



ENERCON TRAINING CATALOGUE

TRAINING CENTER LICHTENAU



VIDEO
ETC LICHTENAU



 **ENERCON**
ENERGY FOR THE WORLD

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TRAINING CATALOGUE

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1

ENERCON CORPORATE CULTURE

VISION & MISSION: ENERGY FOR THE WORLD

Inspired by the guiding principle of company founder Aloys Wobben, this vision shapes ENERCON's development and the way the company thinks and acts to this day. We assume responsibility for creating sustainable, pioneering and future-proof renewable energy generation and supply concepts. Our aim is that our sustainable solutions will make a significant contribution to the growing global energy demand.

ENERCON COMPANY PRINCIPLES



RESPONSIBILITY

We embrace our responsibility – within the company and in shaping a sustainable (energy) future.



INDEPENDENCE

We are and will remain independent.



LONGEVITY

Our growth is stable and intended for the long term.

ENERCON CLAIM TO PERFORMANCE



TECHNOLOGY LEADERSHIP

We are pioneers in generating and supplying energy from renewables.



QUALITY LEADERSHIP

We are the leader when it comes to quality and supply first-class quality at a good price.

1.2

TRAINING CENTER LICHTENAU

TRAINING BUILDING

The Training Center in Lichtenau was specially designed by ENERCON for training customers. The training rooms that are used for teaching theory are designed to be modern and conducive to learning. Well-furnished lounge areas and discussion spaces foster conversation and knowledge exchange among trainers and participants.

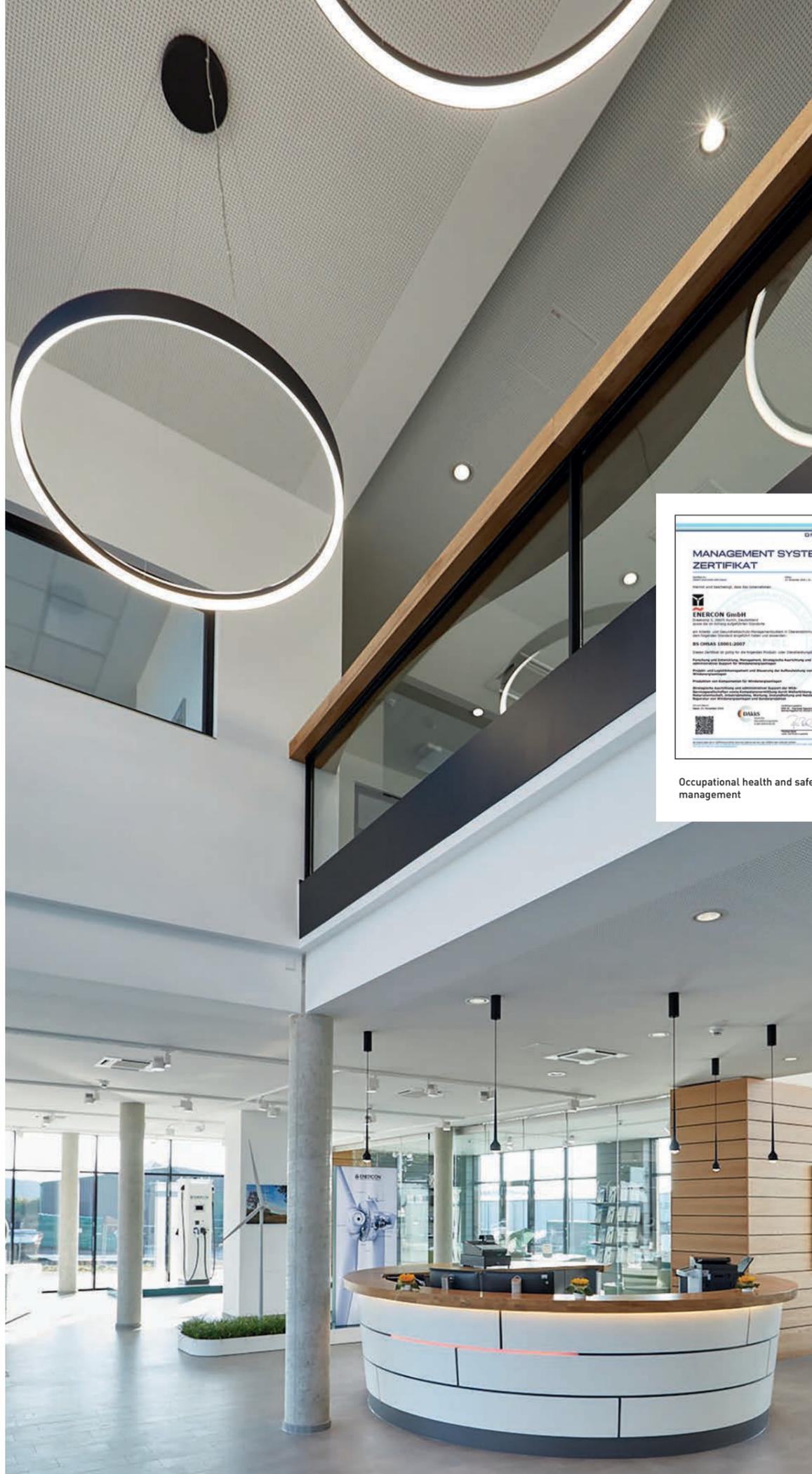
A fully-fitted E-115 nacelle is available in the hall for practical training sessions. Other true-to-life training units can be carried out using components such as fully functional service hoists and various control cabinets and power cabinets. These are provided in workshops and in other parts of the hall and are exactly as they are found in ENERCON wind energy converters.

A specially developed assembly of containers has been installed on the site to ensure practical occupational health and safety, working at height, evacuation and rescue exercises can be conducted in a safe and controlled environment. One of these is a container for fire safety training with real firefighting drills.

Outside, there is also an E-126 EP3 nacelle from the EP3 series, which is available for tours

1.3 CERTIFICATES

The ENERCON Training Center Lichtenau is part of the ENERCON Service Center. For more than 25 years, the ENERCON Service Center has been responsible for installing, supporting, repairing and maintaining the wind energy converters produced by ENERCON. Decades of experience on what currently totals over 31,000 wind energy converters and the close collaboration with ENERCON GmbH as well as Wobben Research & Development GmbH provides the basis for training content.



By purchasing an ENERCON wind energy converter, you are choosing quality and durability. The ENERCON Service Center provides you with legally compliant and reliable service provision with manufacturer-certified spare parts. It is certified in accordance with:

- BS OHSAS 18001:2007 Occupational health and safety
- ISO 9001:2015 Quality management
- ISO 14001:2015 Environmental management
- ISO/IES 27001:2013 Information security management



Occupational health and safety management

Quality management

Environmental management

Information security management

When selecting our partners, we ensure that they too abide by the necessary guidelines and standards so that we can guarantee quality. The partner we have chosen for safety, rescue and evacuation training, SHE Solution GmbH & Co. KG, is thus also certified to ISO 9001:2015 and the GWO standard. What's more, it is also a member of FISAT.





1.4 CONFERENCES AND MEETINGS AT ETC LICHTENAU

The training building of the ENERCON Training Center Lichtenau has three bright and modern conference rooms. You can book these for your meetings and conferences on request.

CONFERENCE ROOMS

	DALHEIM	ATTELN	HUSEN	TOTAL
Room size:	46 m ²	53 m ²	47 m ²	146 m ²
People:	12	24	14	50
Room rental: <small>[per day]</small>	390.00 €	400.00 €	390.00 €	1,100.00 €

EQUIPMENT

All rooms are air-conditioned and have electric blinds for darkening. Free Wi-Fi as well as an 86" Legamaster e-Screen with HDMI and USB ports, a flip chart and white-board including paper and pens come as standard and are included in the room rental fee. Generously appointed lounge areas and discussion spaces are also available free of charge and offer you and your guests the opportunity for conversation and knowledge sharing.

FOOD AND DRINK

Enjoy the food and drink offered at the ENERCON cafe. In addition to the hot lunch, you can also come here during the training breaks for some rest and refreshments. During your event, we provide hot and cold drink and arrange for coffee breaks according to your wishes. If you have any additional catering requests, please let us know! We are happy to offer a customised service for your event.

E-mail: customer-training@enercon.de

Phone: +49 (0) 52 95 - 99 52 910

FAN SHOP & ENERCON EXHIBITION

At ENERCON's first fan shop, ENERCON-themed gifts and souvenirs such as miniature photovoltaic systems are available for purchase. ENERCON is a system supplier for renewable energies and a driver of the development of regenerative solutions worldwide. Visit the exhibition to find out more. See the EP3 nacelle cross-section up close, or learn about ENERCON's electric charging column.



Do you need help putting together your training programme?

Send us a message or give us a call!

E-MAIL

customer-training@enercon.de

PHONE

+49 (0) 49 41 - 69 73 446



1.5 TRAINING CONFIGURATION

Depending on your needs, you can combine individual training modules. To support you, we have put together task-related training packages, the fruit of the many years of experience in providing vocational training to our employees. In our view, these packages provide the safety and technical training required in order to be able to perform the tasks described in the objectives and benefits.

Occupational health and safety as well as the equipment are subject to local laws and regulations, and these vary across countries, or are interpreted or dealt with differently. In order to be able to later work on the wind energy converters, participants must be able to perform the planned work in accordance with local regulations and be personally as well as professionally suited to do so.

Under the note, « Recommended course prerequisites », we have listed the training modules which we consider to contain the content needed in order to later be able to carry out the described activities on a wind energy converter. To participate in the training, these are not required, however, as the trainer ensures the necessary safety level during training.

1.6 WORK EQUIPMENT TO BRING

Theoretical teaching is held in modern, well-equipped rooms. Here, casual everyday clothes are appropriate. For visits to the production facilities and exterior areas, sturdy footwear with flat soles is a good idea.

