

Evolving the well-established

vdz

**Education and Training  
Programme  
2022/23**



## Training Courses and Workshops 2022/2023

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Dear customers, Dear readers,

For more than 60 years we have been successfully offering education and vocational training for employees in the building materials industry and related industrial sectors.

In times of digital change and high demands on environmental protection and emission reduction, professional training and qualification must be given high priority. Standing still is a step backwards. Expanding the knowledge base is essential for lasting success in the rapidly changing environment. In addition to purely technical qualifications, it is a question of skills in dealing with new technologies, using them and developing them further.

VDZ supports the efforts of the cement industry to be successful in the long term through consistent qualification of the workforce. The exchange of ideas in the VDZ working group on personnel development and the cooperation with cement plants ensure efficient and practical learning of the latest content.

For 2022/23, we have once again put together a wide range of vocational training courses covering technical topics. Our training programme ranges from the teaching of technical basics to the imparting of special technical knowledge and education courses for managers. We offer individual, tailor-made seminars on the topics of clinker and cement production, maintenance, quality assurance, environmental protection and concrete technology. Almost all seminars can also be designed and implemented as in-house seminars according to individual customer requirements. In addition to our tried and tested attendance seminars, we now also offer a range of online seminars. All seminars which you can attend online are marked with a special online symbol in this flyer. Some seminars can be booked flexibly as online seminars or as attendance events.

In addition to the seminars, VDZ has been offering online courses for more than 10 years. As a standalone offer, the courses are used worldwide in German, English and Russian. Numerous employees in the building materials industry have used VDZ's online courses for their individual qualification. With the help of digital media and vivid animations, the online courses can convey even highly complex topics in an understandable way. In addition, they offer simple ways of self-monitoring and computer-based tests. Whether as a supplement to the classic classroom seminar or as a standalone solution, VDZ online courses can be used individually and flexibly.

Dr Stefan Schäfer  
Johannes Bömken  
VDZ Training Centre





## Crash Course Process Control

**C-SIc** The SIMULEX® cement plant simulator for training plant supervisors, foremen, production personnel, control room operators and young engineers was developed by KHD Humboldt Wedag AG in cooperation with VDZ.

For over ten years VDZ has been using the simulator within the framework of training courses and has been continually supporting the further development of the system with practical input from the industry. The simulator provides a realistic reconstruction of a production plant with a state-of-the-art supervisory control and data acquisition system (SCADA).




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### Learning objectives

- Comprehensive knowledge of the plant control system in general and the main control circuits in particular.
- Better understanding of how the various sub-processes in the cement plant are interconnected.
- Understanding of the main control circuits in order to reach and maintain target values (e.g. energy consumption).
- Capability to react to process disturbances in a proper way and to develop a long-term control strategy.

### Target groups

- Production personnel
- Control room operators
- Young engineers

### Topics

- Heating up and operating the kiln
- Operation of the raw, cement and coal mills
- Optimising production
- Managing process disturbances and special situations

### Methods

Presentations, interactive exercises, scenario-based training using the simulator, team work, group discussion.

### Trainers

The training is led by highly skilled and experienced engineers.

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### Certificate

The participants will receive a certificate of attendance.

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**14 - 16 February 2022**

Location: Duesseldorf VDZ

1,375 € per participant

We invite you to a joint evening event and dinner on the second day of the course.

Further information and registration:

<https://vdz.info/ccpc>

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## Energy Balances and Efficiency

### C-EFI

This training will provide knowledge of how to conduct and evaluate cement kiln and mill trials. Kiln and mill examinations are carried out in order to gather data on the performance and to validate warranty performance data such as the output, the energy consumption, input/output ratio or the efficiency. They also provide a reliable foundation for the optimisation of individual operational system components, the cement quality, the reduction of emissions levels and for assessment of material cycles and coating formations.




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### Learning objectives

Learn how to conduct and evaluate cement kiln trials and mill trials.

### Target groups

- Production personnel
- Control room operators
- Young engineers

### Topics

- Basics of conducting balances
- Planning, organisation and realisation of plant examinations
- Introduction into calculation of energy and mass balances
- Introduction into measuring techniques
- Case studies: Calculate an energy balance of a cyclone preheater plant, mass balance of a cyclone preheater plant
- Efficient mill operation (ball mill; roller press; VRM)
- Examinations of cement mills (focus on ball mills)
- Case studies: Ball mill examinations / audits
- Discussion of participants' specific questions and problem

### Methods

Presentations, group discussion and experience exchange  
Training sessions: 9:00 - 13:00

### Trainers

Highly skilled and experienced engineers.

