

# SCHOOLING PROGRAMME

*BLADE REMOVAL*

*BLADE CUTTING*

*NACELLE REMOVING*

DECOM TOOLS 2022



Project



Hamburg Institute  
of International  
Economics

Partners:



University of Applied Sciences

HOCHSCHULE  
EMDEN•LEER



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# 1. Introduction

Work package 7 of the Decom Tools programme consists of different items concerning the development of learning elements aimed at making the decommissioning of wind parks offshore more visible.

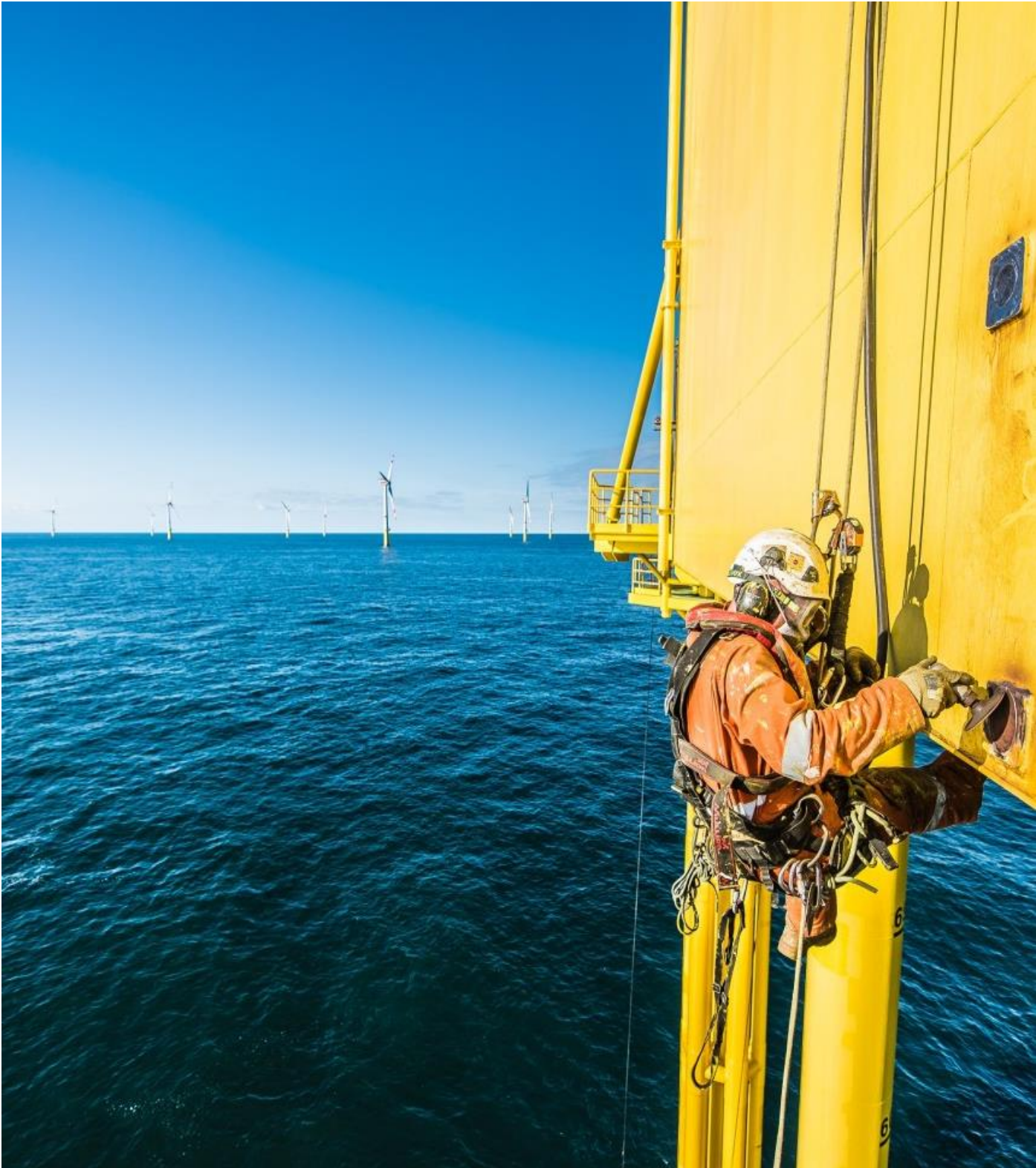
Therefore, different examples of distant learning such as VR modelling and E-learning were given. For this programme the participants focussed on the development of E- Learning modules in line with the different required tasks.