If work or practical exercises are taking place, work clothes, a hard hat, safety goggles, work gloves and safety shoes are required. For exercises and working at height, a personal fall protection system (PFPS), including a guided-type fall arrester for safety ladders, is necessary. You can bring your own work clothes and protective equipment along.

For the personal fall protection system, the following minimum requirements apply:

- Safety harness in accordance with EN 361 and CSA Z359.1
- Shock-absorbing lanyard as per EN 354, EN 355 and CSA Z259.11[2x]
- Fall prevention device in accordance with EN 353-1 and CSA Z259.2.1 for LMB® safety ladders

1.7 HOTEL LIST

In order to make your stay as pleasant as possible while you participate in training at the Lichtenau Training Center, we have created a list of local hotel recommendations for you. You can make use of the ENERCON company rate when you book one of these hotels. All you have to do is indicate that you are taking part in an ENERCON training course when you make your booking.

Do you want us to reserve your hotel for you? Just inform us that you require a hotel room when you book your training course and we will take care of it!

Wohlfühlhotel DER JÄGERHOF ***

Am Jägerpfad 4-6
34439 Willebadessen
Phone: +49 (0) 5646 - 801 - 0
www.hk-hotels-willebadessen.de

Driving time to ENERCON Training Center Lichtenau by car approx. 12 minutes.

Welcome Hotel ****

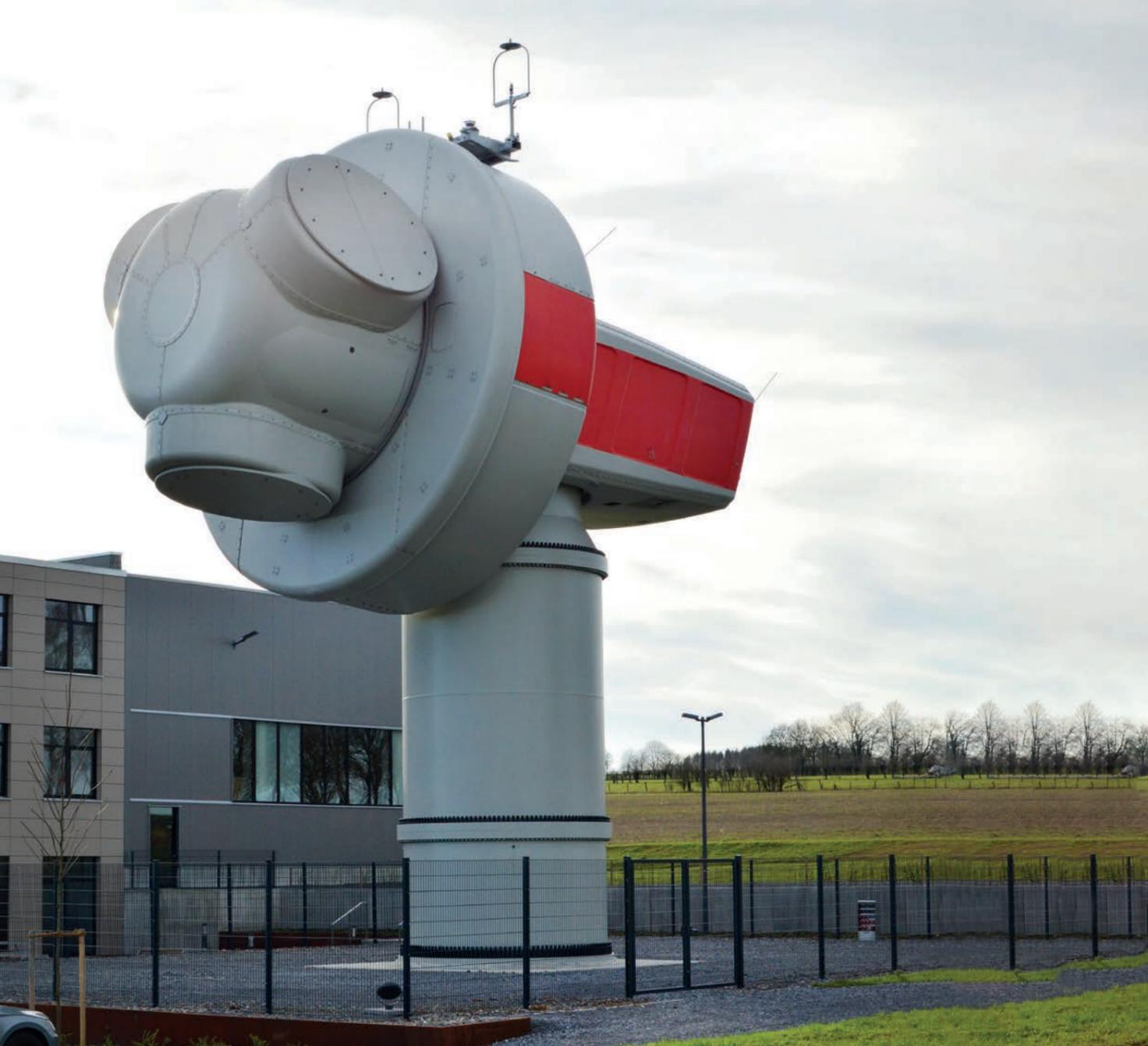
Fürstenweg 13
33102 Paderborn
Phone: +49 (0) 5251 - 28 80 - 0
www.welcome-hotels.com

Driving time to ENERCON Training Center Lichtenau by car approx. 21 minutes.

Hotel Heide Residenz ***

Sander Straße 37
33106 Paderborn
Phone: +49 (0) 5254 - 95 65 - 0
www.heideresidenz.de

Driving time to ENERCON Training Center Lichtenau by car approx. 23 minutes.



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ENERCON TRAINING PACKAGES

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2.1

BASIC WIND ENERGY CONVERTER TRAINING

OBJECTIVES / BENEFITS

Want to independently enter your ENERCON wind energy converter, work in the tower base and climb into the machine house via the safety ladder or using the service hoist? Then basic training is the right choice.

Visit the exhibition to find out more. See the EP3 nacelle cross-section up close, or learn about ENERCON's electric charging column.

TARGET GROUP:

Persons who would like to compare the current technical condition of an ENERCON wind turbine with the target condition.

MAX. PARTICIPANTS: 8**RECOMMENDED COURSE PREREQUISITES:**

For carrying out work on the WEC and for training employees, we recommend the modules 3.1 „DGUV - PSAgA“ basic course or 5.1 GWO Working@Heights basic course, which deal intensively with the use of rescue equipment and corresponding rescue exercises (e.g. rescue of a suspended person).

WORK EQUIPMENT TO BRING:

Safety shoes, work clothes, if available PFPS

METHODS:

Attendance course with a mix of theory and practice, supported by training models. The practical part begins with specially equipped training containers and ends with exercises on the nacelle of an E-115 or the E-126 EP3.

CONTENTS

- Technical structure of an ENERCON WEC
→ also bookable individually: **Module 7.1**
- Operation of ENERCON WEC in the tower base
→ also bookable individually: **Module 10.6**
- Training on personal fall protection systems (PFPS)
→ also bookable individually: **Module 10.3**
- Service hoist operation
→ also bookable individually: **Module 10.4**
- EIP – Enter a wind energy converter
→ also bookable individually: **Module 10.1**

DURATION:

1.5 days

PRICE:

from 1,380.00 € p.p.*

*The price refers to a minimum number of three participants

CONTENTS

- Training on personal fall protection systems (PFPS)
→ also bookable individually: **Module 10.3**
- EIP – Enter a wind energy converter
→ also bookable individually: **Module 10.1**
- Refresher on how to operate the service hoist

DURATION:

8 hours

PRICE:

from 920.00 € p.p.*

*The price refers to a minimum number of three participants

2.2

REFRESHER COURSE FOR BASIC TRAINING

OBJECTIVE / BENEFITS

General occupational health and safety guidelines require regular repetition of health and safety training. In the basic training refresher course, we repeat the modules that you need in order to enter a wind energy converter and ascend into the nacelle. Technical modifications and new safety findings are incorporated into the refresher training.

TARGET GROUP:

Those who have attended the ENERCON basic training and require a refresher.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

For carrying out work on the WEC and for training employees, we recommend the modules 3.1 „DGUV - PSAgA“ basic course or 5.1 GWO Working@Heights basic course, which deal intensively with the use of rescue equipment and corresponding rescue exercises (e.g. rescue of a suspended person).

WORK EQUIPMENT TO BRING:

Safety shoes, work clothes

METHODS:

Attendance course with a mix of theory and practice, supported by training models. The practical part begins with specially equipped training containers and ends with exercises on the nacelle of an E-115 or the E-126 EP3.

2.3

GENERAL OVERVIEW

OBJECTIVE / BENEFITS

Do you want to compare the current state of an ENERCON wind energy converter with the target state? Then this recommended combination is an option for you to achieve the knowledge you need in order to perform this activity. We will introduce to you the ENERCON maintenance cycle and explain the maintenance items in individual maintenance jobs. Furthermore, you also gain knowledge and skills, such as how an ENERCON wind energy converter is operated in the machine house, so that you can safely enter the machine house and the rotor area.

TARGET GROUP:

Those who wish to compare the current technical condition of an ENERCON WEC with the target state.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

We recommend participating in the ENERCON basic training

WORK EQUIPMENT TO BRING:

Safety shoes, work clothes

METHODS:

Attendance course with a mix of theory and practice, supported by training models.

