

## Customer Training 2019



 ... to passion.

 From curiosity ...



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# Foreword

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Dear Ropeway Professionals,

Top safety, constant availability and optimal comfort are the hallmarks of any Doppelmayr ropeway. Well-trained operating personnel are a must when it comes to making sure it stays that way.

Doppelmayr supports your personnel development by offering courses in Austria and around the globe covering different ropeway types. Our goal is to ensure optimum operation of your ropeway and, at the same time, to keep your running costs to a minimum.

In collaboration with our partner companies, we have put together a comprehensive training program geared to the needs of our customers. Individual training programs can be arranged to address specific requirements.

It would give us great pleasure to welcome you and your team on our courses. We look forward to constructive and motivating training sessions and wish all participants every success.

Sincerely Your Doppelmayr Team

## Lower operating costs through trained personnel

### Ropeway Assistant

The Ropeway Assistant is an electronic spare parts catalog for D-Line and 3S ropeways.

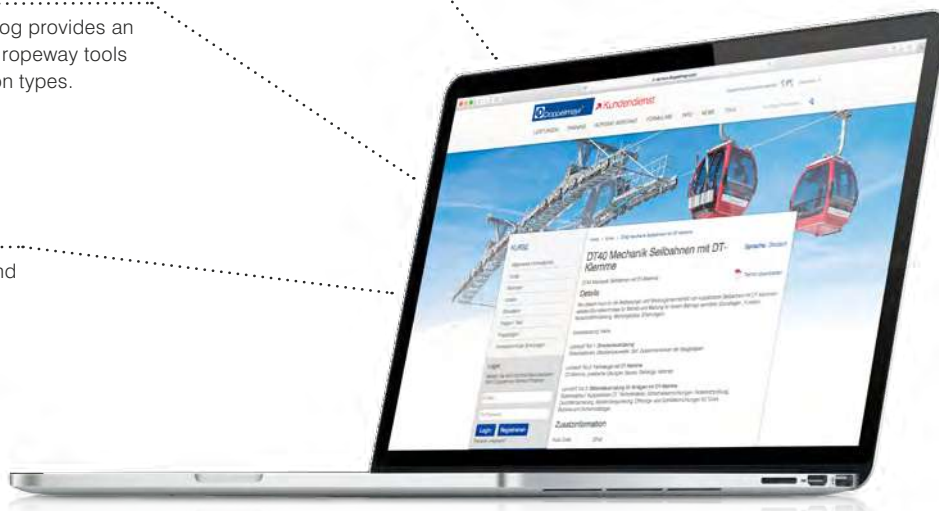
### Electronic Tool Catalog

The Electronic Tool Catalog provides an excellent overview of the ropeway tools available for all installation types.

### Check out and book all training courses online

The entire training program can be found and booked online.

Further information can be found online at: [service.doppelmayr.com](http://service.doppelmayr.com)