In the project “De Lauwershorst BV”, “NEC” and “Virof” came together as a team to exchange knowledge. The team operated according to the obligations of the project workgroup 7 and were in close contact during all of the development work. There was a monthly meeting for fine tuning of the results made by both parties.

One of the project elements was the cross-border cooperation with all participating project partners. Exchange of material and documents is part of the work.

## 1-0 Appendices

Appendix 1 Work package 7-5 Schooling concept



## 2. Research

### 2-1 Involvement

To get the best input for the project we invited representatives from various companies to join our efforts.

Contacted external partners were:

Decom North

- Lubbers Logistics Group - Transport and first dismantling/demolition
- Mammoet - Lifting and hoisting
- Nehlsen/Neocomp (N/N) - Processing composites for the cement industry
- Beelen - Demolition and recycling of foundations
- Buss Terminal Eemshaven - Port storage and handling
- DHSS - Port Agency
- Bek & Verburg (B&V) - Waste separation in Port
- AM-P Groep/CRC - Processing composites via mechanical and chemical treatment
- Ship Co - Sustainable composite solutions (sheeting)
- Nedcam - Sustainable composite solutions (plugs, molds and facades)

IX Wind – Wind energy exploitation

To achieve a widespread understanding of the possibilities of wind turbine decommissioning, a broad range of companies is involved.

To realize a work group of companies, working together in a resonance group and on development activities, we choose one from each branch.

### 2-2 Resonance group

This resulted in the following partners:

- Decom Tools    De Lauwershorst BV
- Industry        Lubbers Logistic Group
- Transport       Mammoet

There were several meetings with the companies from the resonance group.

We used the input from these meetings to develop a curriculum for further development of material.

The results of project Decom Tools were used as a basis for the development of 3 E-learning modules focussing on a curriculum and a job-based assessment of acquirements.

Furthermore, a functional aspect of diversity in the decommissioning chain was recognised and noted.

### 2-3 Existing projects as background

The background material we used existing of material from:

- \* Different NSR projects on decommissioning
- \* Experiences of companies
- \* Videos from You-tube

## **2-4 Results**

The results were the output of materials developed by the work group.

## **2-5 Appendices**

Appendix 2    different decommissioning programmes

Appendix 3    documentation

Appendix 4    films



## 3 Survey

### 3-0 Instruments used

- Existing documents
- Existing experiences
- Companies

### 3-1 Existing documents.

Using the internet and other sources for our research gave us an extensive collection of documents relating to decommissioning. The knowledge we retrieved gave us a greater perspective of what the material is, what it does, how it behaves and which uses it has.

### 3-2 Existing experiences

At the start of the project the knowledge in our country was limited, however, it was not totally new, some small-scale experiments were adopted.

Many examples could already be found through experiences with onshore decommissioning and this material was widely available.

Companies were involved to deliver infrastructure solutions based on these experiences.

### 3-3 Questionnaires

After the start of the project, early attempts were made to make the existing knowledge available for the project. In cooperation with our partners, an attempt was made to find out, if, when and in which quantity offshore decommissioning was an issue.

The results were poor, the knowledge was slim, and, in the Netherlands, it was an upcoming market with limited use. So we could not use these results for further development.

A new investigation based on onshore experiences led to new insights.

The results painted a somewhat better picture of the level of experience and knowledge available.