CONTENTS

- ENERCON maintenance cycle overview
→ also bookable individually: **Module 12.1**
- Operation of ENERCON WEC in the machine house
→ also bookable individually: **Module 10.7**
- Visual and grease maintenance - Overview
- Wind-based maintenance - Overview
- Master maintenance - Overview
→ also bookable individually: **Module 12.2**
- 4-year maintenance - Overview
→ also bookable individually: **Module 12.3**

DURATION:

1.5 days

PRICE:

from 1,380.00 € p.p.*

*The price refers to a minimum number of three participants

CONTENTS

- ENERCON Service Info Portal (SIP)
→ also bookable individually: **Module 11.1**
- ENERCON SCADA
→ also bookable individually: **Module 11.2**

DURATION:
3 hours

PRICE:
from 340.00 € p.p.*

*The price refers to a minimum number of three participants

2.4

REMOTE MONITORING SYSTEM

OBJECTIVE / BENEFITS

We have designed this combination of two modules for you in such a way to ensure you gain the knowledge required to be able to operate the *ENERCON SCADA* system and *ENERCON Service Info Portal* (SIP) programs. You will learn how to read out data and put this together in reports and how this information can be evaluated and assessed.

TARGET GROUP:

Persons who wish to monitor and analyse wind farms.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

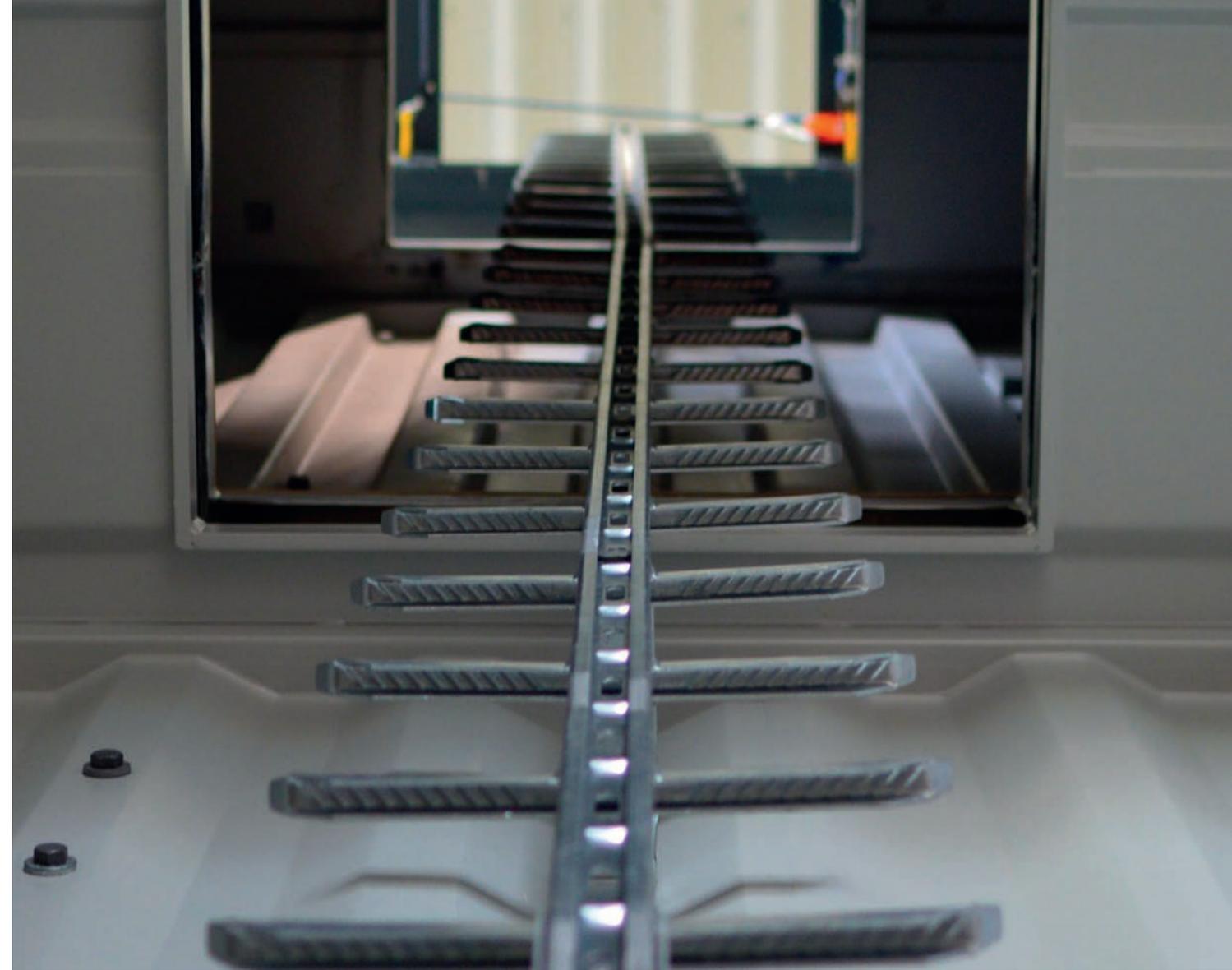
Basic knowledge of IT technology and software processing

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.



3

TRAINING COURSES

IN ACCORDANCE WITH DGUV (German Statutory Accident Insurance)

3.1	DGUV – PFPS basic course in accordance with DGUV regulations 112-198/199	16
3.2	DGUV – PFPS refresher course in accordance with DGUV regulations 112-198/199	17
3.3	DGUV – Confined Space – in accordance with DGUV regulation 113-004 (Rescue from confined space)	18
3.4	DGUV – Company assistant fire warden in accordance with DGUV information 205-023	19
3.5	DGUV vocational training as a competent person in accordance with DGUV basic principle 312-906 – PFPS SSUB domain	20
3.6	DGUV vocational training as a competent person in accordance with DGUV basic principle 312-906 – PFBS and abseiling equipment sub-domain (rope access)	21

The DGUV training courses are carried out by our partner SHE Solution Bergmann GmbH & Co. SHE Solution is a certified company that specialises in safety, rescue and evacuation training.

3.1

DGUV – PFBS BASIC COURSE IN ACCORDANCE WITH DGUV-REGULATIONS 112-198/199

OBJECTIVE / BENEFITS

Through theoretical and practical training, you will learn the proper way to handle and use the personal fall protection system (PFPS) for working in areas where there is a risk of falling, in accordance with German Statutory Accident Insurance (DGUV) regulations 112-198/199. After completing the module, you are able to evaluate different working situations in terms of their safety and can effectively and independently initiate and perform effective rescue measures in the working environment of a wind energy converter / workplace at height. After successful participation, a DGUV certificate and a sticker is issued for the personal safety logbook. The certificate is valid for 1 year, in accordance with DGUV regulations.

TARGET GROUP:

Persons who work in areas where there is a risk of falling, such as construction, operation and maintenance of wind energy converters and other infrastructures at height.

MAX. PARTICIPANTS: 6

RECOMMENDED COURSE PREREQUISITES:

Minimum age of 18 years, physically fit, no health problems – particularly cardiovascular diseases or spinal injuries.

WORK EQUIPMENT TO BRING:

Appropriate protective work clothes and safety shoes, as well as clothing and work gloves that are suitable for the weather. If available, you can use your own PFPS during the training course, otherwise we can also gladly lend participants PFPS.

METHODS:

Attendance course with a mix of theory and practice. The practical parts take place in a wind energy converter or a wind energy converter practice tower.

3.2

DGUV – PFBS REFRESHER COURSE IN ACCORDANCE WITH DGUV REGULATIONS 112-198/199

OBJECTIVE / BENEFITS

Have you already completed a German Statutory Accident Insurance (DGUV) basic course or refresher for PFPS but its validity is due to expire soon? Then you need this refresher training. Through theoretical and practical training, you will gain the knowledge and skills in order to properly handle and use the personal fall protection system (PFPS) for working in areas where there is a risk of falling, in accordance with DGUV regulations 112-198/199. After completing the module, you are once again able to evaluate different working situations in terms of their safety and can effectively and independently initiate and perform effective rescue measures in the working environment of an wind energy converter / workplace at height. After successful participation, a DGUV certificate and a sticker is issued for the personal safety logbook. The certificate is valid for 1 year, in accordance with DGUV regulations.

TARGET GROUP:

Persons who work in areas where there is a risk of falling, such as construction, operation and maintenance of wind energy converters and other infrastructures at height.

MAX. PARTICIPANTS:6

RECOMMENDED COURSE PREREQUISITES:

Minimum age of 18 years, physically fit, no health problems – particularly cardiovascular diseases or spinal injuries.

WORK EQUIPMENT TO BRING:

Appropriate protective work clothes and safety shoes, as well as clothing and work gloves that are suitable for the weather. If available, you can use your own PFPS during the training course, otherwise we can also gladly lend participants PFPS.

METHODS:

Attendance course with a mix of theory and practice. The practical parts take place in a wind energy converter or a wind energy converter practice tower.

CONTENTS

- Legislation, risks and dangers
- Harness and rescue systems
- Visual inspection and functional test of the PFPS
- Personal fall protection systems and handling PFPS
- Suspension trauma
- Self-protection measures
- Ascent and descent in a wind energy converter
- One-off instruction in the operation and handling of rescue equipment
- Practical evacuation and rescue exercises
- Emergency scenarios
- Rescue chain / coordination with the control station

DURATION:

2 days

PRICE:

from 700.00 € p.p.*

*The price refers to a minimum number of five participants

CONTENTS

- Legislation, risks and dangers
- Harness and rescue systems
- Visual inspection and functional test of the PFPS
- Personal fall protection systems and handling PFPS
- Suspension trauma
- Self-protection measures
- Ascent and descent in a wind energy converter
- One-off instruction in the operation and handling of rescue equipment
- Practical evacuation and rescue exercises
- Emergency scenarios
- Rescue chain / coordination with the control station

DURATION:

1 day

PRICE:

from 350.00 € p.p.*

*The price refers to a minimum number of five participants

3.3

**DGUV – CONFINED SPACE –
IN ACCORDANCE WITH
DGUV REGULATION 113-004**

(Rescue from confined space)

OBJECTIVE / BENEFITS

Through theoretical and practical training, you will learn how to evaluate dangers within critical areas of work in terms of their safety and how to plan this work. You will learn how to handle the rescue equipment available to you as well as how to rescue people from confined spaces in a range of emergency situations. Through the use of a fog machine, diverse scenarios can be trained for in realistic settings. After successful participation, a German Statutory Accident Insurance (DGUV) certificate and a sticker is issued for the personal safety logbook. The certificate is valid for 1 year, in accordance with DGUV guidelines.