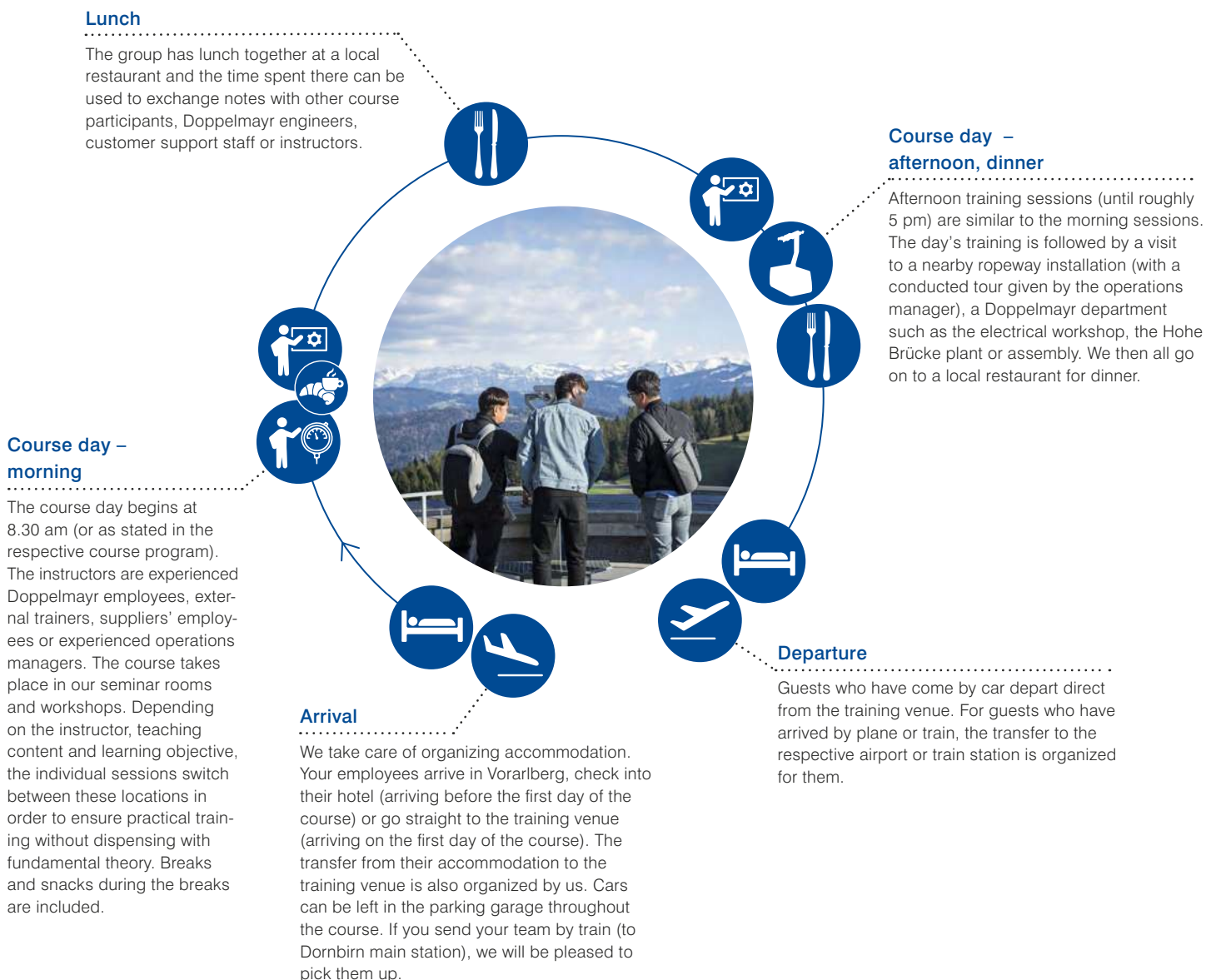


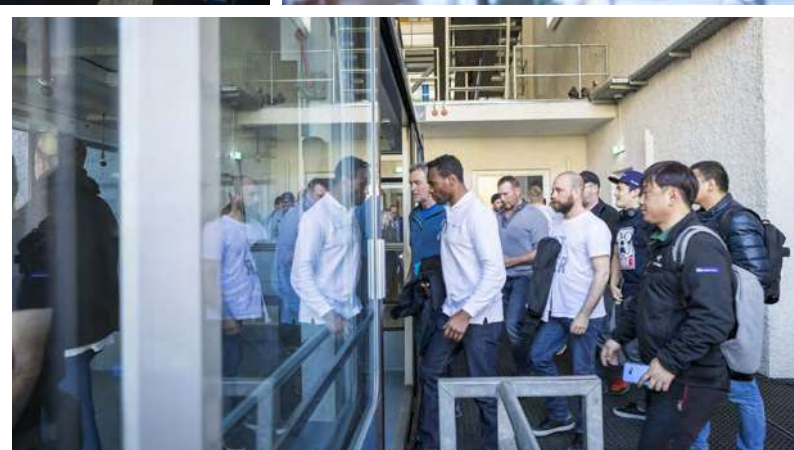
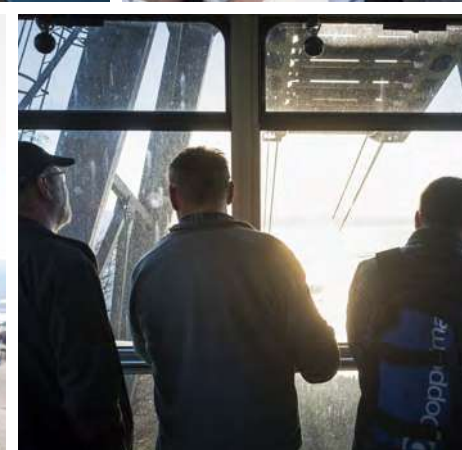
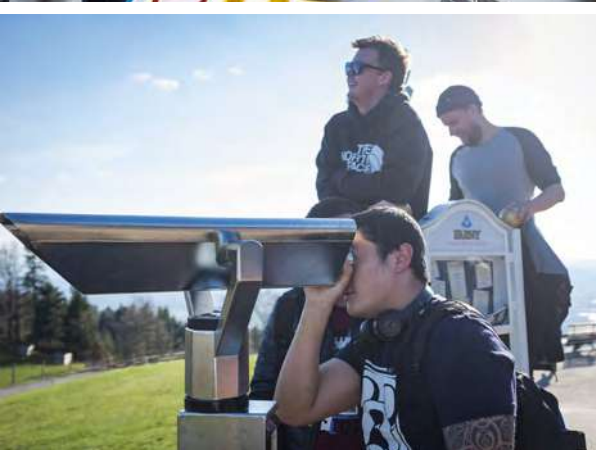


# Visit Arrangements

The motivation for taking part in training courses covers a wide range – new employees or existing employees working on new installations, changes in duties, skill sets or areas of responsibility, a need to brush up knowledge or purely out of interest. Your personnel are always in the best possible hands

when attending our courses, not only in terms of achieving learning objectives but also when it comes to hospitality and support during the training period. For details of how the training courses are organized, please refer to the respective course program.





# EG Basic Ropeway and Electrical Engineering

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This course provides an overview of ropeway engineering. The basic functioning of the various ropeway systems and the fundamentals of electrical engineering will be explained. This basic knowledge is required for the electrical engineering courses ED and EC.

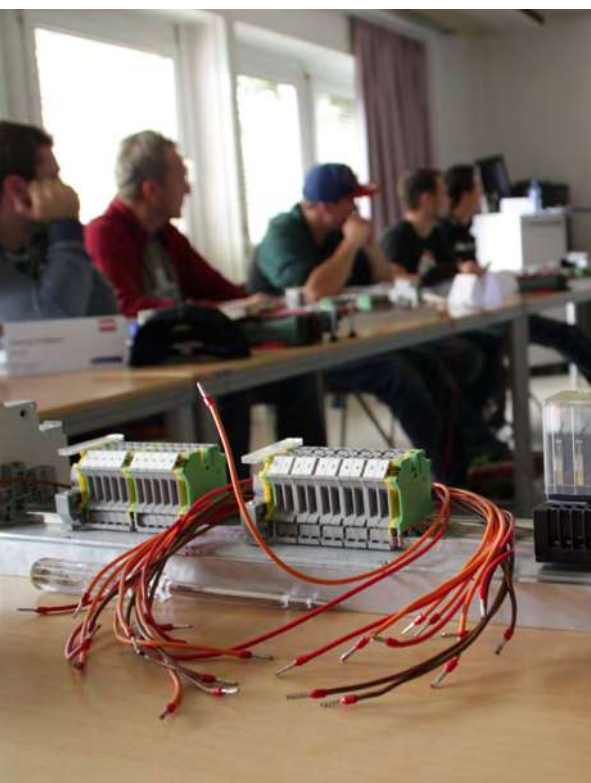
Code	Duration	Start	End
EG 20	4 days	5/13/2019	5/17/2019
DEU		1:45 pm	12:15 pm

Please ask for the training in your language.

**Location:** Wolfurt, Austria

**Please bring:** No special equipment required

**Requirements:** None





### Course Content

- The parts of a ropeway, their role and functions
- Additional equipment for detachable ropeways
- Monitoring to safeguard functions
- Ropeway systems – overview and features
- Electrical power
- Voltage – current – resistance
- Conductors – semiconductors – insulators
- Direct current
- Alternating current – three-phase – frequency
- The dangers of electricity – first aid – safety rules
- Safety measures, circuit breakers
- Energy storage: batteries, capacitors (charging)
- Lightning protection
- Doppelmayr Connect
  - Electrical components and their functions, electrical symbols, circuit diagrams, junction diagrams and parts lists
  - Sensor and actor technology
- Doppelmayr Control System PSS 3000
  - Electrical components and their functions, electrical symbols, circuit diagrams, junction diagrams and parts lists
- Handling measuring devices
- Physical units
- Principle of an electrical circuit
- Ohm's law
- Kirchhoff's law
- Series connection and parallel connection
- Layout of simple circuits
- Electrical components in the control cabinet

# EC Electrical Engineering for Experts – Doppelmayr Connect

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This course is aimed at electrical technicians working on ropeway installations with the Doppelmayr Connect control system. Non-electrical technicians can also take part, provided that they have completed the course "EG Basic Ropeway and Electrical Engineering".

**Location:** Wolfurt, Austria

**Please bring:** No special equipment required

**Requirements:** Knowledge of fundamentals as described in the course "EG Basic Ropeway and Electrical Engineering"

Code	Duration	Start	End
EC 24	3.5 days	6/11/2019	6/14/2019
DEU		1:45 pm	5:00 pm
EC 26	3.5 days	6/24/2019	6/27/2019
DEU		1:45 pm	5:00 pm
EC 35	3.5 days	8/26/2019	8/29/2019
ENG		1:45 pm	5:00 pm

Please ask for the training in your language.

