PV system size and estimate the corresponding energy yield
- Categorise PV-diesel hybrid systems and/evaluate their economic viability
- Identify the PV system type suited to a specific application
- Define the planning and implementation steps that help to ensure the success of a PV project



### This online training will suit those who:

- Require detailed knowledge on the technical characteristics of various PV systems
- Need to deal with various stakeholders in a project appraisal process
- Will be involved in planning or supervising the implementation of a PV plant

Date: 1<sup>st</sup> April – 30<sup>th</sup> Sept. / 1<sup>st</sup> Oct. – 31<sup>st</sup> March

Registration until: 31<sup>st</sup> March / 30<sup>th</sup> Sept. 2020

Price: €1,380 incl. 19% VAT | Duration: ca. 150 hours

[www.renac.de/online](http://www.renac.de/online)

Early bird price: 10% discount until 20<sup>th</sup> Feb. / 20<sup>th</sup> Aug.





## Certified ReGrid® Manager

### Content:

- Highly resolved scenarios
- Short-term prediction of wind/solar power generation
- Generator concepts for RE
- Balancing power for grid integration of RE
- Grid codes for RE
- Generation expansion planning for a high share of variable RE (VRE)
- Grid and system integration studies, with energy storage



### After the online training, you will be able to:

- Identify solutions for grid operation and planning with large shares of VRE
- Manage resource assessment, flexibility options and grid impact studies for large shares of VRE

### This online training will suit those who:

- Plan or operate power systems with an increasing share of wind/ solar
- Need to manage resulting transformation processes in the energy system
- Are involved in other aspects of VRE grid integration, e.g. calls for tender, development of grid codes, or grid connection studies for renewables

Date: 1<sup>st</sup> April – 30<sup>th</sup> Sept. / 1<sup>st</sup> Oct. – 31<sup>st</sup> March

Registration until: 31<sup>st</sup> March / 30<sup>th</sup> Sept. 2020

Price: €2,210 incl. 19% VAT | Duration: ca. 200 hours

[www.renac.de/online](http://www.renac.de/online)

Early bird price: 10% discount until 20<sup>th</sup> Feb. / 20<sup>th</sup> Aug.



## Certified Flexibility Power Systems Specialist (CFPSS)

### Content:

- Photovoltaics (PV) application
- PV-diesel hybrid systems
- Wind power
- Wind and PV grid integration
- Flexibility options for power systems
- Flexibility in thermal power plants

### After the online training, you will be able to:

- Consult with energy ministries or working groups that draft energy strategies and propose measures to increase power system flexibility
- Provide advice to private and public institutions on tender documents for flexible thermal generation capacity

### This online training will suit those who:

- Build medium- to/long-term strategies for interconnected power supply systems with thermal power plants and high shares of wind and PV power stations
- Prepare decisions to invest in new or to retrofit existing thermal power generation capacity
- Analyse the development of market shares of thermal power generation capacity
- Avoid stranded investments in thermal power stations

Date: 1<sup>st</sup> April – 30<sup>th</sup> Sept. / 1<sup>st</sup> Oct. – 31<sup>st</sup> March

Registration until: 31<sup>st</sup> March / 30<sup>th</sup> Sept. 2020

Price: €1,850 incl. 19% VAT | Duration: ca. 180 hours

[www.renac.de/online](http://www.renac.de/online)

Early bird price: 10% discount until 20<sup>th</sup> Feb. / 20<sup>th</sup> Aug.





## Applying Green Energy Finance: Renewable Energy



### Content:

- Introduction to renewable energy (RE) projects
- Greening the bank
- Methodology of project valuation
- RE project finance
- Project contracts
- RE support mechanisms
- Climate finance

Optional:  
Business case studies

### And one elective technology course:

- Photovoltaics, wind power, or biogas application

### After the online training, you will be able to:

- Assess risks in the lifecycle of a RE project
- Discuss bankability criteria and apply to RE projects
- Identify project finance structures and procedures
- Explain principles of climate finance mechanisms

### This online training will suit those who:

- Need to know more about RE project financing
- Would like to be introduced to the green energy financing sphere
- Want to specialise as a finance person in green energy projects

Date: 1<sup>st</sup> April – 31<sup>st</sup> May / 1<sup>st</sup> Oct. – 30<sup>th</sup> Nov. 2020

Registration until: 31<sup>st</sup> March / 30<sup>th</sup> Sept. 2020

Price: €840 incl. 19% VAT | Duration: ca. 80 hours

[www.renac.de/online](http://www.renac.de/online)

Early bird price: 10% discount until 20<sup>th</sup> Feb. / 20<sup>th</sup> Aug.

