Module description

Module	Rescue from the hub, advanced training
Module number	AR-01
Date	27.02.2017
Personnel Profile	P3, Rescue from Heights Personnel Public Sector, Onshore P4, Rescue from Heights Personnel Public Sector, Offshore P5, In-House Technical Rescue Personnel, Onshore P6, In-House Technical Rescue Personnel, Offshore P10, Operative Personnel, Onshore P11, Operative Personnel, Offshore P12, Rope Access Technician, Onshore P13, Rope Access Technician, Offshore
Level	advanced
Standard	AR-01
Description	Carrying out work in the hub of a wind turbine is not an uncommon task for service technicians and requires various skills and specific knowledge. Safe entry into the hub requires the adherence to a defined set of procedures. In this section participants will acquire knowledge about the dangers involved in entering and working in the hub, thus enabling them to work safely in the hub and carry out an emergency evacuation whilst ensuring their own safety.
Learning outcomes	
Knowledge	- Describe the range of tasks involved when working in the hub - Implement sequence of measures for wind turbine safety (Lock-out, tec-out) - Understand the specific risk assessments - Select pre-work safety measures - Explain safety and rescue concepts - Explain manufacturer-specific hub work and safety-relevant conditions - Name the necessary rescue equipment for hub rescue - Assess personal physical fitness - Assess potential hazards in the hub - Recognize anchor points - List first aid and life-saving measures
Skills	- Establish escape route - Familiarization with confined working environment - Perform own evacuation from the hub - Operate gas detection devices - Demonstrate rescue equipment - Establish and carry out communication - Start and apply emergency measures - Apply medical knowledge (first responder) - Understand and use specific rescue equipment - Support professional rescue personnel, for example, prepare escape routes for evacuation
Prerequisites	G-41, DGUV 113.04 company first-aider, DGUV T021 instruction in gas warning equipment, working at heights training, advanced first aid wind energy (recommended)
Duration	4 hours
Number of participants	Maximum 4
Number of trainers	1 theory / 2 practical
Assessment method	Successful completion of practical exercises

Validity of Certificate	1 year
Trainer requirements	Training as a supervisor according to DGUV R 113-004, PPE expert according to DGUV G 312-906, professional in atmospheric testing according to DGUV G 313-002, requirements of trainer/training provider DGUV G 312-001
Equipment requirements	- Hub simulator - Safety harnesses - Fall arrester device with rescue equipment - Tripod - Various webbing slings/band slings, carabiners, connectors - Fire escape hood with multiple filter - Fire escape hood with compressed air bottle - Skopan Stretcher - Helmet microphone, helmet camera

Module description

Module	Rescue from the rotor blade, advanced training
Module number	AR-02
Date	27.02.2017
Personnel Profile	P3, Rescue from Heights Personnel Public Sector, Onshore P4, Rescue from Heights Personnel Public Sector, Offshore P5, In-House Technical Rescue Personnel, Onshore P6, In-House Technical Rescue Personnel, Offshore P10, Operative Personnel, Onshore P11, Operative Personnel, Offshore P12, Rope Access Technician, Onshore P13, Rope Access Technician, Offshore
Level	advanced
Standard	AR-02
Description	Carrying out work in the rotor blade of a wind turbine is not an uncommon task for service technicians and requires various skills and specific knowledge. Safe entry into the rotor blade requires the adherence to a defined set of procedures. In this section participants will acquire knowledge about the dangers involved in entering and working in the rotor blade, thus enabling them to work safely in the rotor blade and carry out an emergency evacuation whilst ensuring their own safety.
Learning outcomes	
Knowledge	- Describe the range of tasks involved when working in the rotor blade - Implement sequence of measures for wind turbine safety (Lock-out, tec-out) - Understand the specific risk assessments - Select pre-work safety measures - Explain safety and rescue concepts - Explain manufacturer-specific rotor blade work and safety-relevant conditions - Name the necessary rescue equipment for rotor blade rescue - Assess personal physical fitness - Assess potential hazards in the rotor blade - Recognize anchor points - List first aid and life-saving measures
Skills	- Establish escape route - Familiarization with confined working environment - Perform own evacuation from the rotor blade - Operate gas detection devices - Demonstrate rescue equipment - Establish and carry out communication - Start and apply emergency measures - Apply medical knowledge (first responder) - Understand and use specific rescue equipment - Support professional rescue personnel, for example, prepare escape routes for evacuation
Prerequisites	G-41, DGUV 113.04 company first-aider, DGUV T021 instruction in gas warning equipment, working at heights training, advanced first aid wind energy (recommended)
Duration	4 hours
Number of participants	Maximum 4
Number of trainers	1 theory / 2 practical