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### Certificate

The participants will receive a certificate of attendance.

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**21 - 25 March 2022**

Online seminar 

2,750 € per participant

Further information and registration:

<https://vdz.info/ebae>

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## Firing Alternative Fuels

**W-AFU** This course covers all relevant aspects concerning the use of alternative fuels in cement plants. Starting with the main political drivers such as the circular economy and the European waste fuel strategy, the training will give a detailed view of the current state-of-the-art-situation with regard to the use of alternative fuels in the EU. In this context, pre-treatment and suitable quality control of alternative fuels will be also explained and presented.

A main focus will be given to the drivers and barriers of the use of alternative fuels within the burning process. Relevant aspects will be explained and discussed with the participants. Finally, technical feasibilities, case studies and possible optimisation potential will be part of the training course.




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### Learning objectives

Comprehensive overview of using alternative fuels in cement plants (from reception and quality control to firing).

### Target groups

- Process and lab engineers
- Energy managers
- Quality managers

### Topics

- Legal requirements
- AF Quality: Sampling and analysis
- Types of AF and impacts on the burning process
- Firing AF
- Optimisation of AF use
- Case studies
- Impact on clinker and cement properties

### Methods

Presentations, group discussion and experience exchange

Training sessions in courses 1: 9:00 - 13:00

Training sessions in courses 2: 13:00 - 17:00

### Trainers

Experienced engineers and highly specialised researchers.

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**28 - 31 March 2022**

**5 - 8 September 2022**

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Online seminar 

2,200 € per participant

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Further information and registration:

<https://vdz.info/afuels1>

<https://vdz.info/afuels2>

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### Certificate

The participants will receive a certificate of attendance.

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## Wear of Refractory Materials

**S-WRM** The refractory lining of a cement plant is subject to wear, which can be typical to abnormal depending on the process conditions. A premature wear of the refractory lining usually results in an unexpected loss of production, which is associated with high costs. In order to be able to better assess the reasons for the wear that has occurred, the course gives an overview of the types of wear in the cement plant and their interpretation. In addition, details are shown how the wear behaviour of the refractory lining in the cement plant changes as a result of the use of alternative fuels.




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### Learning objectives

With this course, participants should be given the opportunity to be able to identify and interpret the types of wear occurring in their system more quickly.

### Target groups

- Young and experienced engineers, masters
- Employees from the areas of production and maintenance

### Topics

- Thermal, chemical and mechanical causes of wear
- Visual inspection of refractory damage
- Influence of alternative fuels
- Kiln shell corrosion

### Methods

Presentations, practical training, team work, group discussion.

### Trainers

The training is led by highly skilled and experienced engineers, external experts and users.

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**14 June 2022**

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Location: Refratechnik, Goettingen

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670 € per participant

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Further information and registration:  
<https://vdz.info/wofm>

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### Certificate

The participants will receive a certificate of attendance.

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## Installation of Refractory Materials

**S-IRM** For good lifetimes of the refractory materials in the clinker production line, a faultless installation is an important prerequisite. Even though the installation is carried out in most companies by external companies, supervision should be done by trained employees. This seminar should help the participants to be able to better evaluate the refractory installation and thereby recognize deficits at an early stage.




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### Learning objectives

The participants get a comprehensive insight which installation methods exist and how errors during installation can be avoided.

### Target groups

- Young and experienced engineers, masters
- Employees from the areas of production and maintenance

### Topics

- Installation methods in rotary kilns
- General rules for the installation in rotary kilns
- Special installations in rotary kilns
- Refractory lining in the static areas

### Methods

Presentations, practical training, team work, group discussion

### Trainers

The training is led by highly skilled and experienced engineers, external experts and users.

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**15 - 16 June 2022**

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Location: Refratechnik, Goettingen

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1,320 € per participant

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Further information and registration:

<https://vdz.info/iorm>

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### Certificate

The participants will receive a certificate of attendance.

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## Process Technology of Cement Production

### C-PTP Module 1

Raw material preparation and cement grinding are the first and the last major process steps during cement production. The energy demand of these two processes amounts to up to 75% of the electrical energy used in a cement plant. This training will enable participants to obtain a better understanding of the comminution processes as well as the equipment used for material grinding to ensure high levels of availability. This altogether will allow an optimisation of production rates and reducing energy consumption.