## Course Content

- Layout/overview of the components
- Safety circuits
- Signal transmission
- Start-up conditions
- Data transmission, bus system
- Brake control for stepped and modulated brakes
- Drive control for AC drives
- Distance measurement by means of encoder
- Carrier spacing monitoring
- Anti-collision system
- RF-ID carrier identification, CIS
- Grip force tester, theory and calibration
- Notification Center
- Solution Center
- Deactivation concept
- WLAN and tablet
- Remote maintenance – IT security
- Radio remote control
- PSS 4000



# ED Electrical Engineering for Experts – Doppelmayr Control System PSS 3000

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This course is aimed at electrical technicians working on ropeway installations with the Doppelmayr control system PSS 3000. Non-electrical technicians can take part provided they have completed the course "EG Basic Ropeway and Electrical Engineering".

**Location:** Wolfurt, Austria

**Please bring:** No special equipment required

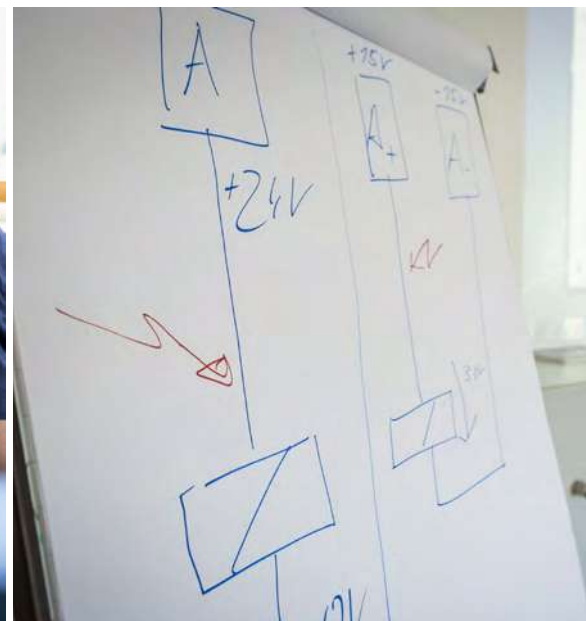
**Requirements:** Knowledge of fundamentals as described in the course "EG Basic Ropeway and Electrical Engineering"

Code	Duration	Start	End
ED 22	2.5 days	5/27/2019	5/29/2019
DEU		1:45 pm	5:00 pm
ED 28	2.5 days	7/8/2019	7/10/2019
POL, CZE, SVK		1:45 pm	5:00 pm
ED 29	2.5 days	7/15/2019	7/17/2019
ESP		1:45 pm	5:00 pm

Please ask for the training in your language.

## Course Content

- Safety circuits
- Signal transmission
- Start-up conditions
- Brake control for stepped and modulated brakes
- Drive control for DC and AC drives
- Distance measurement by means of impulses
- Carrier spacing monitoring
- Anti-collision system
- Carrier marking CIS
- Grip force tester, theory and calibration
- PSS 3000



## EM Maintenance and Operation of Drive Machinery

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The course is organized for maintenance technicians and specialists from ropeway operating companies in collaboration with the company Spalt. Participants gain an overview of the early warning signs of equipment failure and of which measured values, such as vibrations and temperature, can be used for diagnostics.

Spalt is an authorized distributor for ABB motors and ELIN motors, and specializes in the inspection, maintenance, repair and recommissioning of electric motors. Thanks to their many years of experience, this company's experts can provide helpful tips for avoiding failures. The course content relating to SPM monitoring is provided by one of our specialists and an expert from SPM. Please also note the course "OG Condition Monitoring, Lubricants, Oil Analysis, Gear Units", which covers similar topics.

**Location:** Wolfurt, Austria

**Please bring:** No special equipment required

**Requirements:** Basic knowledge of electrical engineering

This course will be held in 2020. The exact details will be given in the next training program. If you are interested in taking part in the course at an earlier date, please contact the Training Department.



#### **Course Content – Part 1**

##### **➤ Basics**

Maintenance concepts, design and function of AC and DC machines, collector and carbon brushes, measuring methods and limit values, step-by-step description of a full machine service

##### **➤ Practical exercises**

Measurement of insulation resistance and winding resistance, surge voltage measurement on a DC machine, measurement of collector concentricity on a DC machine, vibration measurement, laser optical alignment

#### **Course Content – Part 2**

##### **➤ SPM monitoring**

Basics of shock impulse monitoring with the SPM system, how measurements are to be taken and at what intervals, practical exercises on a motor and on our test rig

## DC ABB – Power Converters, DCS 800 Series

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Doppelmayr organizes converter courses in collaboration with ABB for electrical technicians in ropeway operating companies. ABB supplies rectifiers and DC motors for our ropeways. This course deals with the functioning of rectifiers in this series.

**Location:** Wolfurt, Austria

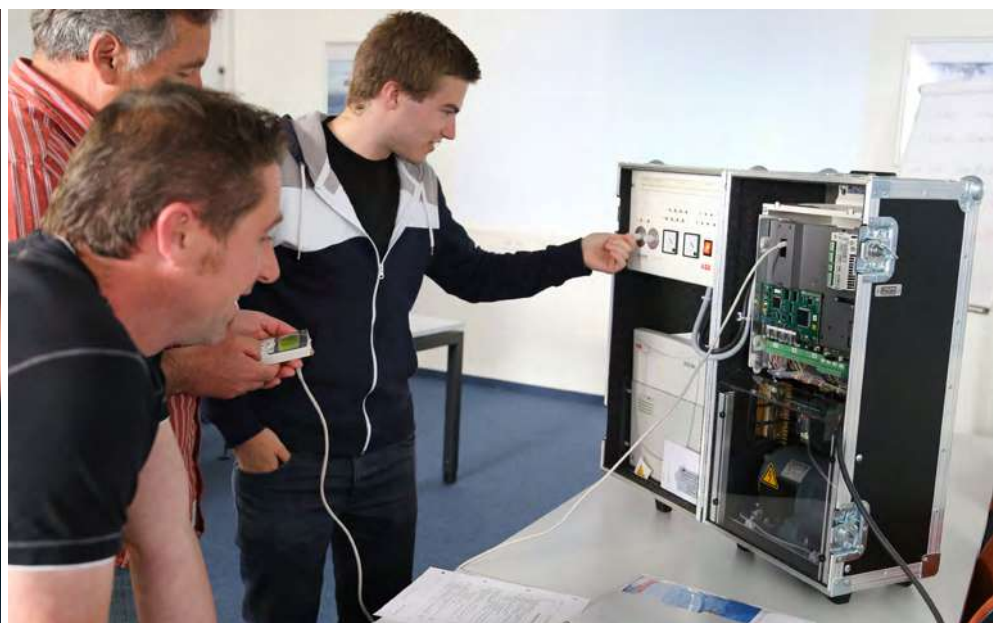
**Please bring:** No special equipment required

**Requirements:** Solid grounding in electrical engineering

### Course Content

- DC as drive component, rectifiers in general
- 2Q/4Q motoring/generating torque
- From AC to DC, firing angle
- Power supply configurations and filter options
- Signal generation and I/Os
- Fault analysis Fxxx, Axxx
- DC motor – handling and maintenance

This course will be held in 2020. The exact details will be given in the next training program. If you are interested in taking part in the course at an earlier date, please contact the Training Department.