Assessment method	Successful completion of practical exercises
Validity of Certificate	1 year
Trainer requirements	Training as a supervisor according to DGUV R 113-004, PPE expert according to DGUV G 312-906, professional in atmospheric testing according to DGUV G 313-002, requirements of trainer/training provider DGUV G 312-001
Equipment requirements	- Rotor blade simulator - Safety harnesses - Fall arrester device with rescue equipment - Various webbing slings/band slings, carabiners, connectors - Fire escape hood with multiple filter - Fire escape hood with compressed air bottle - Helmet microphone, helmet camera - Easy to assemble swivel with high-load capacity - Coated GRP blade segments (without sharp edges) - Spine board - Scoop stretcher - Spec-Pac (special type of stretcher)

Module description

Module	Rescue from depths, advanced training
Module number	AR-03
Date	27.02.2017
Personnel Profile	P3, Rescue from Heights Personnel Public Sector, Onshore P4, Rescue from Heights Personnel Public Sector, Offshore P5, In-House Technical Rescue Personnel, Onshore P6, In-House Technical Rescue Personnel, Offshore P10, Operative Personnel, Onshore P11, Operative Personnel, Offshore P12, Rope Access Technician, Onshore P13, Rope Access Technician, Offshore P14, Offshore Diver Wind Turbine Structures
Level	advanced
Standard	AR-03
Description	Carrying out work in the depths/tower basement of a wind turbine is not an uncommon task for service technicians and requires various skills and specific knowledge. Safe entry into the depths/tower basement requires the adherence to a defined set of procedures. In this section participants will acquire knowledge about the dangers involved in entering and working in the depths/tower basement, thus enabling them to work safely in the depths/tower basement and carry out an emergency evacuation whilst ensuring their own safety.
Learning outcomes	
Knowledge	- Describe the range of tasks involved when working in the depths/tower basement - Implement sequence of measures for wind turbine safety (Lock-out, tec-out) - Understand the specific risk assessments - Select pre-work safety measures - Explain safety and rescue concepts - Explain manufacturer-specific tower basement work and safety-relevant conditions - Name the necessary rescue equipment for rescue at depths - Assess personal physical fitness - Assess potential hazards in the tower basement/at depths - Recognize anchor points - List first aid and life-saving measures
Skills	- Establish escape route - Familiarization with confined working environment - Perform own evacuation from depths/tower basement - Operate gas detection devices - Demonstrate rescue equipment - Establish and carry out communication - Start and apply emergency measures - Apply medical knowledge (first responder) - Understand and use specific rescue equipment - Support professional rescue personnel, for example, prepare escape routes for evacuation
Prerequisites	G-41, DGUV 113.04 company first-aider, DGUV T021 instruction in gas warning equipment, working at heights training, advanced first aid wind energy (recommended)

Duration	4 hours
Number of participants	Maximum 4
Number of trainers	1 theory / 2 practical
Assessment method	Successful completion of practical exercises
Validity of Certificate	1 year
Trainer requirements	Training as a supervisor according to DGUV R 113-004, PPE expert according to DGUV G 312-906, professional in atmospheric testing according to DGUV G 313-002, requirements of trainer/training provider DGUV G 312-001
Equipment requirements	- Wind turbine tower basement simulation facility - Safety harnesses - Fall arrester device with rescue equipment - Tripod - Various webbing slings/band slings, carabiners, connectors - Fire escape hood with multiple filter - Fire escape hood with compressed air bottle - Helmet microphone, helmet camera - Easy to assemble swivel with high-load capacity - Deflection roller with high-load capacity and guide roller made of metal (steel) - Steel carabiner with wide opening width and large radii