## Applying Green Energy Finance: Energy Efficiency



### Content:

- Introduction to energy efficiency (EE) projects
- Greening the bank
- Methodology of project valuation
- Systematic approaches
- Financing EE and ESCOs
- EE support mechanisms
- Climate finance

Optional:  
Business case studies

### And one elective technology course:

- EE industry application or EE buildings application

### After the online training, you will be able to:

- Assess risks in the lifecycle of an EE project
- Discuss bankability criteria and apply to EE projects
- Identify project finance structures and procedures
- Explain principles of climate finance mechanisms

### This online training will suit those who:

- Need to know more about EE project financing
- Would like to get introduced to the green energy financing sphere
- Want to specialise as a finance person in green energy projects

Date: 1<sup>st</sup> April – 31<sup>st</sup> May / 1<sup>st</sup> Oct. – 30<sup>th</sup> Nov. 2020

Registration until: 31<sup>st</sup> March / 30<sup>th</sup> Sept. 2020

Price: €840 incl. 19% VAT | Duration: ca. 80 hours

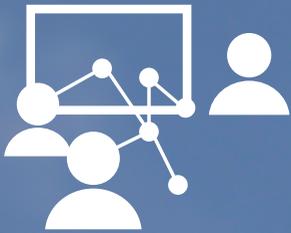
[www.renac.de/online](http://www.renac.de/online)

Early bird price: 10% discount until 20<sup>th</sup> Feb. / 20<sup>th</sup> Aug.



## BLENDED LEARNING

# Blended Learning



While our face-to-face trainings give you practical insights together with participants from all over the world, our online trainings give you the opportunity to learn the theoretical aspects independently of time and place and in accordance with your professional situation.

The face-to-face trainings take place in Berlin. The online trainings can be accessed from anywhere, anytime.

### How to apply the blended learning concept:

Any of our trainings can be combined to match your personal preferences, your technical knowledge and professional demands: first the online training, then the seminar, or vice versa. In addition, you can benefit from our growing range of already combined trainings. You can find the current offer of open blended learning programmes for individuals on the next page.

### REGISTRATION

For further information and training registration please visit:

[www.renac.de/ready-made-trainings](http://www.renac.de/ready-made-trainings)



“Due to the great mix between theoretical and practical sessions I have really gained a lot, not only on a professional, but also on a personal level.”

*Laura Blumenkemper, Project Coordinator, 2017*



# FINANCING

## Green Energy Finance Specialist



### Content:

- RE and EE support mechanisms
- Systematic approach to energy savings
- Financing RE/EE projects and ESCOS (energy service companies)
- Debt financing process; RE project cash flow
- Project contracts and evaluation
- Financial modelling; insurance in project finance
- Environmental and social standards, due diligence
- Climate finance; RE portfolio management

### This training will suit those who:

- Want to specialise in RE and EE project financing
- Have to evaluate RE/EE projects and related credit requests
- Seek to establish a green energy finance or climate finance unit within an organisation

Date: 1<sup>st</sup> April/October (Online) and 3-day face-to-face Seminar Sept./March in Berlin  
 Registration until: 30<sup>th</sup> March | [www.renac.de/gefs](http://www.renac.de/gefs)  
 Price: €3,850 incl. 19% VAT | Duration: ca. 220 hours  
 Early bird price: 10% discount until 23<sup>th</sup> Feb./August

## Outlook

### Success story of the 'Green Energy Finance Specialist' training in Vietnam

In 2017, Hiep Huynh participated in the Green Energy Finance Specialist training. He is working at a financial institution in Vietnam. Hiep had recognised that Green Energy is an important part of sustainable development and needs to be promoted through appropriate financing. Since 2017, he has been overseeing the financing of photovoltaic projects for his institution.