They also made us realise that there was still a lot of learning left to be done before we would be able to create a well skilled environment for skilled workers in the offshore decommission work.

### 3-4 Discussion

To figure out if what was mentioned also reflected actual needs on the subject of knowledge, people involved with the process were asked to express what skills they require people to have.

Through meetings and by questioning the different work groups, it became possible to get an idea of the different skills and levels. These skills and levels were then found to be interesting for a curriculum.

### 3-5 Companies

Companies of different stature and expertise gave their opinions on the knowledge facts and skills they thought should be available. This led to a guideline for what kind of professionals they needed.

### 3-6 Results

The results are written down in the text and appendices.



## 4. Inventory

- What do we want to know
- Who do we need to school
  - Management
  - Middle management
  - Workers
- Professions
  - What do the companies have
  - What do the companies want

### 4-1 What do we want to know

To get a clear understanding of our time working with the involved companies,

In order to get a clear read out of our efforts working with the companies involved we made a distinction between different layers of know how that were needed in the companies.

We made three levels.

They were:

- Knowledge (K)
- Understanding
- Proficiency

#### Knowledge (K)

The first thing that should be asked, what matters on the subject of decommissioning knowledge. Is knowledge in the broader sense important or is it more feasible to bring key knowledge into the picture. As it shows a basic program is essential to take all the specialities of decommissioning in consideration. Characteristics of the material must be mentioned as well as the conditions under which it functions. Know the theoretical items.

#### Understanding (U)

The second level focuses on the understanding of what is written and how we recognise the meaning and purpose of it.

#### Proficiency (P)

The third level gives us the skills to use what we know and understand the practical use. In this program we had the companies decide their recognised needs. What was essential and what could be left out. The curriculum is built on that principle.

### 4-2 Who do we need to school

An essential question for each company or schooling organisation.  
At HRM counters this is the ground level for organizing a skilled labour force.

At different levels different things are needed.  
So, a recognition of positions was essential.

There was some discussion over the fact that the present personnel needed to be schooled but immediately after that also attention was needed to school backups.

Here again the level of people throughout the companies was the starting point.

We made the following choices:

- Management
- Middle management
- Workers

### **4-3 Professions**

As in every HRM department you first have a look at the changes that are necessary in a new field of technology and development. Although we concluded that a lot of functionalities within the ranking of the personnel was already there.

It needed to be adjusted or reshuffled but in essence we could basically count the existing people and give an estimate of what we need in the near future.

It resulted in two questions:

- What do the companies have
- What do the companies want

### **4-4 Results**

An inventory was made. The results are collected in the appendix.

## 5. Companies

Feedback panel and development experts:

- Decom North
- OWIC
- RWE

To get a clear vision of the state-of-the-art knowledge in the companies, a feedback group was established.

They, each with their own background, gave input on the curriculum.

Furthermore, efforts were made to pin knowledge to professions.

By doing this as part of different levels of tasks a comprehensive connection was made between practice and schooling, between craftsman and process knowledge.

The result was based on that input and resulted in the attached document.

### 5-1 Decom North

Within the wind industry in the Northern Netherlands, various companies have joined forces. They named the group Decom North.

These companies have worked on a business case for the dismantling of wind turbines, both on land and at sea, and the recycling of the composite parts. Decom North is based on an integrated approach, with focus on regulations, costs and revenues within each link and coordination of logistics and technology. The positive result of the business case was converted into a definitive collaboration in 2022

### 5-2 RWE

**RWE** is an a German energy company, with a revenue of around €43 billion (2017), more than 42,000 employees and activities in 15 countries across Europe. With its three business segments Grid & Infrastructure, Retail and Renewables, RWE addresses the requirements of a modern, decarbonised, decentralised and digital energy world.

Their activities focus on offering innovative and sustainable products and services which enable to use energy more efficiently and improve the quality of life. The key markets are Germany, the United Kingdom, the Netherlands and Belgium, as well as several countries in Central Eastern and South Eastern Europe, especially the Czech Republic, Hungary and Poland.