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#### Learning objectives

Overview of all relevant aspects of the cement manufacturing process up to the application of cement in concrete. Attaining fundamental knowledge of raw material preparation and cement production with regard to comminution processes, equipment used and quality analysis.

#### Target groups

- Process personnel
- Process and control room operators
- Young engineers

#### Topics

Raw materials extraction

- Mining operations
- Raw material homogenisation

Quality parameters

- Understanding powder characteristics
- Particle size analysis
- Specific surface according to Blaine / BET - method

Grinding technology

- Mills, classifiers / Tromp curve
- Open and closed circuit grinding
- Impact of grinding systems on cement properties
- Optimisation of grinding equipment

#### Methods

Presentations, interactive exercises, group discussion, experience exchange, practical exercises, final exam (if requested).

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#### Certificate

The participants will receive a certificate of attendance.

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**16 - 20 January 2023**

Location: Duesseldorf, VDZ

Five days classroom training (6 hours per day) or online seminar depending on the situation.

2,750 € per participant

Further information and registration

<https://vdz.info/ptpic>

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#### Trainers

Experienced engineers and highly specialised researchers.

## Process Technology of Cement Production

### C-PTP Module 2

Clinker production is the most energy-intensive process step in cement manufacturing. It can represent up to 90% of the total energy demand in a cement plant and is therefore a main focus not only with regard to cost optimisation and quality improvement of the final product, but also regarding emission control and the reduction of impacts on the environment. VDZ's training will enable participants to obtain a deeper knowledge of the clinker production process and a better understanding of the impacts that daily decisions of plant personnel can make on the plant's performance (quality, electrical energy use, fuel consumption and emissions).



#### Learning objectives

Overview of all relevant aspects of the clinker burning process. Attaining fundamental knowledge of cement manufacturing technology (material and burning technology), including the interconnection of sub-processes, process optimisation, emission abatement and efficient use of energy

#### Target groups

- Young engineers
- Production personnel and technical staff
- Process engineers
- Quality and laboratory managers

#### Topics

##### Material technology

- Characterisation of raw materials
- Clinker formation and clinker phases
- Clinker properties and effects on product qualities

##### Raw material preparation

- Blending beds and homogenisation silos
- Raw meal uniformity and quality control

##### Clinker production and burning technology

- Preheater, calciner, rotary kiln, burner, cooler
- Clinker burning reactions
- Alternative fuels and effects on burning process
- Circulation phenomena (chlorine, sulphur, alkalis, etc.)
- Energy efficiency

**23 - 27 January 2023**

Location: Duesseldorf, VDZ

Five days classroom training (6 hours per day) or online seminar depending on the situation.

2,750 € per participant

Further information and registration:

<https://vdz.info/ptpic>

Environment and emissions abatement (dust, NO<sub>x</sub>, SO<sub>2</sub>, organics, trace elements, etc.)

- Emission monitoring
- Emission abatement techniques

Refractories

#### Methods

Presentations, interactive exercises, group discussion, experience exchange, practical exercises, final exam (if requested).

#### Trainers

Experienced engineers and highly specialised researchers.

#### Certificate

The participants will receive a certificate of attendance.

## Basic Course Process Control

**C-Sib** The SIMULEX® cement plant simulator for training plant supervisors, foremen, production personnel, control room operators and young engineers was developed by KHD Humboldt Wedag AG in cooperation with VDZ. For over ten years VDZ has been using the simulator within the framework of training courses and has been continually supporting the further development of the system with practical input from the industry. The simulator provides a realistic reconstruction of a production plant with a state-of-the-art supervisory control and data acquisition system (SCADA).




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### Learning objectives

- Comprehensive knowledge of the plant control system in general and the main control circuits in particular.
- Better understanding of how the various sub-processes in the cement plant are interconnected.
- Understanding of the main control circuits in order to reach and maintain target values (e.g. energy consumption).
- Capability to react to process disturbances in a proper way and to develop a long-term control strategy.

### Target groups

- Production personnel
- Control room operators
- Young engineers

### Topics

- Heating up and operating the kiln
- Operation of the raw, cement and coal mills
- Optimising production
- Managing process disturbances and special situations

### Methods

Presentations, interactive exercises, scenario-based training using the simulator, team work, group discussion.

### Trainers

The training is led by highly skilled and experienced engineers.