TARGET GROUP:

Persons who enter confined spaces during their work.

MAX. PARTICIPANTS: 6

RECOMMENDED COURSE PREREQUISITES:

Minimum age of 18 years, valid G41 examination certificate, personal fall protection system [DGUV 112-198/199, physically fit, no health problems – particularly cardiovascular diseases or spinal injuries.

WORK EQUIPMENT TO BRING:

Appropriate protective work clothes and safety shoes, as well as clothing and work gloves that are suitable for the weather. If available, you can use your own PFPS during the training course, otherwise we can also gladly lend participants PFPS.

METHODS:

Through theoretical and practical training, participants learn how to evaluate dangers within critical areas of work in terms of their safety and how to plan this work. Through the use of a fog machine, diverse scenarios can be trained for in realistic settings.

3.4

**DGUV – COMPANY ASSISTANT
FIRE WARDEN IN
ACCORDANCE WITH DGUV
INFORMATION 205-023**

OBJECTIVE / BENEFITS

Through theoretical and practical training, you will learn measures to prevent fires as well as safe and targeted extinguishing of fires. After successful participation, a German Statutory Accident Insurance (DGUV) certificate and a sticker is provided for the personal safety logbook. The certificate is valid for 1 year, in accordance with DGUV guidelines.

TARGET GROUP:

Persons who perform work with increased fire hazard. Office staff, health and safety representatives, health and safety specialists.

MAX. PARTICIPANTS: 6

RECOMMENDED COURSE PREREQUISITES:

The participant must be in good health and physically fit.

WORK EQUIPMENT TO BRING:

Appropriate protective work clothing and safety shoes.

METHODS:

Attendance course with a mix of theory and practice. The practical parts take place in a wind energy converter or a wind energy converter practice tower.

CONTENTS

- Basics, legislation, risks and dangers
- Definition of terms
- Fall physics and securement equipment
- Materials science
- Requirements for and selection of PFPS
- General precautions for entering confined spaces
- Medical aspects
- Planning the work and rescue operations
- Three-leg lifting device – rescue in upwards / downwards direction
- Horizontal rescue
- One-off instruction in rescue stretchers – SKEDCO
- Practical rescue exercises with and without stretchers

DURATION:

1 day

PRICE:

from 350.00 € p.p.*

*The price refers to a minimum number of five participants

CONTENTS

- Guidelines
- Basics of fire safety
- Company fire protection organisation
- Function and operating principle of fire-fighting equipment
- Dangers of fires
- Conduct in case of fire
- Protecting yourself and others
- Handling and function of fire-fighting equipment
- Fire extinguishing tactics and personal limits of fire-fighting
- Handling fire-fighting equipment / fire extinguishers
- Operating principle and performance of fire-fighting equipment
- Practical exercise for fighting fires

DURATION:

1 day

PRICE:

from 380.00 € p.p.*

*The price refers to a minimum number of five participants

CONTENTS

- Relevant legal principles and standards
- Rules of technology
- Types of PFPS
- Assessment of PFPS
- Intended use of PFPS
- Marking, storage and maintenance of PFPS
- Duties of a competent person
- Organisation and documentation
- Detection of damage and defects

DURATION:

2 days

PRICE:

from 790.00 € p.p.*

*The price refers to a minimum number of five participants

3.5

DGUV VOCATIONAL TRAINING AS A COMPETENT PERSON IN ACCORDANCE WITH DGUV BASIC PRINCIPLE 312-906 – PFPS SSUB-DOMAIN

OBJECTIVE / BENEFITS

You receive proof of being a competent person capable of inspecting personal fall protection systems in accordance with German Statutory Accident Insurance (DGUV) basic principle 312-906. You will be able to detect damage and defects on personal protection equipment and rescue systems. You contribute to preventing falls. After successful participation, a DGUV certificate and a sticker is issued for the personal safety logbook. The certificate is valid for 1 year, in accordance with the DGUV.

TARGET GROUP:

Persons who are to be appointed as competent inspectors of personal fall protection systems. Entrepreneurs, managerial staff, health and safety specialists

MAX. PARTICIPANTS: 10

RECOMMENDED COURSE PREREQUISITES:

Minimum age of 18 years, professional experience and knowledge in the handling and use of personal fall protection systems.

WORK EQUIPMENT TO BRING:

Comfortable clothing

METHODS:

Attendance course with a mix of theory and practice. The practical parts take place in a wind energy converter or a wind energy converter practice tower.

3.6

DGUV VOCATIONAL TRAINING AS A COMPETENT PERSON IN ACCORDANCE WITH DGUV BASIC PRINCIPLE 312-906 – PFPS AND ABSEILING EQUIPMENT SUB-DOMAIN

OBJECTIVE / BENEFITS

You receive proof of being a competent person capable of inspecting personal fall protection systems (PFPS) and rope access material in accordance with German Statutory Accident Insurance (DGUV) Basic Principle 312-906. You will be able to detect damage and defects on personal protection equipment and rescue systems. You contribute to preventing falls. **Note:** The vocational training does not qualify participants to inspect abseiling and rescue devices in accordance with EN 341/1496 or fall arrest blocks in accordance with EN 360.

TARGET GROUP:

Persons who are to be appointed as competent inspectors of personal fall protection systems. Entrepreneurs, managerial staff, health and safety specialists

MAX. PARTICIPANTS: 10

RECOMMENDED COURSE PREREQUISITES:

Minimum age of 18 years, professional experience and knowledge in the handling and use of personal fall protection systems, FISAT Level 1

WORK EQUIPMENT TO BRING:

Comfortable clothing

METHODS:

Attendance course with a mix of theory and practice. The practical parts take place in a wind energy converter or a wind energy converter practice tower.

CONTENTS

- Relevant legal principles and standards
- Rules of technology
- Types of PFPS and rope access material
- Assessment of PFPS
- Intended use of PFPS
- Marking, storage and maintenance of PFPS
- Duties of a competent person
- Organisation and documentation
- Detection of damage and defects
- Mobile pulleys
- Vertical ascent and descent techniques
- Horizontal cross hauls
- Horizontal traverses
- Intermediate anchorings / cable pulleys

DURATION:

3 days

PRICE:

from 1,040.00 € p.p.*

*The price refers to a minimum number of five participants



4 ADDITIONAL TRAINING RESCUE FROM WECS

4.1	Module – Rescue from the hub (special training in wind energy converters and EP3 practice tower)	23
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The specialised training courses are carried out by our partner SHE Solution Bergmann GmbH & Co. SHE Solution is a certified company that specialises in safety, rescue and evacuation training.

4.1

MODULE – RESCUE FROM THE HUB

(Special training in WEC and EP3 practice tower)

OBJECTIVE / BENEFITS

In their everyday operational work, service technicians are exposed to a variety of dangers. This makes it even more important to train employees to recognise potential hazards and practice rescue measures. Do your employees work in the wind energy converter hub? Then, thanks to this special training course, your employees will be as well prepared as possible for any potential emergency situations and can respond safely in the event of an emergency. During training, the participants develop rescue options under the trainer's supervision, using the rescue equipment present in the wind energy converter.

TARGET GROUP:

Persons who perform rescues at height, operational personnel and rescue workers

MAX. PARTICIPANTS: 6

RECOMMENDED COURSE PREREQUISITES:

Minimum age of 18 years, G41 examination, Company First Aider (German Statutory Accident Insurance [DGUV] 113-04), Personal fall protection systems (DGUV 112-198/199)

WORK EQUIPMENT TO BRING:

Work clothes, safety shoes, personal fall protection system

METHODS:

Attendance course with a mix of theory and practice. The practical parts take place in a wind energy converter or a wind energy converter practice tower.

CONTENTS

- Understanding specific risk assessments
- Hazards and risks
- Field of activity, related to work and wind turbine type
- Ranking measures
- Preparatory work safety measures
- Emergency response systems
- Assessment of the potential hazards
- Safety-related conditions
- Anchorage points
- Establishing rescue routes
- Confined work environments
- Self-evacuation
- Rescue options using the rescue equipment on hand
- Communication and rescue chain

DURATION:

1 day

PRICE:

from 350.00 € p.p.*

*The price refers to a minimum number of five participants

4.2

MODULE – RESCUE FROM THE MACHINE HOUSE ROOF

(Special training in WEC and EP3 practice tower)

OBJECTIVE / BENEFITS

In their everyday operational work, service technicians are exposed to a variety of dangers. This makes it even more important to train employees to recognise potential hazards and practice rescue measures. Do your employees work outside of the machine house as well? Then, thanks to this special training course, your employees will be as well prepared as possible for any potential emergency situations and can respond safely in the event of an emergency. During training, the participants develop rescue options under the trainer’s supervision, using the rescue equipment present in the wind energy converter.

TARGET GROUP:

Persons who perform rescues at height, operational personnel and rescue workers.

MAX. PARTICIPANTS: 6

RECOMMENDED COURSE PREREQUISITES:

Minimum age of 18 years, G41 examination, Company First Aider (German Statutory Accident Insurance [DGUV] 113-04), Personal fall protection systems (DGUV 112-198/199)

WORK EQUIPMENT TO BRING:

Work clothes, safety shoes, personal fall protection system

METHODS:

Attendance course with a mix of theory and practice. The practical parts take place in a wind energy converter or a wind energy converter practice tower.

4.3

MODULE – RESCUE FROM THE YAW AREA

(Special training in WEC and EP3 practice tower)

OBJECTIVE / BENEFITS

In their everyday operational work, service technicians are exposed to a variety of dangers. This makes it even more important to train employees to recognise potential hazards and practice rescue measures. Do your employees need to enter the yaw area? Then, thanks to this special training course, your employees will be as well prepared as possible for potential emergency situations in this field and can respond safely in the event of an emergency. During training, the participants develop rescue options under the trainer’s supervision, using the rescue equipment present in the wind energy converter.