# AC AC-Drives, DSD, Frequency Converters

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This course is directed at electrical technicians in ropeway operating companies and is organized in collaboration with the company Danfoss (Vacon), which supplies the frequency converter technology for our ropeways. The course deals with how AC drives function. You will also learn how this technology is used at Doppelmayr.

**Location:** Wolfurt, Austria

**Please bring:** No special equipment required

**Requirements:** Solid grounding in electrical engineering

This course will be held in 2020. The exact details will be given in the next training program. If you are interested in taking part in the course at an earlier date, please contact the Training Department.

## Course Content – Part 1

- Product training on service brakes and emergency brakes
- Bullwheels with bearings and coupling, Doppelmayr Sector Drive (DSD), gear units
- Safety devices for drives, grease

## Course Content – Part 2

- NX series frequency converters
- AC supply, DC supply, power supply modules
- I/O board
- Structure of NX frequency converters and NX DC components
- Control methods of the AC drive open-loop / closed-loop
- Applications at Doppelmayr – permanent-magnet motor
- Standard AC drives – single or tandem operation
- Description of key parameters
- Parameterization of frequency converters using PC program (NC drive)
- I/O boards for NX (programming)
- Explanation of DriveSync
- Practical exercises and operation of devices
- Fault descriptions and analyses



# HY Hydraulics and Valves

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This course is suitable for all operation and maintenance personnel on all ropeway types. Participants acquire the basic knowledge required for the course "HD Advanced Course in Drives and Hydraulics".

**Location:** Wolfurt, Austria

**Please bring:** No special equipment required

**Requirements:** None

Code	Location	Start	End
HY 20	3 days	5/13/2019	5/16/2019
DEU		1:45 pm	12:15 pm

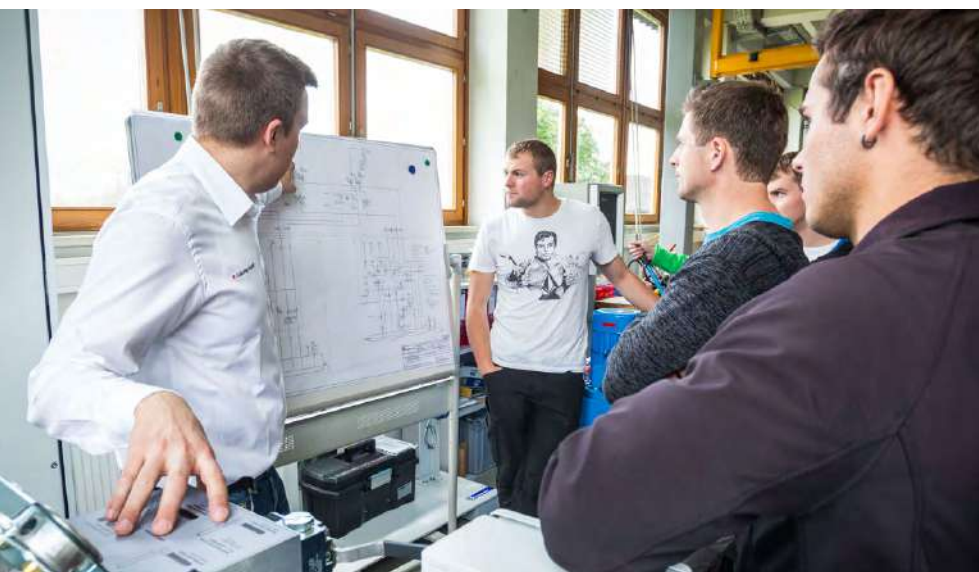
Please ask for the training in your language.

## Course Content

- **What is hydraulics?**  
The basic physics behind hydraulics  
Hydrodynamics, transmission of forces, law of hydraulic flow, fluid flow
- **Hydraulic components 1**  
Pumps, motors, cylinders
- **Hydraulic components 2**  
Pressure valves, control valves, flow valves
- **Hydraulic accessories**
- **Symbols according to DIN ISO 1219**
- **Basic hydraulic circuits**  
Function, design, systematic troubleshooting



# HD Advanced Course in Drives and Hydraulics



Building on from the fundamental principles of hydraulics, Doppelmayr offers the Advanced Course in Drives and Hydraulics for operation and maintenance personnel on the ropeway types fixed-grip and detachable ropeways, 3S ropeways and reversible aerial tramways with Doppelmayr equipment. This course can be followed by type-specific courses (FX, DT, DA, DS, 3S or DL).

**Location:** Wolfurt, Austria

**Please bring:** No special equipment required

**Requirements:** Basic knowledge of hydraulics, ideally completion of the Doppelmayr course "HY Hydraulics and Valves"

Code	Duration	Start	End
HD 21 DEU	2.5 days	5/20/2019 10:00 am	5/22/2019 12:15 pm
HD 23 DEU	2.5 days	6/3/2019 10:00 am	6/5/2019 12:15 pm
HD 27 DEU	2.5 days	7/1/2019 10:00 am	7/3/2019 12:15 pm
HD 34 ENG	2.5 days	8/19/2019 10:00 am	8/21/2019 12:15 pm

## Course Content – Part 1

- **Drives, bullwheels, rope tensioning**  
Product training on service and emergency brakes of all years of construction, bullwheels with bearings and couplings, universal shafts, gearboxes, safety devices for drives, grease

## Course Content – Part 2

- **Hydraulics**  
Reading complex hydraulic circuit diagrams, hydraulic units of different years of construction, troubleshooting on practice units, assessment of oil quality, filtration

Code	Duration	Start	End
HD 36 POL, SVK, CZE	2.5 days	9/2/2019 10:00 am	9/4/2019 12:15 pm
HD 37 ESP	2.5 days	9/9/2019 10:00 am	9/11/2019 12:15 pm
HD 38 DEU	2.5 days	9/16/2019 10:00 am	9/18/2019 12:15 pm
HD 39 FRA	2.5 days	9/23/2019 10:00 am	9/25/2019 12:15 pm
HD 40 DEU	2.5 days	9/30/2019 10:00 am	10/2/2019 12:15 pm

Please ask for the training in your language.

## OG Condition Monitoring, Lubricants, Oil Analysis, Gear Units

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Maintenance technicians and specialists in ropeway operating companies learn how to avoid gearbox damage, maximize uptime, extend maintenance intervals and perform optimal planning of scheduled downtime. They are given an overview of preventive maintenance measures and the early warning signs of equipment failures.

Participants gain an insight into the way in which experts work in the case of oil analyses and gearbox inspections, and find out who they can contact if in doubt. The theoretical principles are illustrated with the help of clear examples from practice. This course is organized in collaboration with the company Oildoc and the David Wimmer firm of consulting engineers.