### 5-3 OWIC

The Offshore Wind Innovation Centre (OWIC) in Eemshaven is an information, training and innovation centre aimed at companies and knowledge institutions involved in offshore wind energy. The aim of OWIC is to facilitate the development of activity and innovation in the field of offshore wind energy. It brings together knowledge and experience and makes it accessible to governments, knowledge institutions and the business community.



# 6 Curriculum

## 6-0 Document development

In the different meetings the focus was directed at the issues the program should take into consideration.

Although the program demanded safety as main focus, the group chose more titles to be addressed. The choices made for the subjects to be looked at were:

- Basic program
- Safety
- Construction
- Decommissioning

Based on this, the most important points were addressed per item.

## 6-1 Basic program

All the things you should know about decommissioning were the key factor. At the end of the lessons, you have to know what decommissioning is, what the use can be and what special effects can occur.

## 6-2 Safety

Safe working and safe management are the most important items of the program. Decommissioning activities are, when done in a proper manner, not more dangerous than other activities like maintenance or repair. Safety is found in every item of the program subjects.

## 6-3 Decommissioning activities

How to operate decommissioning activities is of course the start.

Emphasis on procedures is also in this item trump.

Knowledge of the specific safety acquirements and procedures is of great importance.

## 6-4 Results

Discussions have led to the development of a curriculum based on subjects marked as essential by the companies. Out of that commitment the level and knowledge were distilled.

It was the basic outcome of all effort put in by "De Lauwershorst BV".

## 6-5 Appendices

Appendix 5 Curriculum removing blades

Appendix 6 Curriculum removing nacelle

Appendix 7 Curriculum cutting blades





## **7. HRM demands**

### **7-1 Introduction**

To make a curriculum is one thing, to make it work for a company is another issue.

There is a general feeling about what is considered necessary. Normal education will be organized by school according to the rules. This is written down in a schooling plan curriculum. So far, this program provides the necessary items.

This situation is different when you want to school existing personnel.

HRM departments will have to look at their potential and use the already acquired skills as a starting point.

The following questions form the basis of further development:

- \* What are our demands regarding decommissioning
- \* What are the demands using the technology
- \* What functions will we school
- \* What does the personnel need to know
- \* What level does our personnel have at the moment
- \* How will we organize the schooling
- \* What time will it take to school

### **7-2 What are the demands using the technology**

In a company there is the need to find out what it takes to use the technology related to decommissioning.

This should be addressed based on the core business of the company in which decommissioning plays a role.

This is made clear by developing a company made curriculum.

### **7-3 What functions will we school**

A range of professions related to decommissioning knowledge. There can be existing jobs or even new alternatives.

Prescriptions of the content are very important in this process.

### **7-4 What does the personnel need to know**

Out of the points mentioned above a resume of descriptions emerges. This is easy to use in case of a study plan or schooling plan.

### **7-5 What level does our personnel have at the moment**

Good management of the personal development of each worker in the company is essential to know which level they have.

Not only the knowledge level is important to know, but also the knowledge of issues associated with decommissioning knowledge are significant.

For bench marking the EQF system is used. (European Qualification Format)

## **7-6 How will we organize the schooling**

The schooling of existing personnel can be managed through specialist schooling. Courses made out of the aforementioned points are at the core of the schooling material.

Different methods are also possible.

## **7-7 What time will it take to school**

Depending on the level of schooling and experience of individual workers, a personal schooling plan is necessary.

It is difficult to give a schooling period that fits all.

Developing modules per subject or highlighting special issues should be basic.

## **7-8 Results**

An active instrument for HRM to approach schooling needs and to get an overall picture to establish an "on demand" program.

## 8 E-learning modules

### 8-1 Issues training cutting the blades

As examples for the way it is possible to make a schooling program, three courses are developed. These are:

- Blade removing
- Nacelle removing
- Blade cutting

The following subjects are recognized as necessary skills.