TARGET GROUP:

Persons who perform rescues at height, operational personnel and rescue workers.

MAX. PARTICIPANTS: 6

RECOMMENDED COURSE PREREQUISITES:

Minimum age of 18 years, G41 examination, Company First Aider (German Statutory Accident Insurance [DGUV] 113-04) Personal fall protection systems (DGUV 112-198/199)

WORK EQUIPMENT TO BRING:

Work clothes, safety shoes, personal fall protection system

METHODS:

Attendance course with a mix of theory and practice. The practical parts take place in a wind energy converter or a wind energy converter practice tower.

CONTENTS

- Understanding specific risk assessments
- Hazards and risks
- Field of activity, related to work and wind turbine type
- Ranking measures
- Preparatory work safety measures
- Emergency response systems
- Assessment of the potential hazards
- Safety-related conditions
- Anchorage points
- Establishing rescue routes
- Confined work environments
- Self-evacuation
- Rescue options using the rescue equipment on hand
- Communication and rescue chain

DURATION:

1 day

PRICE:

from 350.00 € p.p.*

*The price refers to a minimum number of five participants

CONTENTS

- Understanding specific risk assessments
- Hazards and risks
- Field of activity, related to work and wind turbine type
- Ranking measures
- Preparatory work safety measures
- Emergency response systems
- Assessment of the potential hazards
- Safety-related conditions
- Anchorage points
- Establishing rescue routes
- Confined work environments
- Self-evacuation
- Rescue options using the rescue equipment on hand
- Communication and rescue chain

DURATION:

1 day

PRICE:

from 310.00 € p.p.*

*The price refers to a minimum number of five participants

CONTENTS

- Understanding specific risk assessments
- Hazards and risks
- Field of activity, related to work and wind turbine type
- Ranking measures
- Preparatory work safety measures
- Emergency response systems
- Assessment of the potential hazards
- Safety-related conditions
- Anchorage points
- Establishing rescue routes
- Confined work environments
- Self-evacuation
- Rescue options using the rescue equipment on hand
- Communication and rescue chain

DURATION:

1 day

PRICE:

from 350.00 € p.p.*

*The price refers to a minimum number of five participants

4.4

MODULE – RESCUE FROM THE ROTOR BLADE

(Special training in WEC and EP3 practice tower)

OBJECTIVE / BENEFITS

In their everyday operational work, service technicians are exposed to a variety of dangers. This makes it even more important to train employees to recognise potential hazards and practice rescue measures. Do your employees have to enter the rotor blade? Then, thanks to this special training course, your employees will be as well prepared as possible for emergency situations in the rotor blade and can respond safely in the event of an emergency. During training, the participants develop rescue options under the trainer's supervision, using the rescue equipment present in the wind energy converter.

TARGET GROUP:

Persons who perform rescues at height, operational personnel and rescue workers.

MAX. PARTICIPANTS: 6

RECOMMENDED COURSE PREREQUISITES:

Minimum age of 18 years, G41 examination, Company First Aider (German Statutory Accident Insurance [DGUV] 113-04) Personal fall protection systems (DGUV 112-198/199), Training in Gas Warning Systems (DGUVT21)*

WORK EQUIPMENT TO BRING:

Work clothes, safety shoes, personal fall protection system

METHODS:

Attendance course with a mix of theory and practice. The practical parts take place in a wind energy converter or a wind energy converter practice tower.

* required only with the rotor blade module



5

GWO (GLOBAL WIND ORGANISATION) TRAINING

5.1	GWO Working@heights – Basic course	28
5.2	GWO Working@heights – Refresher	29
5.3	GWO Fire-Awareness – Basic course and refresher	30
5.4	GWO Manual Handling – Basic course and refresher	31

The GWO training courses are carried out by our partner SHE Solution Bergmann GmbH & Co. SHE Solution is a certified company that specialises in safety, rescue and evacuation training.

CONTENTS

- Legislation, risks and dangers
- Harness and rescue systems
- Visual inspection and functional test of the PFPS
- Personal fall protection system and handling PFPS
- Suspension trauma
- Self-protection measures
- Ascent and descent in a wind energy converter
- One-off instruction in the operation and handling of rescue equipment
- Practical evacuation and rescue exercises
- Emergency scenarios
- Rescue chain / coordination with the control station

DURATION:

2 days

PRICE:

from 710.00 € p.p.*

*The price refers to a minimum number of five participants

5.1

GWO WORKING@HEIGHTS – BASIC COURSE

OBJECTIVE / BENEFITS

Through theoretical and practical training, you will gain the necessary basic knowledge and skills to use PFPS, to work safely at heights, as well as to safely and comprehensively perform evacuations from wind energy converters in accordance with the GWO standard. You are able to evaluate different work stations in terms of their safety and can effectively and independently initiate and carry out effective rescue measures in the working environment of an wind energy converter / workplace at height. Upon successful completion, a GWO certificate and a sticker for the personal safety logbook are issued and participation is confirmed to the GWO. The certificate is valid for 2 years, in accordance with GWO guidelines.

TARGET GROUP:

Persons who work in areas where there is a risk of falling, such as construction, operation and maintenance of wind energy converters and other infrastructures at height.

MAX. PARTICIPANTS: 6

RECOMMENDED COURSE PREREQUISITES:

Minimum age of 18 years, physically fit, no health problems – particularly cardiovascular diseases or spinal injuries

WORK EQUIPMENT TO BRING:

Appropriate protective work clothes and safety shoes, as well as clothing and work gloves that are suitable for the weather. If available, you can use your own PFPS during the training course, otherwise we can also gladly lend participants PFPS.

METHODS:

Attendance course with a mix of theory and practice. The practical parts take place in a wind energy converter or a wind energy converter practice tower.

5.2

GWO WORKING@HEIGHTS – REFRESHER

OBJECTIVE / BENEFITS

Through theoretical and practical training, you will gain the necessary basic knowledge and skills to use PFPS and to work safely at heights, as well as to safely and comprehensively perform evacuations from wind energy converters in accordance with the GWO standard. You are able to evaluate different work stations in terms of their safety and can effectively and independently initiate and carry out effective rescue measures in the working environment of an wind energy converter / workplace at height. Upon successful completion, a GWO certificate and a sticker for the personal safety logbook are issued and participation is confirmed to the GWO. The certificate is valid for 2 years, in accordance with GWO guidelines.

TARGET GROUP:

Persons who work in areas where there is a risk of falling, such as construction, operation and maintenance of wind energy converters and other infrastructures at height.

MAX. PARTICIPANTS: 6

RECOMMENDED COURSE PREREQUISITES:

Minimum age of 18 years, physically fit, no health problems – particularly cardiovascular diseases or spinal injuries, valid GWO basic course certificate

WORK EQUIPMENT TO BRING:

Appropriate protective work clothes and safety shoes, as well as clothing and work gloves that are suitable for the weather. If available, you can use your own PFPS during the training course, otherwise we can also gladly lend participants PFPS.

METHODS:

Attendance course with a mix of theory and practice. The practical parts take place in a wind energy converter or a wind energy converter practice tower.

CONTENTS

- Legislation, risks and dangers
- Harness and rescue systems
- Visual inspection and functional test of the PFPS
- Personal fall protection system and handling PFPS
- Suspension trauma
- Self-protection measures
- Ascent and descent in a wind energy converter
- One-off instruction in the operation and handling of rescue equipment
- Practical evacuation and rescue exercises
- Emergency scenarios
- Rescue chain / coordination with the control station

DURATION:

1 day

PRICE:

from 360.00 € p.p.*

*The price refers to a minimum number of five participants

CONTENTS

- Guidelines
- Basics of fire safety
- Company fire protection organisation
- Function and operating principle of fire-fighting equipment
- Dangers of fires
- Conduct in case of fire
- Protecting yourself and others
- Handling and function of fire-fighting equipment
- Fire extinguishing tactics and personal limits of fire-fighting
- Handling fire-fighting equipment / fire extinguishers
- Operating principle and performance of fire extinguishers
- Practical exercises for fighting fires

DURATION:

each 4 hours

PRICE:

from 230,00 € p.p.*

*The price refers to a minimum number of five participants

5.3

GWO FIRE-AWARENESS – BASIC COURSE AND REFRESHER

OBJECTIVE / BENEFITS

Theoretical and practical content teaches the basic knowledge and skills for the prevention of fires and assessment of fires. The participants learn to initiate the evacuation of persons, so as to be able to do so in a potential emergency situation. In practice, the participants learn how to efficiently extinguish incipient fires using portable fire extinguishers. Upon successful completion, a GWO certificate and a sticker for the personal safety logbook are issued and participation is confirmed to the GWO. The certificate is valid for 2 years, in accordance with GWO guidelines.

TARGET GROUP:

Persons e.g., from the fields of construction, operation and maintenance of wind energy converters

MAX. PARTICIPANTS: 6

RECOMMENDED COURSE PREREQUISITES:

The participant must be in good health and physically fit.

WORK EQUIPMENT TO BRING:

Appropriate protective work clothing and safety shoes

METHODS:

Attendance course with a mix of theory and practice. The practical elements, including fire-fighting exercises, take place on the Training Center grounds and in a fireprotection container.

5.4

GWO MANUAL HANDLING – BASIC COURSE AND REFRESHER

OBJECTIVE / BENEFITS

The objective of this training is to promote positive behaviour when lifting and carrying, in order to perform tasks in the wind energy industry safely. Through theoretical and practical content, the participant's awareness is increased, in order to detect dangers, apply lifting techniques and thereby reduce accidents or long-term health concerns. Upon successful completion, a GWO certificate and a sticker for the personal safety logbook are issued and participation is confirmed to the GWO. The certificate is valid for 2 years, in accordance with GWO guidelines.