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### Certificate

The participants will receive a certificate of attendance.

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**6 - 9 February 2023**

Location: Duesseldorf VDZ

2,200 € per participant

We invite you to a joint evening event and dinner on the second day of the course

Further details and registration  
<https://vdz.info/bcpc>

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## Plant Maintenance and Refractories Course

**C-PMR** The VDZ Plant Maintenance and Refractories Course covers all topics concerning the high efficiency and availability of a cement plant's key machinery. Measurement of rotary kilns and ball mills as well as independent expertise in mechanical maintenance and inspections are also among the major aspects. We provide an extensive know-how transfer on high quality refractory kiln brick lining materials and installation including their relation to mechanical failure.




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### Learning objectives

Comprehensive knowledge of practical preventive maintenance solutions.

### Target groups

- Maintenance managers and planners
- Maintenance staff
- Engineers
- Supervisors
- Team leader mechanics

### Topics

- Theoretical and practical maintenance inspection and measurement solutions
- Open gear lubrication and application
- Online machinery diagnostic and vibration analysis
- Necessity of non-distortion testing (NDT) and analysis
- Refractory material and installation

### Methods

Presentations, hands-on practical inspection training, team work, group discussion.

### Trainers

The training is led by highly skilled and experienced engineers and external experts.

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### Certificate

The participants will receive a certificate of attendance.

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**4 - 8 September 2023**

Location: Cement plant in Germany  
Refratechnik Goettingen

2,750 € per participant

We invite you to a joint evening event and dinner on the second day of the course.

Further information and registration:

<https://vdz.info/pmrc>

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## Crash Course for Young Engineers and Young Scientists

**W-CYE** The cement industry provides excellent job opportunities for young engineers or and young scientists. Training schemes introduce these new employees to cement technology, taking their different professional backgrounds into account. This training course provides an one-week in-depth training session which covers all relevant aspects of clinker and cement technology production including chemistry, mineralogy and environmental aspects. Quality control assurance as well as the cement performance of cement in mortar and concrete will also be addressed.




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### Learning objectives

Overview of all relevant aspects of the cement manufacturing process.

### Target groups

- Recently recruited young engineers
- Skilled specialists at the beginning of their professional careers
- Newcomers in the cement industry

### Topics

Raw materials handling

Clinker production

- Main components of the rotary kiln plant
- Raw materials and fuels
- Burning conditions and their impact on clinker performance

Cement production

- Raw materials and cement grinding
- Common grinding systems
- Particle size distribution and product quality

Chemistry and mineralogy

- Clinker formation and clinker phases
- Hydration of cement

Concrete technology

- Mortar and concrete characteristics
- Strength and durability of concrete
- Role of admixtures in modern concrete production

Environmental issues

- Energy consumption
- Emissions / Emission abatement

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**13 - 17 November 2023**

Location: Duesseldorf VDZ

2,750 € per participant

We invite you to a joint evening event and dinner on the second day of the course.

Further information and registration:

<https://vdz.info/ccyes>

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Product quality assurance

- Quality control systems
- Cement standards
- Physical and chemical testing of cement

### Methods

Presentations, interactive exercises, group discussion, experience exchange, practical exercises.

### Trainers

Experienced engineers and highly specialised researchers.

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### Certificate

The participants will receive a certificate of attendance.

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## Customised Training

Besides our open training courses, we offer a wide range of customised training courses, seminars and workshops. During over 50 years' teaching activity we have conducted numerous tailor-made training courses and seminars for cement producers and national or international organisations around the globe. The biggest advantage of this kind of training is that the topics, duration and the level of difficulty can be tailored to fit the customer's needs to provide maximum practical benefit.




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### Target groups

- Production personnel
- Laboratory managers
- Qualified cement plant specialists
- Young and experienced engineers
- Managers and decision makers in the cement industry

### Topics (examples)

- Basic raw material preparation and homogenisation
- Basic/Advanced training in clinker production
- Basic training in alternative fuels and raw materials
- Advanced training in resources and energy efficiency
- Basic training in BAT, e.g. burners, grinding plants
- Basic cement chemistry and mineralogy training industrie
- Basic/Advanced training in grinding technologies
- Energy efficiency
- Measurement techniques and process automation
- State-of-the-art technologies in environmental protection, e.g. dust, CO<sub>2</sub>, SO<sub>2</sub>, NO<sub>x</sub>, trace elements
- Advanced training in energy consumption and management
- Basic training in emission abatement
- Basic/Advanced cement plant maintenance training
- Basic product quality and quality management training
- Advanced training on quality assurance and European standards (e.g., EN 196)
- Basic training in XRF analysis
- Basic training in technical and others

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### Certificate

The participants will receive a certificate of attendance.