These are in short:

- Blades as a product
- Safety training on cutting
- Facilities for decommissioning
- Decommissioning procedures

### 8-2 Methodical approach

The schooling consists of knowledge.

The way it is brought to the public depends on the possibilities in the schooling environment.

The following methods are possible:

- Schooling on the job
- Mixed learning
- E-learning
- VR schooling

In this program E-learning is developed by Stark Learning, an external, partner in work group 7 of the Decom Tools programme.

### 8-3 Appendices

Appendix 8 E-learning module

Appendix 9 E-learning module

Appendix 10 E-learning module



# APPENDIX 1

## Work package 7-5

### SCHOOLING CONCEPTS

#### **Objective**

They will be drawn up to ensure that future decommissioning can be in line with existing regulations (e.g. no waste to Vietnam/US) and be economically attractive & ecofriendly.

#### **Activity**

To transfer the knowledge, expertise and skills acquired through this project, different schooling and training concepts will be developed. They will address decision and policy makers as well as sector operators/professionals.

#### **Deliverables**

Schooling concepts to change the working practice in decommission and recycling.

#### **Indicator and Target**

3 Working practice change schooling concepts.

## APPENDIX 2

### Different decommissioning programmes

Hype-ST (DELTARES)	The limited lifetime of offshore wind farms requires an efficient and safe decommissioning. The project Hydraulic Pile Extraction Scale Tests (HyPE-ST) studied the option of removal of offshore wind turbine foundations (monopiles) in a sustainable way. HyPE-ST project aimed at both the fundamental understanding and the demonstration of the feasibility of hydraulically extracting monopiles for decommissioning. The project was a one-year R&D Joint Industry Project executed within the GROW research program.
SMARTPORT	SmartPort is a joint venture between the Port of Rotterdam Authority, Deltalinqs, the Municipality of Rotterdam, TNO, Deltares, Marin, Erasmus University and Delft University of Technology. By inspiring, initiating and forming alliances SmartPort stimulates and finances scientific research for and by the companies in the port of Rotterdam in collaboration with knowledge institutes. It is about developing knowledge, share and use it from one collective ambition. The transition onto the best and smartest port can only become successful when all parties involved jointly provide solutions to changes the future will bring. We are convinced that the most impact in developing knowledge is based on specific questions from the market and that the best results arise when the optimal benefit is gained from joined forces of trade and industry, authorities, and science.
DECOM WIND.BE	DecomWind.be is a group of partners – enterprises, sector organizations, research centers and public authorities – that share experiences, knowledge and competencies concerning professional solutions for the refurbishment, re-use or recycling of onshore and offshore wind turbines.

	<p>Collecting experience, exchanging knowledge and providing professional information to all stakeholders active in the onshore and offshore wind sectors in order to create a professional platform for refurbishment, re-use and recycling of end-of-life wind turbines with particular attention for integrity, in-depth analysis and innovation.</p> <p>turning the complex decommissioning activities into a truly circular economy to ensure a sustainable future for the wind energy, thereby improving the social, economic and environmental well-being of our community.</p>
<p>End-of-life planning in offshore wind CATAPULT</p>	<p>Over 3.5GW of global offshore wind capacity will reach its end of operational life by 2035 if no other action is taken. In its efforts to create an alternative source of energy to fossil fuels, the wind industry’s focus in its first decades has been to increase deployment and rapidly reduce the costs of energy. Compared to these urgent and immediate priorities, the decommissioning of wind farms after their operational lifetimes was an issue for longer term consideration.</p>
<p>ODIN-WIND: An Overview of the Decommissioning Process for Offshore Wind Turbines</p>	<p>oldest offshore wind farms in Europe are now well over 2 decades old. Considering this fact, and the technological advancements in wind turbine technology, it is evident that decommissioning of wind farms will soon become a crucial topic of discussion. NIRAS have been at the forefront of offshore wind farm decommissioning, and have developed extensive expertise in the area. Recently, they released a tool—ODIN-WIND—to assist stakeholders with the decommissioning process. The current chapter describes the decommissioning process for wind farms, the inherent challenges that may be faced, and potential solutions. It also provides an overview of ODIN-WIND tool.</p>