TARGET GROUP:

Persons e.g., from the fields of construction, operation and maintenance of wind energy converters

MAX. PARTICIPANTS: 12

RECOMMENDED COURSE PREREQUISITES:

The participant must be in good health and physically fit.

WORK EQUIPMENT TO BRING:

Appropriate protective work clothing and safety shoes

METHODS:

Attendance course with a mix of theory and practice. Practical lifting exercise with different loads where the trainer encourages optimum behaviour and corrects errors.

CONTENTS

- Legal guidelines
- Explanation of the term « Manual Handling »
- Risks and dangers
- Body composition – skeleton
- Muscular, skeletal and intervertebral disc injuries
- Risk minimisation
- Planning
- Checking
- Identification of hazards
- Lifting techniques
- Practical lifting exercises

DURATION:

each 4 hours

PRICE:

from 200.00 € p.p.*

*The price refers to a minimum number of five participants



6

WIND ENERGY CONVERTER VISIT

6.1 Visiting a training wind energy converter

33

6.1

VISITING A TRAINING WIND ENERGY CONVERTER

OBJECTIVE / BENEFITS

To learn more about the technology of an original ENERCON wind turbine, we offer you a tour of the E-126 EP3 training WEC on our premises in Lichtenau. Specialist personnel will accompany you and provide you with information about the turbine technology.

TARGET GROUP:

Interested persons

MAX. PARTICIPANTS: 4

RECOMMENDED COURSE PREREQUISITES:

body weight at least 50 kg (PFPS specification)

WORK EQUIPMENT TO BRING:

Safety shoes

METHODS:

Tour of a wind energy converter, accompanied by specialist personnel

DURATION:

2 hours

PRICE:

from 260.00 € p.p.*

*The price refers to a minimum number of three participants



7

WEC BASICS

- 7.1 Technical structure of an ENERCON wind energy converter 35
 7.2 Wind farm infrastructure, grid properties 36

7.1

TECHNICAL STRUCTURE OF AN ENERCON WIND ENERGY CONVERTER

OBJECTIVE / BENEFITS

Based on a virtual tour, we introduce you to the technical structure of an ENERCON wind energy converter, from the foundation up to the rotor blade. We provide you with information on the individual components which forms the basis of many subsequent technical training courses. This training can also be booked for the latest WEC models.

TARGET GROUP:

Persons who are interested in the basic structure of an ENERCON wind energy converter and how it functions.

MAX. PARTICIPANTS: 8**RECOMMENDED COURSE PREREQUISITES:**

-

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.

CONTENTS

- Necessity for / function of foundations
- Tower types and their cast-in elements
- Access routes
- E-module types
- The nacelle
- The generator
- The rotor hub and rotor blades
- Energy conversion by a wind energy converter

DURATION:

2 hours

PRICE:

from 240.00 € p.p.*

*The price refers to a minimum number of three participants

CONTENTS

- Layout of an ENERCON wind farm from the grid control station to the wind farm
- Description of the ENERCON SCADA system and its function
- Regulatory options of the energy suppliers

DURATION:

1 hour

PRICE:

from 120.00 € p.p.*

*The price refers to a minimum number of three participants

7.2

WIND FARM INFRASTRUCTURE, GRID PROPERTIES

OBJECTIVE / BENEFITS

Would you like to know how the ENERCON wind farm infrastructure is laid out and how the wind farm or wind energy converters are managed and controlled in terms of energy? Based on a model of wind farm infrastructure, we teach you about the interaction between the wind energy converter and the transmission network operator. You will learn about the systems that are used to implement the required grid code.

TARGET GROUP:

Persons who wish to understand the interaction between wind energy converters and transmission network operators.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

-

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.



8

OPTIONAL WEC SYSTEMS

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8.6	Optionales System – Schalloptimierung	40

8.1 FIRE EXTINGUISHING SYSTEM FIRESPY

OBJECTIVE / BENEFITS

Due to regulations or rules issued by public authorities or insurance bodies, fire extinguishing systems must be installed in some wind energy converters. In this training, you will learn about the structure and function of the individual system components of the 'Firespy' fire extinguishing system used by ENERCON. Furthermore, you will also gain the skills to operate the system safely and properly and to perform maintenance work on it.

TARGET GROUP:

Persons who carry out maintenance and inspection work on the fire extinguishing system.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

-

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.

DURATION:
2.5 hours

PRICE:
from 280.00 € p.p.*

*The price refers to a minimum number of three participants

8.2 OPTIONAL SYSTEM – BEACON SYSTEM COMPONENTS

OBJECTIVE / BENEFITS

In accordance with laws and regulations, wind energy converters as of a certain height must be equipped with a day /night marking system for flight operations. Would you like to learn about the various beacon systems in ENERCON wind energy converters and know how these can be controlled? Then this training module is the right choice for you. You will receive information about the structure and the function of the components which are used for the beacon system.

TARGET GROUP:

Persons who would like to learn about the beacon system in an ENERCON wind energy converter.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

-

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.

DURATION:
1 hour

PRICE:
from 120.00 € p.p.*

*The price refers to a minimum number of three participants

8.3 OPTIONAL SYSTEM - ICE DETECTION, BLADE HEATING SYSTEM

OBJECTIVE / BENEFITS

Ice build-up leads to downtimes and reduces the potential annual yield of your wind energy converter. An ice detection system, combined with a blade heating system, reduces this downtime to a minimum. Would you like to learn more about ice detection systems and rotor blade heating in ENERCON wind energy converters? Then this training module is the right choice. You will learn about the structure and function of the components that are used for the ice detection systems and rotor blade heating.

TARGET GROUP:

Persons who wish to learn about the ice detection system and blade heating system in an ENERCON wind energy converter.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

-

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.

DURATION:
1.5 hours

PRICE:
from 180.00 € p.p.*

*The price refers to a minimum number of three participants

8.4 OPTIONAL SYSTEM – BAT DETECTION

OBJECTIVE / BENEFITS

At some sites, the use of bat detection is required. Would you like to learn about bat detection in ENERCON wind energy converters? Then this training module is the right choice for you. You will learn about the structure and function of the components that are used for the bat detection system.

TARGET GROUP:

Persons who would like to learn about the bat detection system in an ENERCON wind energy converter.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

-

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.

DURATION:
0.5 hours

PRICE:
from 60.00 € p.p.*

*The price refers to a minimum number of three participants

8.5

OPTIONAL SYSTEM – SHADOW SHUTDOWN

OBJECTIVE / BENEFITS

With the ENERCON shadow shutdown, wind energy converters can be operated on sites that normally would not be deemed suitable due to creation of shadows. Would you like to learn more about shadow shutdown in ENERCON wind energy converters? Then this training module is the right choice for you. You will learn about the structure and function of the components that are used for shadow shutdown.

TARGET GROUP:

Persons who would like to learn about the shadow shutdown of an ENERCON wind energy converter.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

-

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.

DURATION:

0.5 hours

PRICE:

from 60.00 € p.p.*

*The price refers to a minimum number of three participants

8.6

OPTIONAL SYSTEM – NOISE OPTIMISATION

OBJECTIVE / BENEFITS

ENERCON wind energy converters run in a yield-optimised manner. In some sites, it may be necessary to reduce the noise generated by the machine at certain times. Do you want to know how noise optimisation works in ENERCON wind energy converters and the possibilities it presents? Then this training module is the right choice for you. You will receive information about how the noise optimisation system works.

TARGET GROUP:

Persons who would like to learn about noise optimisation in an ENERCON wind energy converter.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

-

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.

DURATION:

0.5 hours

PRICE:

from 60.00 € p.p.*

*The price refers to a minimum number of three participants



9

TECHNICAL BASICS

9.1	Releasable and non-releasable connections	42
9.2	Bolt tensioning cylinders	43
9.3	Hydraulic torque wrench	44
9.4	Electrical power components	45

CONTENTS

- Function of releasable and non-releasable connections
- The principle of screw connections
- Locking device versions
- Different tightening procedures
- Evaluation of releasable and non-releasable connections
- Defects of or damage to releasable and non-releasable connections
- Familiarity with manual tightening tools and using them correctly
- Familiarity with various manual measurement tools and how to read them

DURATION:

2 hours

PRICE:

from 240.00 € p.p.*

*The price refers to a minimum number of three participants

9.1

RELEASABLE AND NON-RELEASABLE CONNECTIONS

OBJECTIVE / BENEFITS

During maintenance and / or repair work, many connections are inspected or established. In this training, you will gain the knowledge and skills to be able to differentiate between and inspect a range of connection types as well as be able to work with manual screw and measurement tools as intended.

TARGET GROUP:

Persons who are to inspect releasable and non-releasable connections or establish screw connections

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

-

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.

9.2

BOLT TENSIONING CYLINDERS

OBJECTIVE / BENEFITS

For some activities, such as maintenance or repair, bolt tensioning cylinders are used on ENERCON wind energy converters. In this training course, you will gain the skills, abilities and knowledge of how to safely and independently handle the tensioning devices, hydraulic hoses and hydraulic units used.

TARGET GROUP:

Persons whose job requires the use of bolt tensioning cylinders.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

Releasable and non-releasable connections, basic mechanical knowledge

WORK EQUIPMENT TO BRING:

Work clothes

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.

CONTENTS

- Safety training
- Operating principle of the bolt tensioning cylinders
- Areas of application for the use of bolt tensioning cylinders at ENERCON
- Explanation of the equipment
- Practical training, using the equipment on training models

DURATION:

4 hours

PRICE:

from 480.00 € p.p.*

*The price refers to a minimum number of three participants

CONTENTS

- Safety instructions
- One-off instruction in using hydraulic units
- One-off instruction in using hydraulic torque wrenches
- Maintenance of hydraulic torque wrenches
- Practical training, using the equipment on training models

DURATION:

4 hours

PRICE:

from 480.00 € p.p.*

*The price refers to a minimum number of three participants

9.3

HYDRAULIC TORQUE WRENCH

OBJECTIVE / BENEFITS

For some activities, such as maintenance or repair, hydraulic torque wrenches are used on ENERCON wind energy converters. In this training course, you will gain the skills, abilities and knowledge of how to safely and independently handle the hydraulic torque wrenches, hydraulic hoses and hydraulic units used.