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### On request

Costs depend on topic, duration and location.

Number of participants (min. - max.) 10 – 20

Further information:

<https://vdz.info/ctcaw>

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Almost all in this flyer listed seminars can be booked as inhouse trainings.

### Duration

From one day to several weeks. Final tests can be offered on request.

### Trainers

The training is led by highly skilled and experienced engineers. Depending on the topic external experts will be involved.

## VDZ Learning Platform

**E-LPF** In addition to VDZ's online courses on cement production, the learning platform "cement-academy.org" also contains courses on concrete technology topics, with almost 70 different online courses on offer.

The online courses are practical, up-to-date and multimedia-based! In addition to texts, images and videos, they offer in particular interesting animations in order to make complex issues easier to understand and enable plants to be operated in a safer and more environmentally friendly way.

In final questions and tests, participants have the opportunity to check their knowledge and close any gaps. When a test has been successfully completed, the participants automatically receive a corresponding certificate as confirmation.




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### Target groups

- Industrial-technical employees
- Apprentices and trainers
- Young engineers
- Employees from the supplier industry

### Topics

#### Cement Production

- Raw material extraction and handling
- Clinker and cement production
- Loading, packaging and transportation
- General plant equipment
- Environmental protection
- Quality control

#### Concrete technology

- Concrete technology basics
- Fresh and hardened concrete
- Cement application
- Concrete admixtures

### Methods

Time and location-independent network-based learning.

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### Prices

1,500 € set-up fee for new customers

650 € single license (min. 3)

2,850 € license for 5 learners

4,900 € license for 10 learners

Further information:

<https://cement-academy.org>

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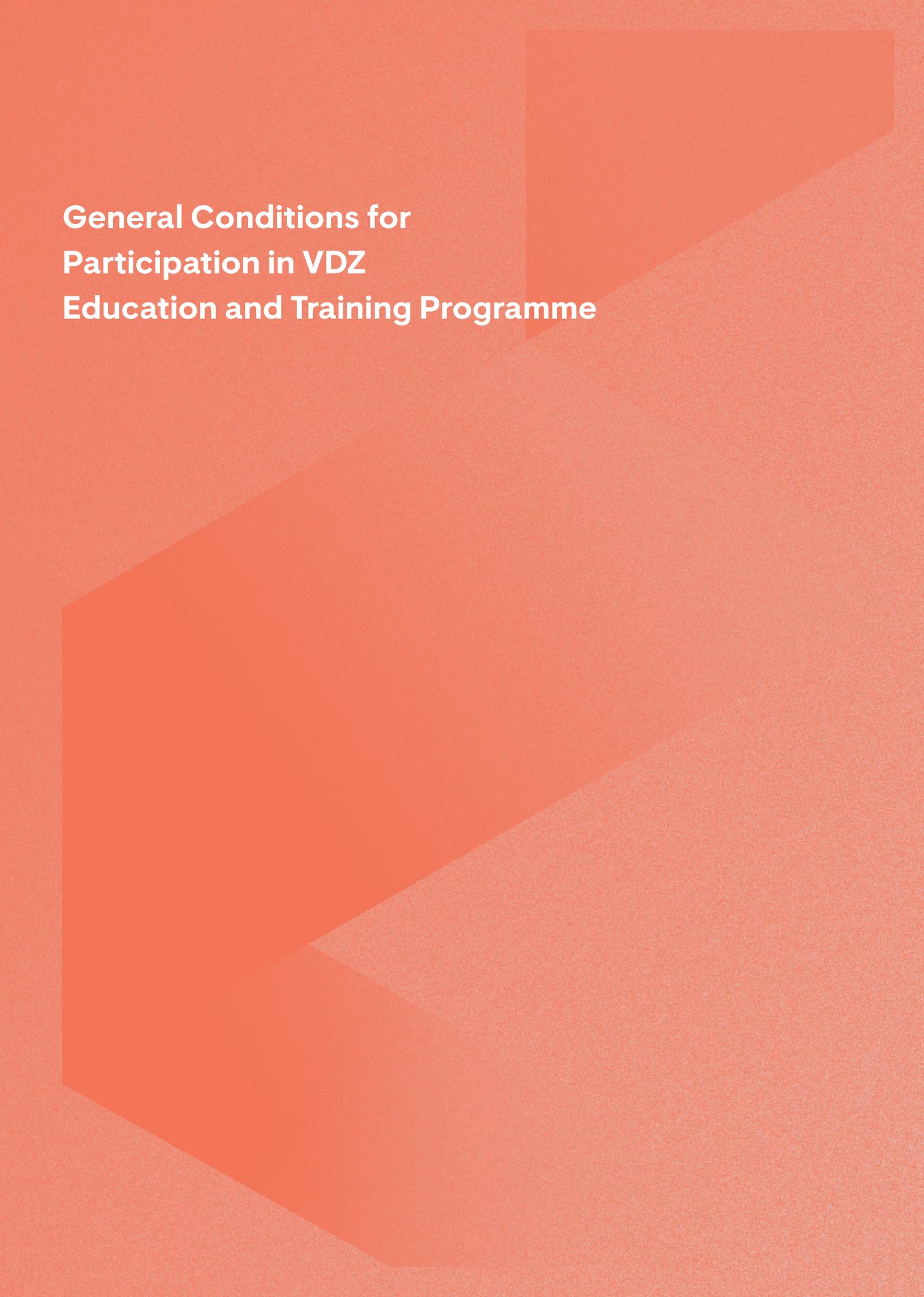