**Location:** Wolfurt, Austria

**Please bring:** Work overall and work gloves are recommended (soiling)

**Requirements:** Basic knowledge of lubricants and ropeway gear units

Code	Duration	Start	End
OG 28	2.5 days	7/8/2019	7/10/2019
DEU		10:00 am	12:15 pm

Please ask for the training in your language.





#### Course Content – Part 1

- **Condition monitoring using oil analysis**  
Lubrication fundamentals, routine checks and special analyses, scope of inspection
- **How lubrication works**  
Fundamental principles of lubricating film formation, hydrodynamics, hydrostatics, elastohydrodynamic lubrication, key parameters of a lubricant
- **Lubricant fundamentals**  
Introduction, comparison of mineral oils and synthetic oils and their uses, gearbox oils, requirements to be met by lubricants for gear units, manufacturer's approvals, special gearbox oils, additives as ingredients of lubricants for specific applications
- **Taking samples**  
Where, when, how often, containers and equipment, examples, sample form and information on the sample
- **Lubricant in practical use**  
Lubricant aging, changes, causes of contamination, ingress of other oil, mixing
- **Oil analysis – testing methods**  
Methods used to determine wear, contamination, oil condition, relevance and applications of the most important methods
- **Basic principles for evaluation of the analysis results**  
Basic procedure, limit values and trend assessment
- **Oil analysis in practice I**  
Role and properties of gearbox oils, standardized oil types and their applications

#### ➤ Oil analysis in practice II

Role and properties of hydraulic oils, standardized oil types and their applications

#### ➤ Oil analysis in practice III

Role and properties of lubricants for combustion engines, specifications and OEM approvals, limit values, trend analysis

#### ➤ Lubricating grease and condition monitoring

Lubricating grease and lubricating oil – the difference, condition monitoring using grease analysis – testing methods, evaluation of lab reports, discussion

#### Course Content – Part 2

#### ➤ Gearbox technology for ropeways

Maintenance and preventive measures, gearbox lubrication and lubricants as gearbox design criterion and as source of information

#### ➤ Operations-dependent and plannable maintenance time frame

through constant monitoring of operating parameters

#### ➤ Recording and evaluating the signal chain

Plain text recommendations

#### ➤ Endoscopy

Quality of equipment, experience of personnel and top-level evaluation of results

#### ➤ Gearbox inspection: possibilities and limits

Periodic inspections, endoscopy, condition monitoring, various damage scenarios

## CC Combustion Engines

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This course deals with the technology, functioning, maintenance and service of the most common combustion engines used on Doppelmayr ropeways. It focuses in particular on Cummins and Caterpillar engines. The basic functioning of the various combustion engines will be explained along with electrical and mechanical engineering fundamentals.

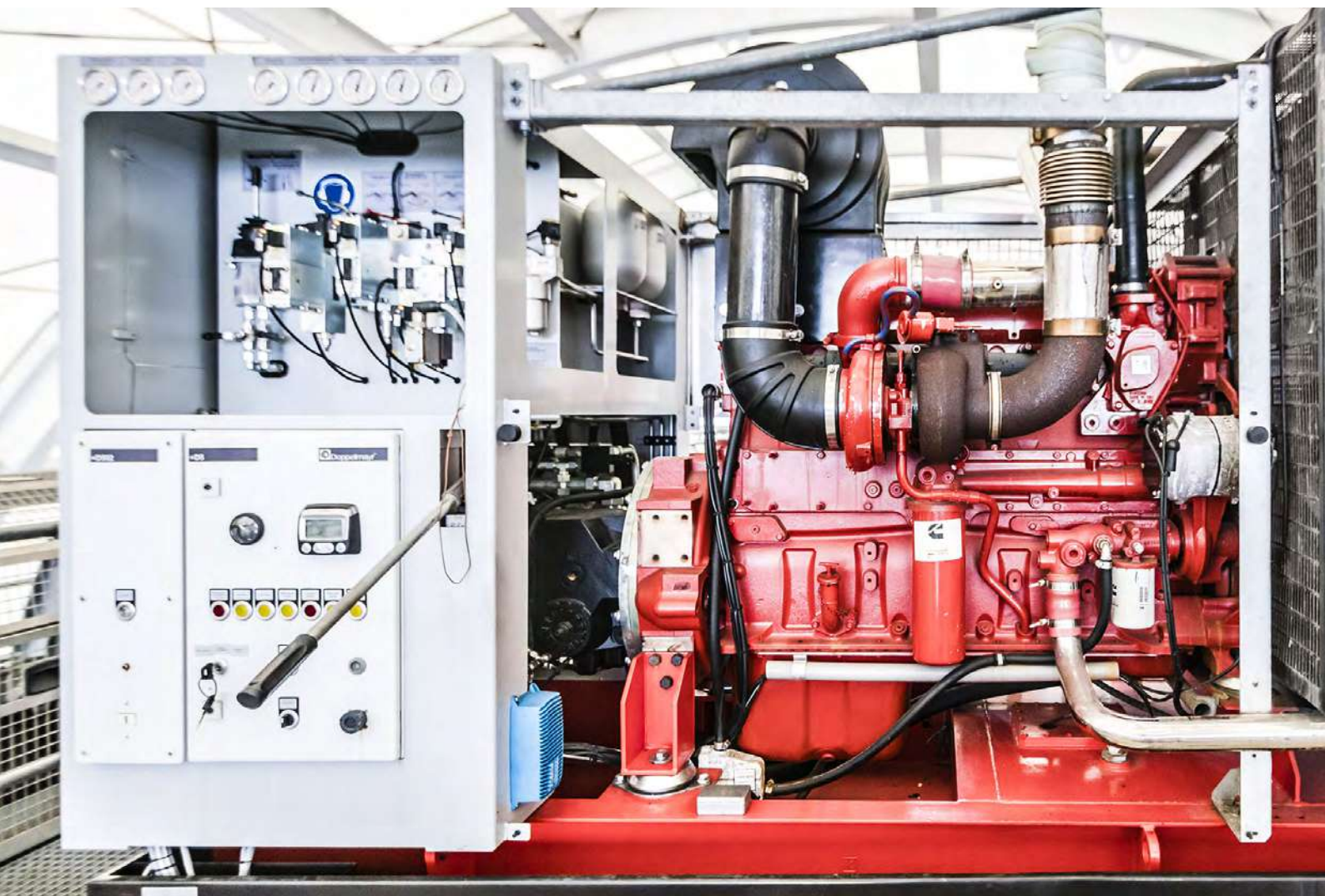
Code	Duration	Start	End
<b>CC 23</b>	0.5 day	6/5/2019	6/5/2019
<b>DEU</b>		1:45 pm	5:00 pm
<b>CC 27</b>	0.5 day	7/3/2019	7/3/2019
<b>DEU</b>		1:45 pm	5:00 pm
<b>CC 40</b>	0.5 day	10/2/2019	10/2/2019
<b>DEU</b>		1:45 pm	5:00 pm

**Location:** Wolfurt, Austria

Please ask for the training in your language.

