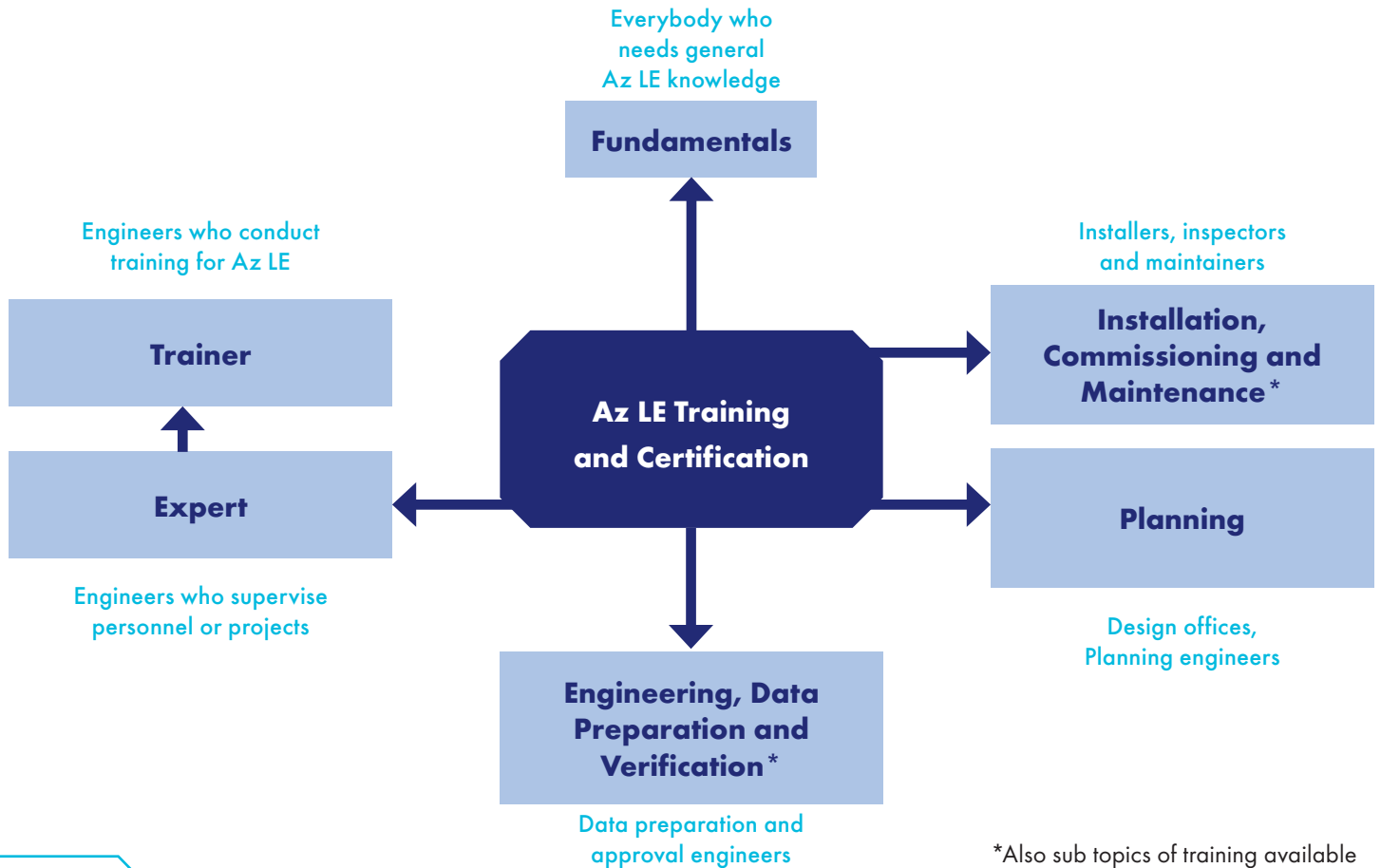


## AXLE COUNTER

### Az LE Training and Certification



# Az LE TRAINING OVERVIEW





**Validity of Certificates: 2 years**

## COURSE OVERVIEW

Course	Duration	Certification	Expert	Trainer
Fundamentals	<b>1 day</b>		<b>7.5 days</b>	<b>5 days</b>
Installation and Commissioning	<b>3 days</b>	<b>+0,5 days</b>		
Maintenance	<b>3 days</b>	<b>+0,5 days</b>		
Installation, Commissioning and Maintenance	<b>4 days</b>	<b>+0,5 days</b>		
Planning	<b>2 days</b>	<b>+0,5 days</b>		
Engineering and Data Preparation	<b>2,5 days</b>	<b>+0,5 days</b>		
Engineering and Data Verification	<b>3 days</b>	<b>+0,5 days</b>		
Engineering, Data Preparation and Verification	<b>3.5 days</b>	<b>+0,5 days</b>		

# COURSES AND CERTIFICATION



## Course target

> Delivery of required basic knowledge for comprehensive system understanding of Az LE



