Minor Training Circular Demolition – Building a sustainable future

Contents

Introduction

Welcome to the minor course Circular Demolition! In this minor we take a closer look at the principles of circular demolition and the importance of sustainability in the construction sector. During this training we will focus on some essential topics that form the basis of a circular approach in the demolition industry.

One of the first topics we'll cover is Kaizen . Kaizen stands for continuous improvement and plays a crucial role in the pursuit of sustainability and the prevention of material waste. We will learn how to optimize processes and techniques to demolition as efficiently as possible and to preserve valuable materials.

In addition, we will delve into sustainable demolition. This means that we carry out demolition activities with minimal impact on the environment and with an eye for the reuse of materials. We will explore the latest techniques and methods to carry out demolition work in the most environmentally friendly way possible.

Another important aspect is the detachability and circularity of buildings. We will discover how to design and construct buildings with a view to future disassembly and reuse of materials. The aim is to create buildings that are flexible and can be easily adapted or dismantled without loss of quality. Or vice versa, how we can remove materials from buildings without much loss of value because we know how the materials in buildings are attached and how they can be taken apart.

Finally, we will delve into the concept of the materials passport. This is a document that contains information about the composition and origin of the materials used in a building. We will learn how to identify, track and document materials so that they can be efficiently reused in new projects.

With these topics as a basis, we want to inspire and prepare you for a future in which circular demolition and sustainability are becoming increasingly important in the construction sector. Together we will build a sustainable future in which we preserve valuable raw materials and contribute to a circular economy.

Structure Minor Training Circular demolition – Building a sustainable future

This minor course in Circular Demolition – Building a Sustainable Future is an additional study program that offers students the opportunity to specialize or to orient themselves more broadly within a certain field, in addition to their main study. It is a short program that offers students the opportunity to further deepen their knowledge and skills in the field of circular demolition.

The Minor training consists of 4 basic modules and each basic module is supported by a module that provides the opportunity for deepening.

The basic modules are:

1. Kaizen
2. Sustainable demolition
3. Detachability and circularity
4. Working with a materials passport

The supporting modules are:

1. LEAN
2. Material knowledge
3. load-bearing structures
4. Field of activity
5. Safety

Each module consists of one or more tutorials, practice assignments and practical assignments.

In the following chapters, the subjects and learning objectives will be discussed for each module and an explanation will be given of the practice and practical assignments.

With each basic module, 1 or more supporting modules have been added and developed. These supporting modules can contribute to broadening or deepening the knowledge required for the basic module.

Module Kaizen

Introduction

Kaizen is a Japanese concept that stands for continuous improvement. It means that we constantly strive for small, incremental improvements in processes, techniques and working methods. Kaizen can be applied within the demolition industry by identifying inefficiencies and implementing improvements to optimize the demolition process and reduce waste. It engages employees in identifying areas for improvement and encourages a culture of proactive engagement. With Kaizen we can demolition more efficiently, preserve valuable materials and reduce the negative impact on the environment.

subjects

The following topics are covered within the Kaizen module;

- Eliminating waste
- Plan, Do, Check and Act
- Kaizen workshop
- The 6 steps of Kaizen
- 5S method

Learning goals

After following the Kaizen module , the student will know:

- What Kaizen means
- How to apply Kaizen to your work
- What the PDCA cycle entails
- How to organize a Kaizen workshop
- How to participate in a Kaizen workshop
- Which 6 steps Kaizen consists of
- What the 5S method entails and how you can use it

Explanation practice assignments

After following the self-study, practice assignments can be used to test knowledge. The outcome of the practice assignments provides insight into what the student can pay extra attention to and what knowledge the student has already mastered.

Explanation of practical assignments

After following the self-study and practice assignments, the practical assignments are used to test the knowledge in practice. These assignments are carried out on or around a demolition site and give the student the opportunity to link the acquired knowledge to practical situations .

for the Kaizen Module , which consists of 2 assignments.

Support Module – LEAN

Introduction

The LEAN Module is a supporting module that offers broadening and deepening in the field of safety and waste on and around a demolition site.

LEAN is a management philosophy aimed at eliminating waste and optimizing processes. Within the demolition industry, LEAN is applied to work more efficiently and to improve quality. It includes identifying and eliminating waste such as overproduction, waiting times, redundant movements and inventory. By implementing LEAN principles, demolition companies can save costs, shorten lead times and increase customer satisfaction. It engages employees in continuous process improvement and fosters a culture of collaboration and problem solving.

subjects

The following topics are covered within the LEAN module;

- What is LEAN
- The basics of LEAN
- LEAN work
- What is customer value

Learning goals

After following the LEAN module, the student knows:

- What LEAN means
- What LEAN working can mean for demolition
- The basic principles of LEAN
- How you can work LEAN
- What it takes to work LEAN
- What waste means and what forms of waste there are
- What influence a customer has on your work

Explanation practice assignments

After following the self-study, practice assignments can be used to test knowledge. The outcome of the practice assignments provides insight into what the student can pay extra attention to and what knowledge the student has already mastered.