**Please bring:** No special equipment required

**Requirements:** None



# DDD Doppelmayr Direct Drive

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This course deals with the technology, functioning, maintenance and service of Doppelmayr Direct Drives. It is organized in collaboration with ABB. The basic functioning of the drives will be explained along with electrical and mechanical engineering fundamentals.

**Location:** Wolfurt, Austria

**Please bring:** No special equipment required

**Requirements:** None

## Course Content – Part 1

### ➤ Electrical engineering

Fundamentals, electromechanical compatibility (EMC) – wiring, safety issues, discharge time, maintenance, fan replacement, storage of spare frequency converters, maintaining the charge, readout, operation, user interface, diagnostics assistance, mechanical and structural layout of control cabinets, module replacement in theory and practice, switchover to redundant encoder

## Course Content – Part 2

### ➤ Mechanical engineering

Fundamentals, flywheel masses, brake concept, correct bearing lubrication, maintenance of fluid cooling, risks, voltage at terminals when the system is switched off or in the case of emergency operation

Code	Duration	Start	End
DDD 23	2.5 days	6/3/2019	6/5/2019
DEU		10:00 am	12:15 pm

Please ask for the training in your language.



## GK Surveying of Ropeway Installations

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The course gives operations managers a comprehensive overview of the state of the art in surveying and looks, in particular, at aspects that are specific to ropeways. Subjects covered include surveying fundamentals, different measuring methods and action required as a consequence of the measurements obtained in the case of landslides, permafrost and undercutting.

**Location:** Wolfurt, Austria

**Please bring:** No special equipment required

**Requirements:** Basic knowledge of ropeway engineering

Code	Duration	Start	End
GK 9	2 days	2/25/2019	2/27/2019
DEU		1:45 pm	12:15 pm

Please ask for the training in your language.





## Course Content

### Fundamentals

- Terminology
- Reference systems, scales
- Measuring methods, measuring instruments, accuracies
- The "cadastre" – concept, history
- Country-specific standards – as concept
- Results

### The cadastre

- Fundamentals, projection systems, Survey Act, forest registry, forest clearance permit
- Law and land register (Austria, Germany, Switzerland)
- Cadastral map
- Boundary negotiation, boundary disputes (plot boundary, cadastral community boundaries, national boundary, etc.)
- Easements
- Supervisory authority (district administrative authority, province, ministry)

### Project engineering and building survey

- Land and terrain survey for ropeway project engineering purposes
- Stakeout of the projected locations for structures, pegs, report
- Additional stabilization of measuring points
- Alignment of foundations, steelwork (entrance beams, supports, mushroom-shaped drive station)

- Alignment of ropeway installation (stations, sheave assemblies)
- Control survey (initial survey and follow-up survey) of completed structures

### Operations-related survey and special features

- Design of suitable measuring points
- Ground movements, subsidence, slope discontinuity, geology, permafrost
- Ski trail planning, trail lengths
- Ground compensation
- GIS
- Snow management
- Effects of solar radiation on towers
- Additional benefits of geodata (geology, geomorphology, etc.)
- Geodetic monitoring
- Wear (sheave assembly)
- Inclination of sheave assembly to compensate for subsidence



# RS Rope Function and Maintenance

For advanced maintenance technicians and specialists in ropeway operating companies, this course offers in-depth insights into the function, inspection and maintenance of the steel ropes used on ropeways.

**Location:** Wolfurt, Austria  
Romanshorn, Switzerland

**Please bring:** ID card or passport,  
no special equipment required

**Requirements:** Basic knowledge of the structure  
and function of steel ropes

Code	Duration	Start	End
RS 22	2.5 days	5/27/2019	5/29/2019
DEU		1:45 pm	5:00 pm

Please ask for the training in your language.

## Course Content

- From wire to rope – rope manufacture at Teufelberger
- Technical fundamentals, structure and function of steel ropes (Teufelberger)
- Difference between DSB wire rope requirements and EN 12927
- Rope installation, rope splice, rope maintenance (Fatzer)
- Visit to the Fatzer rope manufacturing facility
- Test rig and testing lab at Fatzer: practical work on the moving rope, rope maintenance, influence of shear force on wire
- Rope testing– Equipment for electromagnetic testing/visual inspection
- Rope damage, damage assessment, workshop, rope repair (Fatzer)
- What does it take to obtain a durable splice? Measures, splice damage, splice lubrication (TVFA – Wolfgang Hinterndorfer)



## RB RPD – Rope Position Monitoring

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Ideal for the operation and maintenance personnel on ropeways with RPD system. Participants learn the fundamentals and are shown how the system works as well as how it is operated and maintained on the basis of practical examples.

### Course Content

- Fundamentals and functions of the RPD system
- Switch setting
- Demonstration on the presentation stand
- Operation of the control system

**Location:** Wolfurt, Austria

**Please bring:** No special equipment required

**Requirements:** None

Code	Duration	Start	End
RB 25	1 day	6/17/2019	6/17/2019
DEU		9:00 am	4:00 pm
RB 28	1 day	7/10/2019	7/11/2019
POL, SVK, CZE		12:15 pm	12:15 pm

Please ask for the training in your language.

# DL Mechanical Course: D-Line



This course is directed at the operation and maintenance personnel working on D-Line generation ropeway installations. It provides basic knowledge for the operation and maintenance of this lift type: fundamentals, function, wear reduction, maintenance tips, experience.

This course can be combined with the HD hydraulics course that takes place immediately before it.

**Location:** Wolfurt, Austria

**Please bring:** Work overall, work gloves recommended (soiling)

**Requirements:** None

Code	Duration	Start	End
DL 21	2 days	5/22/2019	5/24/2019
DEU		1:15 pm	12:15 pm
DL 34	2 days	8/21/2019	8/23/2019
ENG		1:15 pm	12:15 pm
DL 38	2 days	9/18/2019	9/20/2019
DEU		1:15 pm	12:15 pm

Please ask for the training in your language.

## Course Content – Part 1

- » **Line equipment**  
Sheave assemblies, line structures, rope  
Interaction of the assembly groups

## Course Content – Part 2

- » **Carriers with D grips**  
D grip, practical exercises, chairs, hangers, cabins

## Course Content – Part 3

- » **Station equipment for installations with D grips**  
Operation sequence in the stations, opening and closing line, tire conveyors, safety devices, grip force tester, anti-collision system, carrier spacing, opening and closing of carrier doors, bubbles and restraining bars

# DT Mechanical Course: Detachable Ropeways with DT Grips

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This course is directed at the operation and maintenance personnel on detachable ropeways with DT grips. It provides basic knowledge for the operation and maintenance of this lift type: fundamentals, function, wear reduction, maintenance tips, experience. This course can be combined with the HD hydraulics course that takes place immediately before it.