## APPENDIX 3


### Documentation material

IVF informatieblad energietransitie	
HSE update RWE meeting	
Offshore wind employment report NL	
L1321 Operation manual lifting and cutting tool	
PP 23 blade cutting procedure	



## APPENDIX 4

### Films

Videos
<b>Removing methods of the blade from the nacelle and remove gearbox</b>
<a href="https://www.youtube.com/watch?v=-PeOUo1arRc&amp;t=28s">https://www.youtube.com/watch?v=-PeOUo1arRc&amp;t=28s</a>
<a href="https://www.youtube.com/watch?v=pPeuHepz-J0&amp;t=53s">https://www.youtube.com/watch?v=pPeuHepz-J0&amp;t=53s</a>
<b>Cutting blades</b>
<a href="https://www.youtube.com/watch?v=m-X1uc7MyKo">https://www.youtube.com/watch?v=m-X1uc7MyKo</a>
<a href="https://www.youtube.com/watch?v=ZY6WbUdK_Pc">https://www.youtube.com/watch?v=ZY6WbUdK_Pc</a>
<a href="https://www.youtube.com/watch?v=knX7NkJLhs">https://www.youtube.com/watch?v=knX7NkJLhs</a>
<a href="https://www.youtube.com/watch?v=pKE6CdEkAQY">https://www.youtube.com/watch?v=pKE6CdEkAQY</a>
 WATERSNIJDEN REYM MVI_8438_1.m
<b>Build of a wind park</b>
<a href="https://www.youtube.com/watch?v=lZMrc1QtG2w">https://www.youtube.com/watch?v=lZMrc1QtG2w</a>
<a href="https://www.youtube.com/watch?v=RqdE53JhJ4E&amp;t=97s">https://www.youtube.com/watch?v=RqdE53JhJ4E&amp;t=97s</a>
<a href="https://www.youtube.com/watch?v=x_pr27mGZ1g">https://www.youtube.com/watch?v=x_pr27mGZ1g</a>

# APPENDIX 5

## CURRICULUM BLADE REMOVAL

### 1 PLANNING

#### 1-1 SEABED ASSESSMENT

- Describing the quality of the seabed
- Knowledge of the different soils of the seabed
- Knowledge of the weather conditions at sea

#### 1-2 LIFTING PROCEDURES

- Knowledge of how to connect the blade
- Being able to decommission the blade
- Knowledge of the hoisting procedures
- Being able to execute the hoisting procedures

#### 1-3 TECHNICAL DETAILS

- Knowledge of the technical construction data of the different windmills
- Knowledge of the weight of the wings
- Knowledge of the different hoist material used for hoisting

### 2 KICK-OFF MEETING

#### 2-1 PERSONNEL

- Knowledge of the meaning of a kick-off meeting
- Being able to understand the explanation of the work
- Knowledge of the procedures and tasks
- Knowledge of and able to act on the different roles for everyone
- Being able to understand and agree on consensus of the work procedures
- Knowledge of and able to perform health and safety procedures

### 3 EXECUTION PHASE

#### 3-1 MOBILISATION

- Knowledge of different types of barges for cranes
- Being able to describe the procedures to anchor the barge to the bottom.
- Knowledge of the hoisting procedures of hoisting and lowering the barge
- Knowledge of and being able to use the hoisting equipment on board of the barge

#### 3-2 THE SITE

- Knowledge of the procedures to travel to decommission site
- Knowledge of the entrance procedure to enter the park
- Knowledge of how to approach of the windmill by barge
- Knowledge of how to park in proximity of the tower
- Knowledge of to interpret the wave conditions