Explanation of practical assignments

After following the self-study and practice assignments, the practical assignments are used to test the knowledge in practice. These assignments are carried out on or around a demolition site and give the student the opportunity to link the acquired knowledge to practical situations .

1 practical assignment has been developed for the LEAN Module, which consists of 2 assignments.

Support Module – Security

Introduction

The Safety Module is a supporting module that offers broadening and deepening in the field of safety on and around a demolition site.

Safety is paramount on a demolition site, where potentially hazardous conditions exist. Ensuring the safety of workers and bystanders is central to any demolition operation. This includes following strict safety protocols, wearing proper personal protective equipment and training personnel in safety procedures. In addition, it is essential to identify potential risks, such as the risk of collapse, the presence of hazardous substances and ensure adequate signage at the demolition site. By paying attention to safety, we can create a healthy and protected working environment for everyone involved in demolition activities.

subjects

The following topics are covered within the Safety module;

- Personal Protective Equipment (PPE)
- Hazardous Substances
- Last Minute Risk Assessment (LMRA)
- Assessment guidelines (BRL)

Learning goals

- What Review Guidelines are
- How assessment guidelines can help you
- What supervisors are at a demolition site
- How to recognize hazardous substances
- What to do if you come across hazardous substances at a demolition site
- Which personal protective equipment (PPE) there are and which you should wear or use
- What happens if you don't use or don't use the right PPE at a demolition site
- What a Last Minute Risk Analysis (LMRA) is and when you can best use it

Explanation practice assignments

After following the self-study, practice assignments can be used to test knowledge. The outcome of the practice assignments provides insight into what the student can pay extra attention to and what knowledge the student has already mastered.

Explanation of practical assignments

After following the self-study and practice assignments, the practical assignments are used to test the knowledge in practice. These assignments are carried out on or around a demolition site and give the student the opportunity to link the acquired knowledge to practical situations .

Three practical assignments have been developed for the Safety Module, namely;

1. Practical assignment related to hazardous substances at a demolition site
2. Practical assignment related to the Last Minute Risk Analysis (LMRA)
3. Practical assignment related to Personal Protective Equipment (PPE)

Sustainable demolition module

Introduction

Sustainable demolition means that demolition work is carried out with minimal impact on the environment and with an eye for the reuse of materials. The aim is to reduce waste and preserve valuable raw materials. Sustainable demolition uses techniques and methods to carefully disassemble and sort materials for recycling or reuse. The aim is to reduce CO2 emissions and to minimize the negative effects of demolition work on the environment. Sustainable demolition contributes to a circular economy in which materials are used efficiently and the impact on the environment is reduced.

subjects

Within the Sustainable Demolition module, the following topics are covered;

- R Principles
- Key questions and considerations for sustainable demolition
- Basic concepts about materials and raw materials
- Costs and benefits of sustainable demolition
- Guarantee provisions for the reuse of materials
- Ladder van Lansink

Learning goals

After following the Sustainable Demolition module, the student knows:

- What Lansink's Ladder entails and how you can use it at work
- How to distinguish between the different R-strategies with materials
- What activities are involved in the chain in classic demolition
- Which activities are involved in circular demolition in the chain
- What information is needed to make a trade-off between classic and circular demolition
- Explain the costs and benefits of the various components of a circular demolition method
- When circular demolition is more economical than conventional demolition
- Why time is an important part of making a choice to demolish classically or circularly.

Explanation practice assignments

After following the self-study, practice assignments can be used to test knowledge. The outcome of the practice assignments provides insight into what the student can pay extra attention to and what knowledge the student has already mastered.

Explanation of practical assignments

After following the self-study and practice assignments, the practical assignments are used to test the knowledge in practice. These assignments are carried out on or around a demolition site and give the student the opportunity to link the acquired knowledge to practical situations .

1 practical assignment has been developed for the Sustainable Demolition Module, which consists of 2 assignments.

Support Module – Material Knowledge

Introduction

The Material Knowledge Module is a supporting module that offers broadening and deepening in the field of safety on and around a demolition site.