## Duration

> 1 day

## Prerequisites

> Basic railway signalling knowledge

## Audience

> Everybody who needs general Az LE knowledge

## Maximum number of participants

> 12



# Az LE – INSTALLATION AND COMMISSIONING

## Duration

> 3 days

## Prerequisites

> Basic knowledge of signalling engineering and railway operation

## Audience

> Installation and commissioning staff, acceptance inspector

## Maximum number of participants

> 8

## Course target

> Delivery of required professional knowledge for installation and commissioning of Az LE



# Az LE – MAINTENANCE

## Course target

> Delivery of required professional knowledge for maintenance of Az LE



## Duration

> 3 days

## Prerequisites

> Basic knowledge of signalling engineering and railway operation

## Audience

> Maintenance staff

## Maximum number of participants

> 8

Introduction  
Train Detection

1.5 hours

Structure and  
Functions

1.5 hours

Hardware

1.5 hours

Interfaces

1.5 hours

Maintenance-  
related  
Installation &  
Commissioning

6 hours

Preventive and  
Corrective  
Maintenance

6 hours



# Az LE – INSTALLATION, COMMISSIONING AND MAINTENANCE

## Duration

> 4 days

## Prerequisites

> Basic knowledge of signalling engineering and railway operation

## Audience

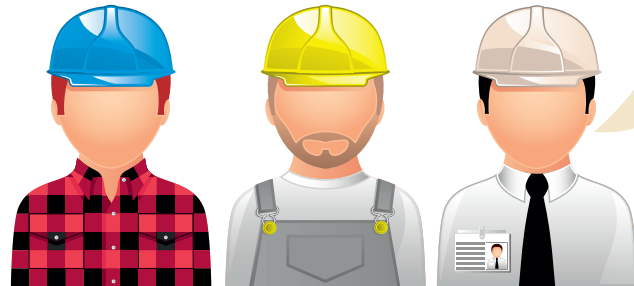
> Installation and commissioning staff, acceptance inspector, maintenance staff

## Maximum number of participants

> 8

## Course target

> Delivery of required professional knowledge for installation, commissioning and maintenance of Az LE



# Az LE – PLANNING

## Course target

> Delivery of required professional knowledge for planning of Az LE



## Duration

> 2 days

## Prerequisites

> Basic knowledge of signalling engineering and railway operation

## Audience

> Design engineers performing the hardware engineering (based on track layouts)

## Maximum number of participants

> 8



## Duration

> 2.5 days

## Prerequisites

- > Basic knowledge of signalling engineering and railway operation
- > Advanced PC skills

## Audience

> Engineering & data preparation staff

## Maximum number of participants

> 8

## Course target

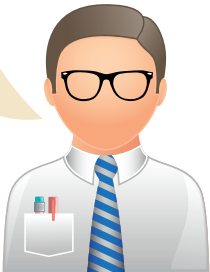
- > Delivery of required professional knowledge for planning and engineering, generation of application documentation and application data of Az LE



# Az LE – ENGINEERING AND DATA VERIFICATION

## Course target

- > Delivery of required professional knowledge for planning and engineering as well as application approval of Az LE



## Duration

- > 3 days

## Prerequisites

- > Basic knowledge of signalling engineering and railway operation
- > Advanced PC skills

## Audience

- > Data verification staff

## Maximum number of participants

- > 8



# Az LE – ENGINEERING, DATA PREPARATION AND DATA VERIFICATION

## Duration

> 3.5 days

## Prerequisites

- > Basic knowledge of signalling engineering and railway operation
- > Advanced PC skills

## Audience

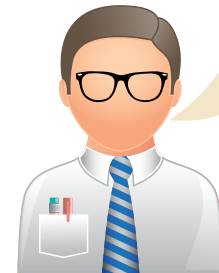
- > Engineering & data preparation staff, data verification staff

## Maximum number of participants

> 8

## Course target

- > Delivery of required professional knowledge for planning and engineering, generation of application documentation and application data, as well as application approval of Az LE



# Az LE – CERTIFICATION

## Certification

- > Training objectives are certified in written and hands-on examinations

## Written Examination

- > Participants have to prove that they have the theoretical background to fulfil certification level
- > Examinations are according to the learning objectives

## Hands-on certification

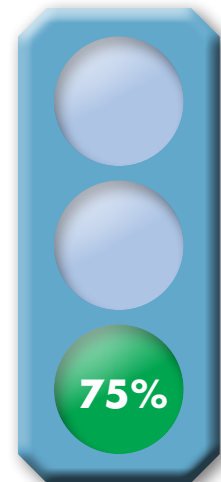
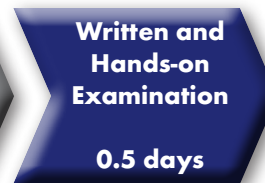
- > Participants have to prove that they are able to complete the practical exercises to fulfil the certification level
- > Examinations are according to the learning objectives

## Duration

- > 0.5 days

## Prerequisites

- > Completion of related course



## Duration

> 7.5 days (including 1 day of certification)