**Location:** Wolfurt, Austria

**Please bring:** Work overall, work gloves recommended (soiling)

**Requirements:** None

## Course Content – Part 1

- **Line equipment**  
Sheave assemblies, line structures, rope  
Interaction of the assembly groups

## Course Content – Part 2

- **Carriers with DT grips**  
DT grip, practical exercises, chairs, hangers, cabins

## Course Content – Part 3

- **Station equipment for installations with DT grips**  
Operation sequence in the stations, opening and closing line for DT grips, tire conveyors, safety devices, grip force tester, anti-collision system, carrier spacing, opening and closing of carrier doors, bubbles and restraining bars

Code	Duration	Start	End
DT 21	2 days	5/22/2019	5/24/2019
DEU		1:15 pm	12:15 pm
DT 23	2 days	6/5/2019	6/7/2019
DEU		1:15 pm	12:15 pm
DT 27	2 days	7/3/2019	7/5/2019
DEU		1:15 pm	12:15 pm
DT 34	2 days	8/21/2019	8/23/2019
ENG		1:15 pm	12:15 pm

Code	Duration	Start	End
DT 36	2 days	9/4/2019	9/6/2019
POL, SVK, CZE		1:15 pm	12:15 pm
DA/DT 37	2 days	9/11/2019	9/13/2019
ESP		1:15 pm	12:15 pm
DT 38	2 days	9/18/2019	9/20/2019
DEU		1:15 pm	12:15 pm

Please ask for the training in your language.



# DA Mechanical Course: Detachable Ropeways with A Grips

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This course is directed at operation and maintenance personnel on detachable ropeways with A grips. Participants acquire basic knowledge for the operation and maintenance of this lift type: fundamentals, function, wear reduction, maintenance tips, experience.

This course can be combined with the HD hydraulics course that takes place immediately before it.

**Location:** Wolfurt, Austria

**Please bring:** Work overall and work gloves recommended (soiling)

**Requirements:** None

Code	Duration	Start	End
DA 27	2 days	7/3/2019	7/5/2019
DEU		1:15 pm	12:15 pm
DA 34	2 days	8/21/2019	8/23/2019
ENG		1:15 pm	12:15 pm
DA/DT 37	2 days	9/11/2019	9/13/2019
ESP		1:15 pm	12:15 pm
DA 39	2 days	9/25/2019	9/27/2019
FRA		1:15 pm	12:15 pm

Please ask for the training in your language.

## Course Content – Part 1

- **Line equipment**  
Sheave assemblies, line structures, rope  
Interaction of the assembly groups

## Course Content – Part 2

- **Carriers with A grips**  
A grip, practical exercises, chairs,  
hangers, cabins

## Course Content – Part 3

- **Station equipment for installations with A grips**  
Operation sequence in stations, opening and closing line for A grips, tire conveyors, safety devices, grip force tester, anti-collision system, carrier spacing, opening and closing of carrier doors, bubbles and restraining bars

# DS Mechanical Course: Detachable Ropeways with DS Grips

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This course is directed at operation and maintenance personnel on detachable ropeways with DS grips. Participants acquire basic knowledge for the operation and maintenance of this lift type: fundamentals, function, wear reduction, maintenance tips, experience.

This course can be combined with the HD hydraulics course that takes place immediately before it.

**Location:** Wolfurt, Austria

**Please bring:** Work overall and work gloves recommended (soiling)

**Requirements:** None

Code	Duration	Start	End
DS 23	2 days	6/5/2019	6/7/2019
DEU		1:15 pm	12:15 pm

Please ask for the training in your language.

## Course Content – Part 1

- **Line equipment**  
Sheave assemblies, line structures, rope  
Interaction of the assembly groups

## Course Content – Part 2

- **Carriers with DS grips**  
DS grip, practical exercises, chairs  
hangers, cabins

## Course Content – Part 3

- **Station equipment for installations with DS grips**  
Operation sequence in stations, opening and closing line for DS grips, tire conveyors, safety devices, grip force tester, anti-collision system, carrier spacing, opening and closing of carrier doors, bubbles and restraining bars





## 3S Mechanical Course: 3S Ropeways

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This course is directed at operation and maintenance personnel on 3S ropeways. Participants acquire basic knowledge for the operation and maintenance of this ropeway type: fundamentals, function, wear reduction, maintenance tips, experience.

This course can be combined with the HD hydraulics course that takes place immediately before it.

**Location:** Wolfurt, Austria

**Please bring:** Work overall, work gloves, safety shoes

**Requirements:** None

This course will be held in 2020. The exact details will be given in the next training program. If you are interested in taking part in the course at an earlier date, please contact the training department.

### Course Content

- Carrier, carriage, detachable grip, practical exercises
- Station equipment
- Track ropes, haul rope, track rope relocation process
- Rope saddles, haul rope sheaves
- Slack carriers for haul rope, relocation process



# FX Mechanical Course: Fixed-Grip Ropeways

This course is directed at operation and maintenance personnel on fixed-grip ropeways. Participants acquire basic knowledge for the operation and maintenance of this lift type: fundamentals, function, wear reduction, maintenance tips, experience. This course can be combined with the HD hydraulics course that takes place immediately before it.

**Location:** Wolfurt, Austria

**Please bring:** Work overall, work gloves recommended (soiling)

**Requirements:** None

## Course Content

### ▸ Line equipment

Sheave assemblies, line structures, rope  
Interaction of the assembly groups

### ▸ Carriers

Fixed grips, chairs, hangers, cabins  
(if necessary), practical exercises

Code	Duration	Beginn	Ende
FX 40	1 day	10/2/2019	10/3/2019
DEU		1:15 pm	12:15 pm

Please ask for the training in your language.



## SL Mechanical and Electrical Course: Surface Lifts

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This course is directed at operation and maintenance personnel on surface lifts. Participants acquire basic knowledge for the operation and maintenance of this lift type from Doppelmayr experts: fundamentals, function, wear reduction, maintenance tips, experience.

**Location:** Wolfurt, Austria

**Please bring:** Work overall and work gloves recommended (soiling)

**Requirements:** None

### Course Content

- Ropes, grips for surface lifts, towing outfits
- Line equipment, tensioning devices, drives
- Function tests, electrical engineering for surface lifts

Code	Duration	Start	End
SL 39	2 days	9/23/2019	9/25/2019
DEU		1:45 pm	12:15 pm

Please ask for the training in your language.

# KA OMEGA IV Cabin Maintenance

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This course is directed at the operation and maintenance personnel on lifts with OMEGA IV cabins. Participants acquire knowledge required for the operation and maintenance of this cabin type: fundamentals, functions, maintenance, inspection and experience from the world of practice.