For demolition work it is very important to have sufficient material knowledge. This knowledge enables demolition professionals to identify, handle and process materials in a safe and efficient manner. By understanding the properties and characteristics of different materials, such as concrete, steel, wood and plastic, demolition companies can apply the right methods and techniques. Material knowledge also enables us to identify and separate valuable and reusable materials, thereby contributing to a circular economy. With a solid base of material knowledge, demolition professionals can carry out demolition work safely, sustainably and effectively.

subjects

The following topics are covered within the Materials Knowledge module;

- Properties of materials
- Separating materials
- Disposal of materials

Learning goals

- What properties materials can have
- How to separate these materials
- How to dispose of different types of materials
- Which materials can be released during demolition
- What types of containers are available and how best to use them
- What you should pay attention to when ordering and placing a container
- Which products can be reused
- What is high-grade and low-grade reuse
- What Lansink's Ladder entails
- Which and how chemicals can affect your work

Explanation practice assignments

After following the self-study, practice assignments can be used to test knowledge. The outcome of the practice assignments provides insight into what the student can pay extra attention to and what knowledge the student has already mastered.

Explanation of practical assignments

After following the self-study and practice assignments, the practical assignments are used to test the knowledge in practice. These assignments are carried out on or around a demolition site and give the student the opportunity to link the acquired knowledge to practical situations .

1 practical assignment has been developed for the Material Knowledge Module, which consists of 2 assignments.

Support Module – Security

Introduction

The Safety Module is a supporting module that offers broadening and deepening in the field of safety on and around a demolition site.

Safety is paramount on a demolition site, where potentially hazardous conditions exist. Ensuring the safety of workers and bystanders is central to any demolition operation. This includes following strict safety protocols, wearing proper personal protective equipment and training personnel in safety procedures. In addition, it is essential to identify potential risks, such as the risk of collapse, the presence of hazardous substances and ensure adequate signage at the demolition site. By paying attention to safety, we can create a healthy and protected working environment for everyone involved in demolition activities.

subjects

The following topics are covered within the Safety module;

- Personal Protective Equipment (PPE)
- Hazardous Substances
- Last Minute Risk Assessment (LMRA)
- Assessment guidelines (BRL)

Learning goals

- What Review Guidelines are
- How assessment guidelines can help you
- What supervisors are at a demolition site
- How to recognize hazardous substances
- What to do if you come across hazardous substances at a demolition site
- Which personal protective equipment (PPE) there are and which you should wear or use
- What happens if you don't use or don't use the right PPE at a demolition site
- What a Last Minute Risk Analysis (LMRA) is and when you can best use it

Explanation practice assignments

After following the self-study, practice assignments can be used to test knowledge. The outcome of the practice assignments provides insight into what the student can pay extra attention to and what knowledge the student has already mastered.

Explanation of practical assignments

After following the self-study and practice assignments, the practical assignments are used to test the knowledge in practice. These assignments are carried out on or around a demolition site and give the student the opportunity to link the acquired knowledge to practical situations .

Three practical assignments have been developed for the Safety Module, namely;

1. Practical assignment related to hazardous substances at a demolition site
2. Practical assignment related to the Last Minute Risk Analysis (LMRA)
3. Practical assignment related to Personal Protective Equipment (PPE)

Detachability and circularity module

Introduction

Detachability and circularity are two essential concepts in today's construction and design industry. Detachability refers to the ability to disassemble building elements and materials in an efficient and safe manner so that they can be reused. Circularity, on the other hand, is about striving for a closed loop system, where materials and products are continuously reused, repaired and recycled, in order to minimize the amount of waste. By integrating detachability and circularity into the design process, buildings and infrastructure can be made flexible and sustainable, with a view to future adaptations and reuse. These approaches contribute to reducing carbon emissions, reducing resource waste and promoting a more resilient and sustainable built environment. The pursuit of detachability and circularity is therefore crucial for the transition to a circular economy in the construction sector.

subjects

Within the Detachability and Circularity module, the following topics are discussed;

- What detachability of materials means
- How materials can be reused
- What is the social value of reusing materials
- How we can protect the supply of materials and the environment by reusing materials

Learning goals

After following the Detachability and Circularity module, the student will know:

- Which means detachability of materials
- Why detachability is important when reusing materials
- What the concept of CO2 emissions means
- Determine the economic value of materials
- What the social value of reusable materials are
- What a social material balance for a building is

Explanation practice assignments

After following the self-study, practice assignments can be used to test knowledge. The outcome of the practice assignments provides insight into what the student can pay extra attention to and what knowledge the student has already mastered.