The same year the Government issued a decision to provide incentives for solar energy development such as tax breaks, import duty exemption, and land lease exemption.

This led to a large number of applications seeking debt finance and funding. Hiep's company had three simple-yet-effective criteria to evaluate the incoming project proposals: (i) land, (ii) grid, and (iii) government. Of the more than 50 solar projects Hiep and his team reviewed, they selected the



Mui Ne Solar Project for funding and debt arrangement. The Mui Ne Solar Plant covers an area of over 38 hectares of waste land in Binh Thuan Province and has a capacity of 40 MWp. The project began construction in October 2018 and was finalised in June 2019.

Fully operational, it produces over 65 million kWh per year, enough to power the nearby city – a great success!



## ACADEMIC PROGRAMMES

# Academic Programmes

In cooperation with various universities, RENAC offers academic study programmes in English and Spanish. Topics include economic, technical, legal, political and organisational knowledge tailored to the specific needs of emerging renewable energy and energy efficiency markets.

The distance learning academic programmes allow the students to decide when and where they want to study.

### Features

- Materials for self-study
- Online lectures
- Video podcasts
- Exercises for monitoring the learning process
- Virtual working groups
- Course forums and chat rooms



This secures maximum flexibility and studying at ones own pace for the whole period of study. The interdisciplinary teams exchange know-how and experience using our learning platform and web-conference system with fellow students from other parts of the world. Also there's an optional campus time scheduled each year.

Further information you will find on the following pages and on our website.

[www.renac.de/academic-programmes](http://www.renac.de/academic-programmes)



# MBA RENEWABLES

MBA Renewables is the first distance learning programme in English that offers the opportunity to obtain the Master of Business Administration (MBA) degree with a focus on renewable energy and energy efficiency.



The programme combines economic, technical, legal, political and organisational knowledge tailored to the specific needs of the renewable energy and energy efficiency industries. Thanks to its holistic approach, you will gain an overview of various renewable energy technologies and approaches to energy efficiency and management and their applications in the industry, as well as an understanding of international energy policies, investment, and financing.

### This degree will suit those who:

Are pursuing a management position in the renewable energy and energy efficiency industries, or a related position in public institutions or the finance sector.

### In cooperation with:



BEUTH HOCHSCHULE  
FÜR TECHNIK  
BERLIN  
University of Applied Sciences

### Accredited by:



“The combination of practical sessions and theoretical sessions made a strong impression on me. I am more able to relate my policy and regulatory experience to the existing technologies and the reality of the projects“.

*Ene Macharm, Nigeria, MBA Renewables*

Degree	Master of Business Administration (MBA) Renewables
Content	<ul style="list-style-type: none"> <li>Technologies – systems and applications (renewable energy, energy efficiency)</li> <li>Law and energy policy</li> <li>Management and leadership skills</li> <li>Marketing and project management</li> <li>Accounting and financing</li> </ul>
Admission requirements	<ul style="list-style-type: none"> <li>University degree (210 ECTS CP)</li> <li>Very good command of English</li> <li>At least two years' work experience</li> </ul>
Attendance in Berlin	<ul style="list-style-type: none"> <li>Oral master's examination</li> <li>Advanced practical renewable energy and energy efficiency implementation (optional)</li> </ul>
Language	English
Accreditation	FIBAA
Beginning	1st October, annually
Mode of study	Part-time
Duration	30 months (5 semesters)
Application	1st September, annually
Website	<a href="http://www.mba-renewables.de">www.mba-renewables.de</a>



# ESPECIALIZACIÓN EN ENERGÍAS RENOVABLES

The one-year distance learning program Especialización en Energías Renovables (Specialisation in Renewable Energy) covers the fundamentals of renewable energy technologies and provides advanced knowledge on the technical and economic aspects of planning renewable energy projects.



Especialización  
en Energías  
Renovables

Case studies range from small-scale rural electrification projects through to larger-scale grid-connected projects.