Module description

Module	Rescue from the azimuth area, advanced training
Module number	AR-04
Date	27.02.2017
Personnel Profile	P3, Rescue from Heights Personnel Public Sector, Onshore P4, Rescue from Heights Personnel Public Sector, Offshore P5, In-House Technical Rescue Personnel, Onshore P6, In-House Technical Rescue Personnel, Offshore P10, Operative Personnel, Onshore P11, Operative Personnel, Offshore P12, Rope Access Technician, Onshore P13, Rope Access Technician, Offshore
Level	advanced
Standard	AR-04
Description	Carrying out work in the azimuth area of a wind turbine is not an uncommon task for service technicians and requires various skills and specific knowledge. Safe entry into the azimuth area requires the adherence to a defined set of procedures. In this section participants will acquire knowledge about the dangers involved in entering and working in the azimuth area, thus enabling them to work safely in the azimuth area and carry out an emergency evacuation whilst ensuring their own safety.
Learning outcomes	
Knowledge	- Describe the range of tasks involved when working in the azimuth area - Implement sequence of measures for wind turbine safety (Lock-out, tec-out) - Understand the specific risk assessments - Select pre-work safety measures - Explain safety and rescue concepts - Explain manufacturer-specific azimuth area work and safety-relevant conditions - Name the necessary rescue equipment for azimuth area rescue - Assess personal physical fitness - Assess potential hazards in the azimuth area - Recognize anchor points - List first aid and life-saving measures
Skills	- Establish escape route - Familiarization with confined working environment - Perform own evacuation from the azimuth area - Operate gas detection devices - Demonstrate rescue equipment - Establish and carry out communication - Start and apply emergency measures - Apply medical knowledge (first responder) - Understand and use specific rescue equipment - Support professional rescue personnel, for example, prepare escape routes for evacuation
Prerequisites	G-41, DGUV 113.04 company first-aider, DGUV T021 instruction in gas warning equipment, working at heights training, advanced first aid wind energy (recommended)
Duration	4 hours
Number of participants	Maximum 4
Number of trainers	1 theory / 2 practical

Assessment method	Successful completion of practical exercises
Validity of Certificate	1 year
Trainer requirements	Training as a supervisor according to DGUV R 113-004, PPE expert according to DGUV G 312-906, professional in atmospheric testing according to DGUV G 313-002, requirements of trainer/training provider DGUV G 312-001
Equipment requirements	- Wind turbine azimuth simulator - Safety harnesses - Fall arrester device with rescue equipment - Various webbing slings/band slings, carabiners, connectors - Fire escape hood with multiple filter - Fire escape hood with compressed air bottle - Helmet microphone, helmet camera - Roller with swivel and sling gear

Module description

Module	Rescue from the nacelle roof, advanced training
Module number	AR-05
Date	27.02.2017
Personnel Profile	P3, Rescue from Heights Personnel Public Sector, Onshore P4, Rescue from Heights Personnel Public Sector, Offshore P5, In-House Technical Rescue Personnel, Onshore P6, In-House Technical Rescue Personnel, Offshore P10, Operative Personnel, Onshore P11, Operative Personnel, Offshore P12, Rope Access Technician, Onshore P13, Rope Access Technician, Offshore
Level	advanced
Standard	AR-05
Description	Carrying out work on the nacelle roof of a wind turbine is not an uncommon task for service technicians and requires various skills and specific knowledge. Safe entry onto the nacelle roof requires the adherence to a defined set of procedures. In this section participants will acquire knowledge about the dangers involved in entering and working on the nacelle roof, thus enabling them to work safely on the nacelle roof and carry out an emergency evacuation whilst ensuring their own safety. Participants will also be taught how to rescue someone who has fallen over the edge of the roof.
Learning outcomes	
Knowledge	- Describe the range of tasks involved when working on the nacelle roof - Implement sequence of measures for wind turbine safety (Lock-out, tec-out) - Understand the specific risk assessments (e.g. rescue times, suspension trauma) - Familiarization with instruction manual - Select pre-work safety measures - Explain safety and rescue concepts - Explain manufacturer-specific nacelle roof work and safety-relevant conditions - Name the necessary rescue equipment for nacelle roof rescue - Assess personal physical fitness - Assess potential hazards on the nacelle roof - Recognize anchor points - List first aid and life-saving measures
Skills	- Establish escape route - Familiarization with confined working environment - Perform own evacuation from the nacelle roof - Demonstrate rescue equipment - Establish and carry out communication - Start and apply emergency measures - Apply medical knowledge (first responder) - Understand and use specific rescue equipment - Support professional rescue personnel, for example, prepare escape routes for evacuation
Prerequisites	G-41, DGUV 113.04 company first-aider, DGUV T021 instruction, working at heights training, advanced first aid wind energy (recommended)
Duration	4 hours
Number of participants	Maximum 4