TARGET GROUP:

Persons whose job requires the use of hydraulic torque wrenches.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

Releasable and non-releasable connections, basic mechanical knowledge

WORK EQUIPMENT TO BRING:

Work clothes

METHODS:

Attendance course using presentation and practical exercises on bolt connection models.

9.4

ELECTRICAL POWER COMPONENTS

OBJECTIVE / BENEFITS

In this training course, we would like to show you which components are used to generate power in ENERCON wind energy converters. You will gain the knowledge and skills necessary to understand the electrical power components and their functions, as well as how power generation and power conversion occurs in the wind energy converter.

TARGET GROUP:

Persons who are interested in the power components and power generation in ENERCON wind energy converters.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

-

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.

CONTENTS

- Overview of how power travels through an ENERCON wind energy converter
- Structure and function of the components that are used for power generation

DURATION:

2 hours

PRICE:

from 240.00 € p.p.*

*The price refers to a minimum number of three participants



10 SAFE WORKING ON ENERCON WECS

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10.1

EiP - ENTER A WIND ENERGY CONVERTER

OBJECTIVE / BENEFITS

Wind energy converters are enclosed electrical operating areas that may only be entered by (electrically) skilled persons and (electrically) instructed persons (EIPs). Lay-people may only enter these when accompanied by an (electrically) skilled person or an (electrically) instructed person. In this training, we provide instruction on all the relevant topics so that you are able to enter enclosed electrical operating areas of WECs. You will gain the knowledge and skills required for you to be able to detect electrical dangers and know how to protect yourself against them.

TARGET GROUP:

Persons who wish to enter the ENERCON wind energy converters.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

First aid course

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.

We recommend an annual refresher of this training.

CONTENTS

- Electrical basics such as electric current, voltage, and resistance
- Potential electrical hazards caused by the presence of electrical energy
- Protective measures for electrical hazards
- First aid for accidents caused by electric current

DURATION:
2 hours

PRICE:
from 240.00 € p.p.*

*The price refers to a minimum number of three participants

CONTENTS

- Electrical engineering standards and guidelines
- Electrical basics such as electric current, voltage, and resistance
- Potential electrical hazards caused by the presence of electrical energy
- Protective measures for electrical hazards
- The 5 safety rules
- Personal protection equipment for work involving electrical hazards
- First aid for accidents caused by electric current

DURATION:

4 hours

PRICE:

from 480.00 € p.p.*

*The price refers to a minimum number of three participants

10.2

EiP - WORKING AT ENERCON WIND ENERGY CONVERTERS

OBJECTIVE / BENEFITS

Wind energy converters are enclosed electrical operating areas that may only be entered by (electrically) skilled persons and (electrically) instructed persons (EIPs). Since additional electrical hazards occur when working in wind energy converters, this course provides advanced knowledge and goes into the general electrical risks and additional hazards as well as the necessary protective measures. In this training course, we will provide instruction on all the relevant topics so that you can enter enclosed electrical operating areas and can safely perform non-electrical work.

TARGET GROUP:

Persons who work on ENERCON wind energy converters but are not (electrically) skilled persons.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

First aid course

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.

We recommend an annual refresher of this training.

10.3

TRAINING ON PERSONAL FALL PROTECTION SYSTEMS

OBJECTIVE / BENEFITS

During work involving the risk of falling, the use of PFPS is stipulated. In an emergency, you must be able to evacuate from the nacelle. We will provide you with all the relevant content, so that you gain the knowledge, skills and abilities to be able to safely use the personal fall protection system in the WEC area. This training course focusses on the safe use of equipment in order to work in the wind energy converter safely and without accidents.

TARGET GROUP:

Persons who work at height and therefore use the standard components of a personal fall protection system (PFPS).

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

-

WORK EQUIPMENT TO BRING:

Work clothes, work shoes, hard hat, gloves, safety goggles and PFPS if available

METHODS:

Attendance course using presentations and practical instruction based on the PFPS and the practical performance of an evacuation exercise.

For carrying out work on the WEC and for training employees, we recommend the modules 3.1 „DGUV - PSAgA“ basic course or 5.1 GWO Working@Heights basic course, which deal intensively with the use of rescue equipment and corresponding rescue exercises (e.g. rescue of a suspended person).

CONTENTS

- Legal issues
- Hazards and risks
- The special requirements of the following items used at ENERCON:
 - Safety / rescue harnesses
 - Shock-absorbing lanyards
 - Guided-type fall arresters including a rigid anchor line and flexible anchor line
 - Equipment for workstation positioning
 - Additional fall arrest blocks
 - Any available anchorage options
 - Abseiling and rescue devices
- Health risks due to extended periods of motionless suspension in safety harnesses
- Emergency measures in case of fall events
- Putting the knowledge acquired into practice

DURATION:

4 hours

PRICE:

from 480.00 € p.p.*

*The price refers to a minimum number of three participants

CONTENTS

- Operator requirements
- Safety regulations
- Intended use
- Daily inspection
- Operation; normal operation, automatic operation as well as in emergency situations and in the event of malfunctions

DURATION:

4 hours

PRICE:

from 480.00 € p.p.*

*The price refers to a minimum number of three participants

10.4

SERVICE HOIST OPERATION

OBJECTIVE / BENEFITS

Would you like to operate the service hoist in ENERCON wind energy converters independently and safely? Then this training course is the right choice for you. You will gain the knowledge, skills and abilities required to operate the service hoist safely and properly, as well as learning the correct behaviour and actions in the event of emergencies or malfunctions.

TARGET GROUP:

Persons who need to operate the service hoist independently

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

WEC basic training or GW0 BST

WORK EQUIPMENT TO BRING:

Work clothes, work shoes, PFPS if available

METHODS:

Attendance course using presentation and practical exercises on a training rig for service hoists.

We recommend an annual refresher of this training.

10.5

REFRESHER SERVICE HOIST OPERATION

OBJECTIVE / BENEFITS

It has been a year since you received instruction on how to use the service hoist and would like to refresh it? Then this training is the right choice for you. Your knowledge and skills for the safe and proper operation of the service hoist in ENERCON facilities will be renewed with this online training.

TARGET GROUP:

Persons who need to operate the service hoist independently

MAX. PARTICIPANTS: 9

RECOMMENDED COURSE PREREQUISITES:

Service Hoist Operation

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training will be conducted online. The stated duration of training is to be considered as a guideline and may vary.

CONTENTS

- News
- Safety regulations
- Daily inspection
- Operation and behavior in emergency situations

DURATION:

2 hours

PRICE:

from 240.00 € p.p.*

*The price refers to a minimum number of three participants

CONTENTS

- Legal basics and safety regulations for operating cranes
- Basic crane equipment
- The functions and influences required for crane operation
- Rigging loads properly and securely using different lifting tackle
- Performing crane transport jobs properly and safely

DURATION:
6 hours

PRICE:
from 700.00 € p.p.*

*The price refers to a minimum number of three participants

10.6

OPERATION OF WINCHES AND CRANES

OBJECTIVE / BENEFITS

We've put together the content you need to be able to use winches and / or cranes for maintenance or repair work in ENERCON wind energy converters. You will gain the knowledge, abilities and skills to be able to properly and safely operate winches and cranes in ENERCON wind energy converters, as well as handle conventional load lifting assemblies.

TARGET GROUP:

Persons who have to operate winches or cranes in ENERCON WECs in order to be able to carry out their jobs.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

WEC Basic Training or GWO BST

WORK EQUIPMENT TO BRING:

Work clothes, work shoes

METHODS:

Attendance course using presentation and practical exercises on training models.

10.7

OPERATION OF ENERCON WEC IN THE TOWER BASE

OBJECTIVE / BENEFITS

Would you like to start, stop and manually operate an ENERCON wind energy converter? Then this training course is the right choice for you. We provide you with the content needed to stop and start an ENERCON WEC – and, if necessary, put it into maintenance mode – safely and in accordance with the operating manual.

TARGET GROUP:

Persons who wish to safely and properly operate an ENERCON wind energy converter in the tower base.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

EIP – Enter a wind energy converter

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.

CONTENTS

- Safety regulations
- Stopping an ENERCON wind energy converter in the tower base
- Starting an ENERCON wind energy converter in the tower base
- Putting an ENERCON wind energy converter into maintenance mode
- Emergency shutdown systems

DURATION:
1 hour

PRICE:
from 120.00 € p.p.*

*The price refers to a minimum number of three participants

CONTENTS

- Operating the yaw system (yaw control)
- Operating the rotor blade control system
- Operating the rotor brake system
- Operating the rotor locking system

DURATION:
4 hours

PRICE:
from 480.00 € p.p.*

*The price refers to a minimum number of three participants

10.8

OPERATION OF ENERCON WEC IN THE MACHINE HOUSE

OBJECTIVE / BENEFITS

Do you want to operate an ENERCON wind energy converter in the machine house? Then this training course is the right choice for you. Some functions, such as the pitch control and the yaw drive, can be operated manually. We provide you with the knowledge and skills to safely operate an ENERCON wind energy converter in accordance with the operating manual in the machine house. You will also gain the knowledge, abilities and skills relating to how the rotor is braked and locked, so that you can safely enter the rotor hub area.

TARGET GROUP:

Persons whose tasks involve operating the wind energy converter in the machine house and entering the rotor hub.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

Basic WEC Training

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.