The programme aims to provide participants with the understanding and expertise they need to embark on renewable energy projects and installations.

Especialización en Energías Renovables is taught entirely in Spanish. The programme can be combined with an optional practical week at the campus of the EARTH University in Costa Rica.

### This degree will suit those who:

- Want to develop a career in the renewable energy sector
- Are a professional in the public or private sector, or an engineer, consultant, trader or entrepreneur

Degree	Especialización
Content	<ul style="list-style-type: none"> <li>▪ Technology</li> <li>▪ Project development and management</li> <li>▪ Financing</li> <li>▪ Legal framework</li> </ul>
Admission requirements	<ul style="list-style-type: none"> <li>▪ Academic degree</li> <li>▪ At least 1 year of professional experience</li> <li>▪ Good command of Spanish</li> </ul>
Language	Spanish
Accreditation	Certification and Quality Assurance Institute - ACQUIN
Beginning	1st September, annually
Mode of study	distance learning
Duration	3 cuatrimestres
Application	1st August, annually
Website	<a href="http://www.renac.de/especializacion">www.renac.de/especializacion</a>

In cooperation with:



Accredited by:



## GLOBAL PRODUCTION ENGINEERING

The international Master of Science in Global Production Engineering is a two-year academic programme offered by the Technische Universität Berlin (Germany) and taught in English.



GPE is designed for outstanding international students seeking to strengthen their competence in the fields of production, management, engineering, new energy technologies, and intercultural communication. Lecturers come from the academic and the private sector and hold a wealth of experience in the renewable energy industry.

In the GPE programme, RENAC offers the 6 ECTS credit points module Renewable Power Technologies and Grid Integration (RPTG).

This module provides students with a comprehensive overview of the main commercially-viable and upcoming renewable power technologies, and the incorporation of renewable power capacity into electricity grids.

#### This degree will suit those who:

Wish to broaden their perspective and understand the challenges of re-shaping power supply towards a higher share of renewable power generation.

#### In cooperation with:



Degree	Master of Science
Location	Technical University and RENAC, Berlin
Content	To be selected from the following module groups: <ul style="list-style-type: none"> <li>Production and engineering</li> <li>Management</li> <li>Intercultural communication</li> <li>Special profile</li> </ul>
Language	English
Admission requirements	<ul style="list-style-type: none"> <li>Bachelor of Engineering or equivalent</li> <li>TOEFL test or equivalent</li> <li>One year professional experience</li> <li>Excellent grades</li> </ul>
Mandatory	<ul style="list-style-type: none"> <li>Internship (minimum 9 weeks)</li> <li>Master thesis (3 months)</li> </ul>
Beginning	October, annually
Duration	4 semesters (2 years)
Application deadline	From October to March, annually
Website	<a href="http://www.gpe-solar.de">www.gpe-solar.de</a>

“One of the best course I have taken in GPE program so far. Several insightful information and very practical-oriented classes generate a top-notch experience in RE.”

*Mr Cortes, Renewable Power Technologies (GPE at TU), 2019*



# TESTIMONIALS

“This is one of the most comprehensive professional course I had the opportunity to participate in. The programme focused on real world scenarios and presented real world solutions for the renewable energy industry. I would recommend this training for everyone involved in the renewable energy industry.”

*Carlos Reviero, Czech Republic, Certified Renewable Energy Project Developer - PV-diesel, 2019*



“If you want to be a renewable energy project developer, RENAC is the best place to start. I learned a lot in an easy-to-manage way with many important materials.”

*Tadesse Tujuba Kenea, Certified Renewable Energy Project Developer, 2018*



“The course I attended was really joyful and I was happy with the rich content and the way everything is organized and displayed. I'm looking forward to attending another course in order to build and expand my knowledge in the RE-Area.”

*Mahmoud Derbas, Germany, Applying Renewable Energy, 2020*

“Very well structured and comprehensive content courseware backed by phenomenal support from RENAC experts who are always available and ready with answers to your questions.”

*Mr. Samaan, UAE, Certified Project Developer, 2019*



# RENAC PARTNERS



## **Contact**

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[www.renac.de](http://www.renac.de)