Number of trainers	1 theory / 2 practical
Assessment method	Successful completion of practical exercises
Validity of Certificate	1 year
Trainer requirements	Training as a supervisor according to DGUV R 113-004, PPE expert according to DGUV G 312-906, requirements of trainer/training provider DGUV G 312-001
Equipment requirements	- Wind turbine nacelle roof or simulator - Safety harnesses - Fall arrester device with rescue equipment - High rescue device with lifting function - Various webbing slings/band slings, carabiners, connectors - Rope clamps - Fire escape hood with multiple filter - Fire escape hood with compressed air bottle

Module description

Module	Rescue from the hub, basic training
Module number	AR-06
Date	27.02.2017
Personnel profile	P1, Emergency paramedic, onshore P2, Emergency paramedic, offshore P7, HEMS crew member P15, Rescue Coordination Centre Personnel
Level	advanced
Standard	AR-06
Description	Carrying out work in the hub of a wind turbine is not an uncommon task for service technicians and requires various skills and specific knowledge. Safe entry into the hub requires the adherence to a defined set of procedures. In this module participants will acquire basic knowledge about rescue procedures when accessing and working in the hub.
Learning outcomes	
Knowledge	- Describe the range of tasks involved when working in the hub - Describe the specific risk assessments - Understand operating instructions - Select pre-work safety measures - Explain manufacturer-specific hub work and safety-relevant conditions - Explain the safety and rescue concept - Demonstrate the ranking measures for wind turbine safety (lock-out, tec-out) - Name the necessary rescue equipment for hub rescue - Assess personal physical fitness - Assess potential hazards in the hub - Name anchor points - Describe escape routes
Skills	- Establish and carry out uniform emergency communication on-site - Assess the current situation and implement measures - Initiate and apply appropriate emergency procedures - Organize medical treatment and patient transport
Prerequisites	WT-05
Duration	3 hours
Number of participants	Maximum 12
Number of trainers	1
Assessment method	Attendance
Validity of Certificate	2 years
Trainer requirements	Training as a supervisor according to DGUV R 113-004, PPE expert according to DGUV G 312-906, requirements of trainer/training provider DGUV G 312-001, instructor according to DGUV 304-001 or at least paramedic, G-41, G-26, G-25, G-46 examinations.
Equipment requirements	- Hub simulator - Safety harnesses in accordance with EN361, EN358 - Fall arrester device with rescue equipment - Tripod - Various webbing slings/band slings, carabiners, connectors - Fire escape hood with multiple filter - Fire escape hood with compressed air bottle - Skopan Stretcher