Explanation of practical assignments

After following the self-study and practice assignments, the practical assignments are used to test the knowledge in practice. These assignments are carried out on or around a demolition site and give the student the opportunity to link the acquired knowledge to practical situations .

1 practical assignment has been developed for the Detachability and Circularity Module, which consists of 2 assignments.

Supporting Module – Load-bearing Structures

Introduction

Load-bearing structures are the backbone of any building, but when it comes time for demolition, they play a vital role in the process. These structures, which are designed to support the weight of a building and ensure stability, must be handled carefully to prevent unwanted collapses. The demolition of load-bearing structures requires thorough planning, expertise and advanced techniques to ensure safety. The dismantling or demolition of these structures can vary from traditional demolition methods to the use of controlled explosives, depending on the nature and scope of the project. It is vital that professionals in the demolition industry understand the complexities associated with the removal of load-bearing structures to ensure that this process is carried out safely and efficiently.

subjects

After following the module Load-bearing structures, the student knows:

- Strut and stamping work
- Making recesses and openings in load-bearing walls
- Making passages in load-bearing walls

Learning goals

After following the module Load-bearing structures, the student knows:

- What types of load-bearing structures are there
- What a load-bearing construction means
- What strut and stamping means and how you can best use it
- How shoring and stamping work contributes to working safely on a demolition site
- What stamps are and how to use them safely
- What is the best way to make a passage or breakthrough in a load-bearing wall?
- How you can safely make an opening in a load-bearing wall
- What are the consequences of not shoring or stamping a load-bearing wall during demolition work
- What are the differences between the demolition of stony walls and wooden beams
- Which safety measures you can take when demolishing load-bearing structures.

Explanation practice assignments

After following the self-study, practice assignments can be used to test knowledge. The outcome of the practice assignments provides insight into what the student can pay extra attention to and what knowledge the student has already mastered.

Explanation of practical assignments

After following the self-study and practice assignments, the practical assignments are used to test the knowledge in practice. These assignments are carried out on or around a demolition site and give the student the opportunity to link the acquired knowledge to practical situations .

For the Load-bearing Structures Module, 1 practical assignment has been developed, which consists of 2 assignments.

Support Module – Security

Introduction

The Safety Module is a supporting module that offers broadening and deepening in the field of safety on and around a demolition site.

Safety is paramount on a demolition site, where potentially hazardous conditions exist. Ensuring the safety of workers and bystanders is central to any demolition operation. This includes following strict safety protocols, wearing proper personal protective equipment and training personnel in safety procedures. In addition, it is essential to identify potential risks, such as the risk of collapse, the presence of hazardous substances and ensure adequate signage at the demolition site. By paying attention to safety, we can create a healthy and protected working environment for everyone involved in demolition activities.

subjects

The following topics are covered within the Safety module;

- Personal Protective Equipment (PPE)
- Hazardous Substances
- Last Minute Risk Assessment (LMRA)
- Assessment guidelines (BRL)

Learning goals

- What Review Guidelines are
- How assessment guidelines can help you
- What supervisors are at a demolition site
- How to recognize hazardous substances
- What to do if you come across hazardous substances at a demolition site
- Which personal protective equipment (PPE) there are and which you should wear or use
- What happens if you don't use or don't use the right PPE at a demolition site
- What a Last Minute Risk Analysis (LMRA) is and when you can best use it

Explanation practice assignments

After following the self-study, practice assignments can be used to test knowledge. The outcome of the practice assignments provides insight into what the student can pay extra attention to and what knowledge the student has already mastered.

Explanation of practical assignments

After following the self-study and practice assignments, the practical assignments are used to test the knowledge in practice. These assignments are carried out on or around a demolition site and give the student the opportunity to link the acquired knowledge to practical situations .

Three practical assignments have been developed for the Safety Module, namely;

1. Practical assignment related to hazardous substances at a demolition site
2. Practical assignment related to the Last Minute Risk Analysis (LMRA)
3. Practical assignment related to Personal Protective Equipment (PPE)

Working with a materials passport module

Introduction

The use of a materials passport plays an essential role in the practice of circular demolition. A materials passport is a detailed documentation that contains information about the composition, origin and quality of materials in a building. It acts as a valuable source of information that helps identify and record materials suitable for reuse. By using a material passport, demolition projects can accurately identify and select potentially valuable materials for disassembly and reuse, leading to a more efficient and sustainable demolition practice. The passport also makes it possible to trace the origin of materials, making it possible to better assess their quality and sustainability. The use of a materials passport stimulates transparency and trust in the circular economy by providing a standardized and reliable method for managing and valorising materials in the demolition sector.

subjects

Within the module Working with a materials passport, the following topics are covered;

- The content of a materials passport
- The use of a materials passport
- Circular demolition with a materials passport

Learning goals

After following the module Working with a materials passport, the student knows:

- What a material passport is and what it contains
- How a materials passport can be used for circular demolition
- How the materials passport is structured and how it is filled.