11

WIND FARM COMMUNICATION & REMOTE MONITORING SYSTEM

- 11.1 ENERCON Service Info Portal (SIP)
- 11.2 ENERCON SCADA

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57

CONTENTS

- Login to SIP
- Structure and operation of the menu
- Evaluation of data
- Generation of reports

DURATION:
1 hour

PRICE:
from 120.00 € p.p.*

*The price refers to a minimum number of three participants

11.1

ENERCON SERVICE INFO PORTAL (SIP)

OBJECTIVE / BENEFITS

Based on the data and the power curves of wind energy converters, it is possible to compare yields and availabilities of different wind energy converters. Large differences in output indicate potential malfunctions. Through this training, you will gain the necessary skills, knowledge and abilities to be able to call up the ENERCON Service Info Portal, understand the provided data records, power curves and availabilities as well as evaluate the data and create reports with them. Furthermore, you will also obtain information about service reports and maintenance planning.

TARGET GROUP:

Persons who wish to evaluate wind energy converter or wind farm data and who wish to create monthly, quarterly or annual reports.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

-

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.

11.2

ENERCON SCADA

OBJECTIVE / BENEFITS

The ENERCON SCADA system is the established platform for remote monitoring and remote control of ENERCON wind energy converters and is an integral component of ENERCON's service and maintenance cycle. It offers numerous optional functions and interfaces for integrating ENERCON wind farms into the grid and ensuring compliance with grid codes and electrical engineering regulations. During this training, the knowledge, skills and abilities are taught to call up online data and operate the optional control and adjustment options offered by the ENERCON SCADA system.

TARGET GROUP:

Persons who would like to learn how to use the ENERCON SCADA system.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

-

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.

CONTENTS

- Structure of the ENERCON SCADA system
- Operating the ENERCON SCADA system software
- Reading data
- Generation of WEC reports

DURATION:
2 hours

PRICE:
from 240.00 € p.p.*

*The price refers to a minimum number of three participants



12 WEC MAINTENANCE

- 12.1 ENERCON maintenance concept – Overview
12.2 Master maintenance and 4-year maintenance – Overview

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12.1

ENERCON MAINTENANCE CONCEPT – OVERVIEW

OBJECTIVE / BENEFITS

Maintenance ensures operating safety, ongoing availability and that the full service life of the wind energy converters is achieved. The basics of the ENERCON maintenance cycle are explained in this training course. You will also learn about maintenance intervals and the importance of maintenance operations.

TARGET GROUP:

Persons who want to know how the maintenance cycle is set up for ENERCON wind energy converters.

MAX. PARTICIPANTS: 8

RECOMMENDED COURSE PREREQUISITES:

-

WORK EQUIPMENT TO BRING:

-

METHODS:

Training by means of presentation and trainer in lecture mode. The training can be conducted as a face-to-face or online training. The indicated training duration is to be considered as a guideline and may vary depending on the chosen method.

CONTENTS

- Structure of maintenance operations
- Explanation of the maintenance intervals

DURATION:
0.5 hours

PRICE:
from 60,00 € p.p.*

*The price refers to a minimum number of three participants

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GENERAL TERMS OF CONDITION

for training services

In the following, contractual partners of ENERCON GmbH are referred to as « participants » and ENERCON GmbH as « ENERCON ». Both participants and ENERCON are referred to as « contractual parties » in these General Terms and Conditions.

1. Scope of application

1.1 These General Terms and Conditions shall apply to the holding of the training courses in the current ENERCON GmbH catalogue. They shall also apply if training modules have been individually adapted to the participant's requests through a written agreement between the contractual parties.

1.2 ENERCON quotes shall be made and services rendered exclusively subject to these General Terms and Conditions. Changes shall apply only if these are agreed in writing. Any deviating participant terms and conditions shall not be recognised unless they have been expressly confirmed in writing by ENERCON.

1.3 These General Terms and Conditions shall also apply to entrepreneurs as well as all legal entities under public law and special and special funds under public law within the meaning of § 310 BGB, insofar as nothing to the contrary is expressly stipulated.

1.4 If the Customer does not belong to the group of persons referred to in section of § 310 of the German Civil Code (BGB), these General Terms and Conditions of Business shall apply with the following proviso:

- a) Clause 7.1 applies with the proviso that the registered office of ENERCON is agreed as the agreed upon as the place of jurisdiction in the event that the participant moves its residence or habitual abode from the area of application of the laws of the of the law of the Federal Republic of Germany or if his registered office, place of residence or habitual abode is not known at the time the action is brought.
- b) Clause 7.2 shall not apply.

2. Quote, conditions of participation, conclusion of contract, withdrawal

2.1 The training quotes in the training catalogue are non-binding and subject to change. This also applies to the pricing information. The subject of

the training contract is the activity or other service agreed, not, however, a certain successful outcome.

2.2 Participants are advised that to access the wind energy converter, physical fitness and the ability and suitability to work at height are required, as is verified via the liability insurance association G-41 health examination. Work clothes and safety equipment (PFPS) must be used in practical training.

2.3 Participants can register or place an order for training by email at customer-training@enercon.de. Registration or order placement is binding as soon as the participant has received written order confirmation or an order confirmation by email.

2.4 The participant has the option to withdraw from registration or an order in writing. If the declaration of withdrawal is received four weeks prior to the start of the training, at the latest, the agreed remuneration for the training is no longer due. If the declaration of withdrawal is received by ENERCON at a later date, the training fee shall be charged in full.

3. Terms of payment

3.1 Unless an individual contractual arrangement or another basis for calculation has been agreed, remuneration shall be in accordance with the prices valid at the time of registration with ENERCON. Payment shall be due immediately upon receipt of invoice without any deductions, with indication of the invoice number, and shall be transferred to one of the specified accounts.

3.2 The prices quoted in the training catalogue are per person. The costs of travel and accommodation as well as the participant's daily food expenses are not included. If a training course is agreed to take place at a specific location specified by the participant, the travel and accommodation expenses of the head of training will also be billed.

3.3 All prices are subject to the applicable value-added tax at the current legally stipulated rate. Exceptions pursuant to § 4 No. 21 of the German VAT act (UStG) are specially marked as such.

3.4 A training event cannot be split among multiple participants. A partial reservation with a reduction in price is, if it is not expressly indicated in the training catalogue, not possible, unless this has been expressly declared in written form in a different agreement.

4. Holding of events

4.1 Events will be held in accordance with the training catalogue or the agreement made specially with the participant. ENERCON reserves the right, however, to make changes, provided this does not fundamentally affect the objective of training.

4.2 No entitlement is granted to have a training event held by a specific instructor or at a specific location. There is also no entitlement to compensation for a missed training day.

4.3 ENERCON reserves the right to postpone or cancel an event for reasons outside of ENERCON's control, e.g., in the case of a lecturer becoming ill or if the required number of participants is not reached. Notification of a cancellation shall be sent to participants via the address specified during registration. Training fees already paid shall be refunded if an event is cancelled. Subject to any contrary provisions under paragraph 6 of these General Terms and Conditions, ENERCON shall not be held liable for lost expenditures or other disadvantages that may result to a participant as a result of a cancellation.

4.4 ENERCON is entitled to deploy subcontractors to provide its services.

4.5 The participant undertakes to notify ENERCON of any incidences or changes prior to or during the training events that could affect the training directly or indirectly.

5. Protection and copyright, data protection

5.1 The documents, software and other media used for the purposes of the event which are handed out to the participant are protected by copyright. The reproduction, dissemination or other use of the materials handed out – even in part – is only permitted if ENERCON has expressly agreed to this in writing.

5.2 ENERCON stores, processes and uses participants' personal data for the correct fulfilment of orders and for its own purposes. For this purpose, ENERCON uses automatic data processing systems. To fulfil data protection requirements of the annex to § 9 of the German Federal Data Protection Act (BDSG), ENERCON has taken technical and organisational measures that ensure the security of the data stores and the data processing procedures. The employees involved in processing are obligated to comply with the BDSG, and must strictly comply with all data protection regulations.

5.3 Any use of the trademarks of ENERCON which goes beyond proper use of the certificate of participation issued to the participant or the certificate of attendance, requires the prior written consent of ENERCON.

6. Liability

6.1 ENERCON shall be liable for damages – irrespective of the legal grounds – only if ENERCON is responsible for these damages through wilful intent, gross negligence or significant breach of contractual duty (cardinal duty). In the event of a significant breach of material contractual obligations, ENERCON shall be liable only for the contract-typical, foreseeable damages at the time of conclusion of the contract.

6.2 Insofar as ENERCON is liable for negligently caused damage in the

event of a breach of significant contractual obligations in accordance with clause 6.1 above, its obligation to pay compensation shall be limited to EUR 500,000.00 for property damage and EUR 125,000.00 for financial losses.

6.3 Liability for damages caused by the breach of non-significant contractual obligations as a result of ordinary negligence is excluded.

6.4 « Significant contractual obligations » refers to such obligations that protect the participant's legal positions relevant to the contract, which the contract has to grant in accordance with its content and purpose; furthermore, such contractual obligations are significant, the fulfilment of which makes the proper execution of the contract possible in the first place and on the observance of which the participant has regularly trusted and can rely.

6.5 The disclaimer in paragraphs 6.1. to 6.4 relating to exclusion of liability or limitation of liability does not apply to damage to life, limb or health or to claims arising from a guarantee of quality or in accordance with the German Product Liability Act (Produkthaftungsgesetz).

6.6 The participant shall immediately report any damage for which ENERCON is to be held liable.

6.7 Insofar as compensation claims against ENERCON are excluded or limited, this shall also apply to the personal liability of ENERCON's bodies, expert inspectors and other employees as well as vicarious agents.

7. Place of jurisdiction, place of performance, applicable law

7.1 The place of jurisdiction for the assertion of claims for the contractual parties is ENERCON's headquarters if the requirements in accordance with section § 38 of the German Civil Process Order (ZPO) apply.

7.2 For all obligations arising from the contract, the ENERCON headquarters is the place of jurisdiction.

7.3 The contractual relationship and all legal relationships hereunder are exclusively subject to the law of the Federal Republic of Germany, excluding the conflict of laws of international private law and the UN Sales Convention (CISG).

8. Written form

Any deviating agreements or supplements shall only be effective if made in writing. This also applies to any deviation from this requirement for the written form.

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