	- Helmet microphone, helmet camera

Module description

Module	Rescue from the rotor blade, basic training
Module number	AR-07
Date	27.02.2017
Personnel profile	P1, Emergency paramedic, onshore P2, Emergency paramedic, offshore P7, HEMS crew member P15, Rescue Coordination Centre Personnel
Level	advanced
Standard	AR-07
Description	Carrying out work in the rotor blade of a wind turbine is not an uncommon task for service technicians and requires various skills and specific knowledge. Safe entry into the rotor blade requires the adherence to a defined set of procedures. In this module participants will acquire basic knowledge about rescue procedures when accessing and working in the rotor blade.
Learning outcomes	
Knowledge	- Describe the range of tasks involved when working in the rotor blade - Describe the specific risk assessments - Understand operating instructions - Select pre-work safety measures - Explain manufacturer-specific rotor blade work and safety-relevant conditions - Explain the safety and rescue concept - Demonstrate the ranking measures for wind turbine safety (lock-out, tec-out) - Name the necessary rescue equipment for rotor blade rescue - Assess personal physical fitness - Assess potential hazards in the rotor blade - Name anchor points - Describe escape routes
Skills	- Establish and carry out uniform emergency communication on-site - Assess the current situation and implement measures - Initiate and apply appropriate emergency procedures - Organize medical treatment and patient transport
Prerequisites	WT-05
Duration	3 hours
Number of participants	Maximum 12
Number of trainers	1
Assessment method	Attendance
Validity of Certificate	2 years
Trainer requirements	Training as a supervisor according to DGUV R 113-004, PPE expert according to DGUV G 312-906, requirements of trainer/training provider DGUV G 312-001, instructor according to DGUV 304-001 or at least paramedic, G-41, G-26, G-25, G-46 examinations.
Equipment requirements	- Rotor blade simulator - Safety harnesses in accordance with EN361, EN358 - Fall arrester device with rescue equipment - Various webbing slings/band slings, carabiners, connectors - Fire escape hood with multiple filter - Fire escape hood with compressed air bottle - Helmet microphone, helmet camera

	- Easy to assemble swivel with high-load capacity - Coated GRP blade segments (without sharp edges) - Spine board - Scoop stretcher - Spec-Pac (special type of stretcher)

Module description

Module	Rescue from depths, basic training
Module number	AR-08
Date	27.02.2017
Personnel profile	P1, Emergency paramedic, onshore P2, Emergency paramedic, offshore P7, HEMS crew member P15, Rescue Coordination Centre Personnel
Level	advanced
Standard	AR-08
Description	Carrying out work in the depths/tower basement of a wind turbine is not an uncommon task for service technicians and requires various skills and specific knowledge. Safe entry into depths/tower basement requires the adherence to a defined set of procedures. In this module participants will acquire basic knowledge about rescue procedures when accessing and working in depths/tower basements.
Learning outcomes	
Knowledge	- Describe the range of tasks involved when working in depths/tower basement - Describe the specific risk assessments - Understand operating instructions - Select pre-work safety measures - Explain manufacturer-specific depth/tower basement work and safety-relevant conditions - Explain the safety and rescue concept - Demonstrate the ranking measures for wind turbine safety (lock-out, tec-out) - Name the necessary rescue equipment for rescue at depths - Assess personal physical fitness - Assess potential hazards in the tower basement/depths - Name anchor points - Describe escape routes
Skills	- Establish and carry out uniform emergency communication on-site - Assess the current situation and implement measures - Initiate and apply appropriate emergency procedures - Organize medical treatment and patient transport
Prerequisites	WT-05
Duration	3 hours
Number of participants	Maximum 12
Number of trainers	1
Assessment method	Attendance
Validity of Certificate	2 years
Trainer requirements	Training as a supervisor according to DGUV R 113-004, PPE expert according to DGUV G 312-906, requirements of trainer/training provider DGUV G 312-001, instructor according to DGUV 304-001 or at least paramedic, G-41, G-26, G-25, G-46 examinations.
Equipment requirements	- Wind turbine tower basement simulation facility - Safety harnesses in accordance with EN361, EN358 - Fall arrester device with rescue equipment - Tripod - Various webbing slings/band slings, carabiners, connectors - Fire escape hood with multiple filter

	- Fire escape hood with compressed air bottle - Helmet microphone, helmet camera - Easy to assemble swivel with high-load capacity - Deflection roller with high-load capacity and guide roller made of metal (steel) - Steel carabiner with wide opening width and large radii