Explanation practice assignments

After following the self-study, practice assignments can be used to test knowledge. The outcome of the practice assignments provides insight into what the student can pay extra attention to and what knowledge the student has already mastered.

Explanation of practical assignments

After following the self-study and practice assignments, the practical assignments are used to test the knowledge in practice. These assignments are carried out on or around a demolition site and give the student the opportunity to link the acquired knowledge to practical situations .

For the Module Working with a material passport, 1 practical assignment has been developed, which consists of 2 assignments.

Support Module – Field of Operation

Introduction

The field of demolition and circular demolition has evolved significantly in recent years and has played an important role in the transition to a more sustainable construction industry. Demolition work no longer focuses solely on the demolition and removal of buildings, but increasingly emphasizes the preservation and reuse of valuable materials. Circular demolition means that careful consideration is given to the disassembly and processing of a building, so that as many materials as possible can be recovered and reused. This requires advanced techniques and methods to identify, sort and separate materials for further processing. The field of demolition and circular demolition offers opportunities not only for a more sustainable construction practice, but also for stimulating green jobs and reducing the environmental impact of the construction sector.

subjects

After following the Field of Work module, the student will know:

- Setting up a work area
- Work at height
- Protect your environment
- Cleaning up the work area
- Removal of cables and pipes
- Working in a confined space

Learning goals

After following the Field of Work module, the student will know:

- What it takes to make a demolition site safe
- How a demolition site can be set up safely
- How to safely cordon off a demolition site
- How containers should be placed on a demolition site
- What escape routes are and why they are important
- Which deposits outside a demolition site are important
- Which tools are used when working at height
- What is the difference between a ladder, scaffolding and stairs
- What fall protection is and why it is important
- How to protect the environment of a demolition site
- How important a clean demolition site is
- What a confined space is and how you can work safely in it
- How to work with cables and pipes

Explanation practice assignments

After following the self-study, practice assignments can be used to test knowledge. The outcome of the practice assignments provides insight into what the student can pay extra attention to and what knowledge the student has already mastered.

Explanation of practical assignments

After following the self-study and practice assignments, the practical assignments are used to test the knowledge in practice. These assignments are carried out on or around a demolition site and give the student the opportunity to link the acquired knowledge to practical situations .

1 practical assignment has been developed for the Work Field Module, which consists of 2 assignments.

Support Module – Security

Introduction

The Safety Module is a supporting module that offers broadening and deepening in the field of safety on and around a demolition site.

Safety is paramount on a demolition site, where potentially hazardous conditions exist. Ensuring the safety of workers and bystanders is central to any demolition operation. This includes following strict safety protocols, wearing proper personal protective equipment and training personnel in safety procedures. In addition, it is essential to identify potential risks, such as the risk of collapse, the presence of hazardous substances and ensure adequate signage at the demolition site. By paying attention to safety, we can create a healthy and protected working environment for everyone involved in demolition activities.

subjects

The following topics are covered within the Safety module;

- Personal Protective Equipment (PPE)
- Hazardous Substances
- Last Minute Risk Assessment (LMRA)
- Assessment guidelines (BRL)

Learning goals

- What Review Guidelines are
- How assessment guidelines can help you
- What supervisors are at a demolition site
- How to recognize hazardous substances
- What to do if you come across hazardous substances at a demolition site
- Which personal protective equipment (PPE) there are and which you should wear or use
- What happens if you don't use or don't use the right PPE at a demolition site
- What a Last Minute Risk Analysis (LMRA) is and when you can best use it

Explanation practice assignments

After following the self-study, practice assignments can be used to test knowledge. The outcome of the practice assignments provides insight into what the student can pay extra attention to and what knowledge the student has already mastered.

Explanation of practical assignments

After following the self-study and practice assignments, the practical assignments are used to test the knowledge in practice. These assignments are carried out on or around a demolition site and give the student the opportunity to link the acquired knowledge to practical situations .

Three practical assignments have been developed for the Safety Module, namely;

1. Practical assignment related to hazardous substances at a demolition site
2. Practical assignment related to the Last Minute Risk Analysis (LMRA)
3. Practical assignment related to Personal Protective Equipment (PPE)