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### Certificate

After successfully completed computer-based test an automatically generated confirmation can be downloaded for each online course.

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**General Conditions for  
Participation in VDZ  
Education and Training Programme**

## **Registration**

Registrations can only be made online via the VDZ website [www.vdz-online.de/en/training](http://www.vdz-online.de/en/training). All current registration deadlines are shown on the website. Participants will receive written confirmation of their registration.

## **Participation fee**

The participation fee includes training sessions, training course documentation, lunches, beverages and coffee breaks during the training sessions, one social event and presentation of certificates. The participation fee also includes the services that are listed in the respective descriptions of the training courses and seminars. If not stated differently, the general regulations under “Accommodation” apply.

## **VAT applicability:**

Invoices issued to recipients in Germany: The standard German rate of VAT, currently 19%, will be applied.

Invoices issued to recipients in other EU countries: VAT will not be applied, if the recipient provides a valid VAT registration number (reverse charge rule according to Art. 196, 205 EU-Directive 2006/112).

Invoices issued to recipients in non-EU countries: VAT will not be applied. A certificate of tax residence is required. The above-mentioned VAT application rules apply to participation in VDZ seminars and training courses only.

## **Accommodation**

If not stated otherwise in the descriptions of the courses, accommodation as well as the participants' travel costs are not included in the participation fee. VDZ will provide hotel recommendations, but the participants have to book their hotel accommodation by themselves. In the event of cancellation of a room reservation the terms and conditions of the hotel apply.

## **Payment**

Participants will receive an invoice (after registration) which is payable immediately upon receipt by bank transfer or cheque. Payment will be accepted in Euros only.

## **Cancellations by VDZ**

If an event is cancelled by VDZ, participants are entitled to a full refund of their participation fee. If one of courses, training and seminars is cancelled, participants will be informed by VDZ at least 4 weeks prior to the first day of the training.

## **Cancellations by the customer**

Participation fee will be refunded for cancellations made in writing up to 14 days prior to the event. No refund will be made for cancellations received after this date.

## **Changes and general rules**

VDZ reserves the right to change the course programme and agendas and to cancel events in case of insufficient bookings or other circumstances beyond VDZ's control. VDZ is not responsible for any other loss incurred by a participant as the result of the cancellation or amendment of an event by VDZ. These terms and conditions are governed by German law.

Duesseldorf, December 2021

## Impressions

VDZ conducts its trainings at various locations: at VDZ in Dueseldorf, at selected cement plants in Germany or at VDZ partners' premises.

When planning its trainings VDZ pays great attention to the timeliness and urgency of the topic as well as the relevance for the praxis of each training or seminar.

Trainings are conducted by experienced lecturers because the learning success and the satisfaction of the participants are very important for us.

Further information and registration:  
<https://www.vdz-online.de/en/training>



Cement plant visit



Practical exercises in a refractory company



Graduation ceremony in the Foremen Course



Class room training



Visiting VDZ laboratories



Cement plant visit

## Contact

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## Imprint

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Duesseldorf, December 2021

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