- Knowledge of the spuds placing and securing requirements at the bottom
- Knowledge of the jack up activities to bring the vessel to working high

### **3-3 TOOLBOX MEETING**

- Knowledge of the importance of different toolbox talks for the different tasks
- Knowledge of and being aware of the displacement area of the work
- Knowledge of the presence of a signed document agreement for the work
- Knowledge of and being able to make a risk assessment of the work
- Knowledge of and being able to do a lift check
- Able to execute the tasks according to the work protocol
- Explaining and effectuation of the health and safety procedures

### **3-4 BLADE REMOVAL**

- Knowledge of and being able to execute the lift procedures by the inside team
- Knowledge of and executing health and safety procedures during blade removal
- Knowledge of and be able to execute preparations work before execution
- Knowledge of the procedures to check the different connections
- Knowledge of and able to execute the unbolting procedure
- Knowledge of and able to execute the correct hoisting procedure
- Knowledge of and able to execute the use of taglines and weight balancer
- Knowledge of and able to disconnect the correct unbolting procedure
- Knowledge of and able to test the weight of lowering the wing
- Knowledge of and able to execute the lowering of the wing
- Knowledge of and able to execute the placing of the wing on the deck

## **4 DEBRIEFING**

### **4-1 TOOLBOX TALK**

- Knowledge of an able to attend and understand the importance of debrief procedures
- Able to execute feedback and experiences for optimisation of procedures
- Able to execute feedback and experiences for optimisation of health and safety procedures

# APPENDIX 6

## CURRICULUM NACELLE REMOVAL

### 1 PLANNING

#### 1-1 SEABED ASSESSMENT

- Describing the quality of the seabed
- Knowledge of the different soils of the seabed
- Knowledge of the weather conditions at sea

#### 1-2 LIFTING PROCEDURES

- Knowledge of how to connect the nacelle
- Being able to decommission the nacelle
- Knowledge of the hoisting procedures
- Being able to execute the hoisting procedures

#### 1-3 TECHNICAL DETAILS

- Knowledge of and able to de-electrify the nacelle
- Knowledge of the technical construction data of the different windmills
- Knowledge of the weight of the nacelle
- Knowledge of the different hoist material used for hoisting

### 2 KICK-OFF MEETING

#### 2-1 PERSONNEL

- Knowledge of the meaning of a kick-off meeting
- Being able to understand the explanation of the work
- Knowledge of the procedures and tasks
- Knowledge of and able to act on the different roles for everyone
- Being able to understand and agree on consensus of the work procedures
- Knowledge of and able to perform health and safety procedures

### 3 EXECUTION PHASE

#### 3-1 MOBILISATION

- Knowledge of different types of barges for cranes
- Being able to describe the procedures to anchor the barge to the bottom.
- Knowledge of the hoisting procedures of hoisting and lowering the barge
- Knowledge of and being able to use the hoisting equipment on board of the barge

#### 3-2 THE SITE

- Knowledge of the procedures to travel to decommission site
- Knowledge of the entrance procedure to enter the park
- Knowledge of how to approach of the windmill by barge
- Knowledge of how to park in proximity of the tower

- Knowledge of to interpret the wave conditions
- Knowledge of the spuds placing and securing requirements at the bottom
- Knowledge of the jack up activities to bring the vessel to working height

### **3-3 TOOLBOX MEETING**

- Knowledge of the importance of different toolbox talks for the different tasks
- Knowledge of and being aware of the displacement area of the work
- Knowledge of the presence of a signed document agreement for the work
- Knowledge of and being able to make a risk assessment of the work
- Knowledge of and being able to do a lift check
- Able to execute the tasks according to the work protocol
- Explaining and effectuation of the health and safety procedures