Module description

Module	Rescue from the azimuth area, basic training
Module number	AR-09
Date	27.02.2017
Personnel profile	P1, Emergency paramedic, onshore P2, Emergency paramedic, offshore P7, HEMS crew member P15, Rescue Coordination Centre Personnel
Level	advanced
Standard	AR-09
Description	Carrying out work in the azimuth area of a wind turbine is not an uncommon task for service technicians and requires various skills and specific knowledge. Safe entry into the azimuth area requires the adherence to a defined set of procedures. In this module participants will acquire basic knowledge about rescue procedures when accessing and working in the azimuth area.
Learning outcomes	
Knowledge	- Describe the range of tasks involved when working in the azimuth area - Describe the specific risk assessments - Understand operating instructions - Select pre-work safety measures - Explain manufacturer-specific azimuth area work and safety-relevant conditions - Explain the safety and rescue concept - Demonstrate the ranking measures for wind turbine safety (lock-out, tec-out) - Name the necessary rescue equipment for rescue from the azimuth area - Assess personal physical fitness - Assess potential hazards in the azimuth area - Name anchor points - Describe escape routes
Skills	- Establish and carry out uniform emergency communication on-site - Assess the current situation and implement measures - Initiate and apply appropriate emergency procedures - Organize medical treatment and patient transport
Prerequisites	WT-05
Duration	3 hours
Number of participants	Maximum 12
Number of trainers	1
Assessment method	Attendance
Validity of Certificate	2 years
Trainer requirements	Training as a supervisor according to DGUV R 113-004, PPE expert according to DGUV G 312-906, requirements of trainer/training provider DGUV G 312-001, instructor according to DGUV 304-001 or at least paramedic, G-41, G-26, G-25, G-46 examinations.
Equipment requirements	- Wind turbine azimuth simulator - Safety harnesses in accordance with EN361, EN358 - Fall arrester device with rescue equipment - Various webbing slings/band slings, carabiners, connectors - Fire escape hood with multiple filter - Fire escape hood with compressed air bottle

	- Helmet microphone, helmet camera - Roller with swivel and sling gear

Module description

Module	Rescue from the nacelle roof, basic training
Module number	AR-10
Date	27.02.2017
Personnel profile	P1, Emergency paramedic, onshore P2, Emergency paramedic, offshore P7, HEMS crew member P15, Rescue Coordination Centre Personnel
Level	advanced
Standard	AR-10
Description	Carrying out work on the nacelle roof of a wind turbine is not an uncommon task for service technicians and requires various skills and specific knowledge. Safe entry onto the nacelle roof requires the adherence to a defined set of procedures. In this module participants will acquire basic knowledge about rescue procedures when accessing and working on the nacelle roof.
Learning outcomes	
Knowledge	- Describe the range of tasks involved when working on the nacelle roof - Describe the specific risk assessments - Understand operating instructions - Select pre-work safety measures - Explain manufacturer-specific nacelle roof work and safety-relevant conditions - Explain the safety and rescue concept - Demonstrate the ranking measures for wind turbine safety (lock-out, tec-out) - Name the necessary rescue equipment for rescue from the nacelle roof - Assess personal physical fitness - Assess potential hazards on the nacelle roof - Name anchor points - Describe escape routes
Skills	- Establish and carry out uniform emergency communication on-site - Assess the current situation and implement measures - Initiate and apply appropriate emergency procedures - Organize medical treatment and patient transport
Prerequisites	WT-05
Duration	3 hours
Number of participants	Maximum 12
Number of trainers	1
Assessment method	Attendance
Validity of Certificate	2 years
Trainer requirements	Training as a supervisor according to DGUV R 113-004, PPE expert according to DGUV G 312-906, requirements of trainer/training provider DGUV G 312-001, instructor according to DGUV 304-001 or at least paramedic, G-41, G-26, G-25, G-46 examinations.
Equipment requirements	- Wind turbine nacelle roof or simulator - Safety harnesses in accordance with EN361, EN358 - Fall arrester device with rescue equipment - High rescue device with lifting function - Various webbing slings/band slings, carabiners, connectors - Rope clamps - Fire escape hood with multiple filter

	- Fire escape hood with compressed air bottle