**Location:** Olten, Switzerland

**Please bring:** Safety shoes, work clothing, passport

**Requirements:** None



## Course Content

### » Fundamentals

Safety components and functions in the cabin, maintenance in accordance with maintenance checklist, replacement of spare parts such as window panes, flip-out and hopper windows, cabin bumpers, opening lever and push-pull cable. Door mechanism, platforms and cabin guide, seat benches, ski protection glazing. Cleaning and care of cabins.

### » Practical exercises

Fitting and removal of suspension rods, door adjustment and checking the door closing force, adjustment of the door opener and checking the door lock, inspection in accordance with instructions, procedure following exceptional occurrences

Code	Duration	Start	End
KA 21	1.5 days	5/20/2019	5/21/2019
DEU		1:45 pm	5:00 pm

Please ask for the training in your language.



Doppelmayr®

Customer Training

Customer Support



## Training Courses in Wolfurt and on Site

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Take advantage of the training courses in Wolfurt and the benefits they bring. Participants can develop direct contact with the Doppelmayr team, get to know Customer Support and the individual points of contact, and have the opportunity to talk to technicians and engineers. Additional highlights include a tour of the plant and manufacturing facilities.

We offer successive courses with varying levels of difficulty. The program depends on the learning objectives, the number of participants and the knowledge available within the team, and will be planned to suit individual requirements. Contact the Training Department for information on available options: [training@doppelmayr.com](mailto:training@doppelmayr.com).

### ➤ BC Basic Training

The "basic" course is conducted on the ropeway and is aimed at the operation and maintenance crew that works on it. The main focus is on operation and inspection requirements to ensure the safe operation of the installation. The course content

covers operation, running, safety devices, general checks, operation and maintenance manual, documentation, tests with and without loads, evacuation and maintenance. The content of the course is geared to your specific ropeway installation.

### ➤ OA Operation Advisory Training

The training deals with the factors to be taken into consideration when starting up and running the specific ropeway installation. We proceed in accordance with the operation manual and provide tips for the correct and safe operation of the ropeway.

### ➤ MA Maintenance Assistance Training

The training deals with the factors to be taken into consideration for service and maintenance of the specific ropeway installation. We proceed in accordance with the operation and maintenance manual, provide theoretical and practical tips, and perform practical exercises on different equipment assemblies. The crew learns how to maintain the installation correctly, safely and efficiently.



# Training Container

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A large proportion of the training courses can also take place on site using the training container, which can be equipped to cater for specific needs. The advantage: no interference with the existing installation. The training container is provided on loan and can be shipped quickly and easily. If you have any questions regarding the container, please contact the training team.



# Costs

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## Attendance fee for courses in Wolfurt

EUR 396 per person per day  
(excl. 20% VAT, w/o accommodation/breakfast)

The attendance fee covers:

- instructors, all course and working documents
- snacks during breaks
- lunch and dinner
- transportation

## Accommodation

You will be accommodated at a three-star hotel in Bregenz or Dornbirn. The price per night with breakfast is EUR 83 (excl. 20% VAT, subject to change).

Please pay for any extras, such as minibar, telephone, internet, etc., when checking out of the hotel. For further information, do not hesitate to contact us.

## Cancellation conditions for courses in Wolfurt

The cancellation charge for the seminar is 50% of the costs up to 7 days prior to course start and 100% of the costs thereafter. If we are able to fill the vacant place with another participant, the cancellation charge will be dropped. With regard to the accommodation, the cancellation conditions of the respective hotel apply.

## Billing

The seminar fees and hotel costs are payable on receipt of the invoice.

## Costs for courses on site

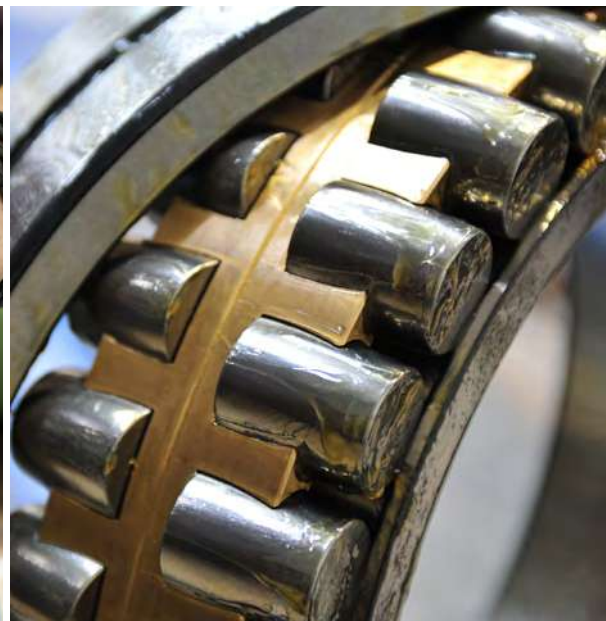
Courses are tailored to the respective learning objectives and requirements. Costs will be billed on the basis of the cost estimate. The costs for courses on site cover the following: course costs per person and day or course costs per day; travel and accommodation costs for trainers and guest speakers; transport and loan charge for the container if booked; where applicable, costs of seminar rooms and translators.

## Cancellation conditions for international courses

The cancellation charge for the course is 50% of the course costs and 100% of the incurred costs (flights, etc.) up to 14 days prior to course start, and 100% thereafter. With regard to the accommodation, the cancellation conditions of the respective hotel apply.

## Important: subsidies

Subsidies may be available in your own country or grants from the EU to finance the course costs, subject to specific conditions. Please contact the appropriate agencies for further information.



# General Information

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## Instructors

The instructors are engineers and technicians from different specialist areas within the Doppelmayr/Garaventa Group or external experts. As well as presenting the technical content of courses, they are also willing to discuss topics and questions raised by the participants.

## Course code

The code used to denote each course is a combination of two letters referring to the type of course, a two-digit number for the calendar week and three letters denoting the course language. The course code can be found alongside the dates in the course description. Please also use this code when registering.

## Minimum number of participants and course cancellations

Minimum number of participants: 8. Courses will be cancelled if fewer than 8 people register for them. For this reason, please check whether the course will be taking place before purchasing flight tickets, etc. and before setting out on your journey.

## Registration and queries

Please register online via our website or by email to [training@doppelmayr.com](mailto:training@doppelmayr.com). Registrations are requested no later than 14 days before the start of the course. Confirmation of registration will be sent by return.

## Ropeway installation number and job descriptions

Please state the job descriptions of the participants and the installation number of the ropeway on which they work. This will enable our instructors to prepare themselves in accordance with your requirements.

## Website

Please refer to our website for course details and the latest information on our courses.  
[service.doppelmayr.com/training](https://service.doppelmayr.com/training)

## Note

Responsibility for ropeway operations lies with the respective operator. Doppelmayr Seilbahnen GmbH accepts no liability whatsoever as a result of the training program and the information provided therein, insofar as no intent or gross negligence exists on the part of Doppelmayr Seilbahnen GmbH. The respective national statutory requirements are to be complied with and are not the subject of this training program.

**We look forward to your participation!**

[service.doppelmayr.com/training](https://service.doppelmayr.com/training)









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