### **3-4 NACELLE REMOVAL**

- Knowledge of and being able to execute the lift procedures by the inside team
- Executing health and safety procedures during nacelle removal
- Knowledge of and be able to execute preparations work before execution
- Knowledge of the procedures to check the different connections
- Knowledge of and able to execute the unbolting procedure
- Knowledge of and able to execute the correct hoisting procedure
- Knowledge of and able to execute the use of taglines
- Knowledge of and able to disconnect the correct unbolting procedure
- Knowledge of and able to test the weight of lowering the nacelle
- Knowledge of and able to execute the lowering of the nacelle
- Knowledge of and able to execute the placing of the nacelle on the deck

## **4 DEBRIEFING**

### **4-1 TOOLBOX TALK**

- Knowledge of an able to attend and understand the importance of debrief procedures
- Able to execute feedback and experiences for optimisation of procedures
- Able to execute feedback and experiences for optimisation of health and safety procedures

# APPENDIX 7

## CURRICULUM BLADE CUTTING

### 1 PLANNING

#### 1-1 OFFSHORE CUTTING

- Knowledge of and able to recognise and use cutting procedures
- Knowledge of and able to plan supply and delivery of cutting material
- Knowledge of and able to recognise different materials blades are made of.
- Knowledge of and able to recognise the property and quality of wing materials
- Knowledge of and able to make and keep surroundings dust free
- Knowledge of procedures to prevent pollution on the work site
- Knowledge of weather conditions effecting dust movement

#### 1-2 LIFTING PROCEDURES

- Knowledge of and able to correct lifting of the blades for cutting
- Knowledge of and able to address correct hoist procedures

#### 1-3 TECHNICAL DETAILS

- Knowledge of the methods for cutting materials used for wind blades
- Knowledge of and use of hoist material
- Knowledge of health and safety measures for blade cutting

### 2 KICK-OFF MEETING

#### 2-1 PERSONELL

- Knowledge of workplace and arranging work site
- Knowledge of work procedures and hazards to be able to efficiently cut wings
- Knowledge of different work assignments for every worker
- Knowledge and commitment to work procedures

### 3 EXECUTION PHASE

#### 3-1 MOBILISATION

- Knowledge of and correct use of hoisting material
- Knowledge of and correct use of transportation material
- Knowledge of and correct use of equipment for cutting procedure
- Knowledge of and correct use of health and safety material and equipment

#### 3-2 THE SITE

- Knowledge of and able to correct set up of the work area for cutting
- Knowledge of and able to correct setting machines for cutting
- Knowledge of and able to correct setting of equipment for cutting

### **3-3 TOOLBOX MEETING**

- Knowledge of and able to recognize different tasks
- Knowledge of and able to make a risk assessment
- Knowledge of and able to perform a lift check
- Knowledge of and recognize the signed document agreement on site

### **3-4 PREPARATION OF CUTTING**

- Knowledge of and able to prepare the transport procedure of material
- Knowledge of and able to use health and safety procedures for cutting
- Knowledge of and able to use the hoisting procedure
- Knowledge of and able to check the different connections during cutting

### **3-5 TRANSPORT OF THE BLADES**

- Knowledge of and able to connect the blade to the crane
- Knowledge of and able to use taglines connecting the blade to the crane

### **3-6 REMOVAL OF THE VESSEL**

- Knowledge of and able to use disconnection procedures
- Knowledge of and able to use safety procedures when removing wings from vessel

### **3-7 CUTTING OF THE BLADES**

- Knowledge of and able to cut the blades conform the procedures
- Knowledge of and able to cut the blades with scissors
- Knowledge of and able to prevent dust waste nuisance
- Knowledge of and able to handle removing parts

## **4 DEBRIEFING**

### **4-1 Toolbox Talk**

- Knowledge of and able to attend and understand the importance of debrief procedures
- Able to execute feedback and experiences for optimisation of procedures
- Able to execute feedback and experiences for optimisation of health and safety procedures

## APPENDIX 8

### E-LEARNING MODULE 1



APPENDIX 9  
E-LEARNING MODULE 2

APPENDIX 10  
E-LEARNING MODULE 3