## Prerequisites

- > Basic knowledge of signalling engineering and railway operation
- > Advanced PC skills

## Audience

- > Engineers who supervise personnel or projects and need thorough understanding

## Maximum number of participants

> 4

## Expert Certification

- > Comprehensive knowledge and highly experienced in installation, commissioning and maintenance as well as engineering, data preparation and verification enable engineers to be certified as Az LE Expert



## Trainer certification for Certified Experts

- > **Specific training preparation**  
Supported preparation of test training through mentor
- > **Test teaching**  
With participants unknown to the topic, the designated trainer has to prove teaching skills through delivery of a test course
- > **Debriefing**  
Feedback and wrap-up discussion, graduation

## Duration

> 5 days

## Prerequisites

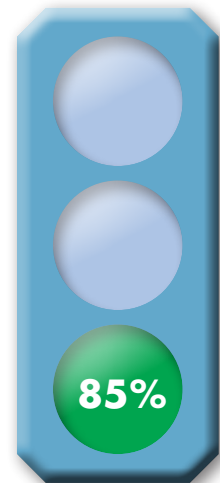
- > Az LE Certified Expert
- > Basics in presentation methods and tendency to free lecture

## Audience

- > Engineers who conduct Az LE training

## Maximum number of participants

> 1





## Validity

> 2 years, project-related, country-related

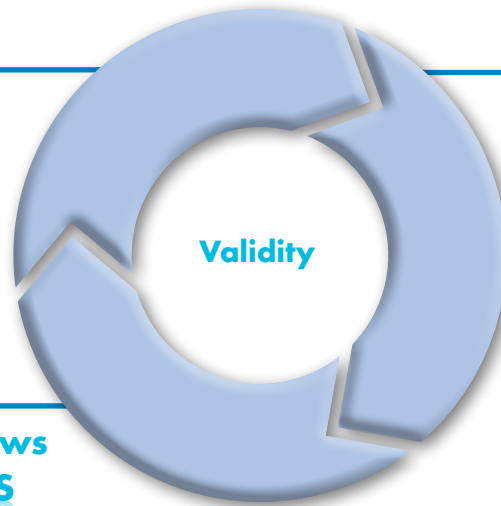
## Validity extension

> Renewal of certification through knowledge review

**Recertification  
when the certification  
expires**

**Certification granted  
after successful  
examination**

**Valid certification allows  
access to *mcp* PRODUCTS**



# RECERTIFICATION AND UPGRADE

## Recertification

> Knowledge review by “Records of Work Experience” and online examination

### Available for:

- > Installation and Commissioning
- > Maintenance
- > Installation, Commissioning and Maintenance
- > Engineering and Data Preparation
- > Engineering and Data Verification
- > Engineering, Data Preparation and Data Verification

## Recertification

### > Certified Expert

2.5 days + 0.5 days of certification

### > Certified Trainer

1.5 days + 0.5 days of certification

## Upgrade Courses

- > Refer to a system upgrade of Az LE; available for all releases
- > Compatibility: course for new release may include previous releases

# COURSE OUTLINE



## Az LE – FUNDAMENTALS

Course reference	KPP6171E
Course language	English or German
Course duration	6 hours (1 day)
Certification	None
Course target	Delivery of required basic knowledge for comprehensive system understanding of Az LE
Training methods	Lecture/presentation, exercises
Max. number of participants	12
Target audience	Everybody who needs general Az LE knowledge

Prerequisites	Basic knowledge of signalling engineering and railway operation is advantageous
Objectives	<p>By the end of the course, participants will be able to:</p> <ul style="list-style-type: none"> <li>• describe the principle of train detection by axle counter systems</li> <li>• identify Az LE in the rail signalling system</li> <li>• describe the layout and the components of Az LE as well as the most important boards and its function</li> </ul>
Course contents	<ul style="list-style-type: none"> <li>• Introduction Az LE</li> <li>• System overview</li> <li>• Functions</li> <li>• Detection point Zp30H/Zp30K</li> <li>• Axle counter evaluator ACE</li> <li>• Axle counter section reset</li> <li>• Interfaces</li> </ul>

## Az LE – INSTALLATION AND COMMISSIONING

Course reference	KPP6172E
Course language	English or German
Course duration	18 hours (3 days)
Certification	3 hours (0.5 days) written and hands-on examination
Course target	Delivery of required professional knowledge for installation and commissioning of Az LE
Training methods	Lecture/presentation, exercises, hands-on practices
Max. number of participants	8
Target audience	Installation and commissioning staff, commissioning manager

Prerequisites	<ul style="list-style-type: none"> <li>• Basic knowledge of signalling engineering is required</li> <li>• Basic knowledge of railway operation is advantageous</li> </ul>
Objectives	<p>By the end of the course, participants will be able to:</p> <ul style="list-style-type: none"> <li>• describe the layout and the components of Az LE and its function</li> <li>• understand operational and technical messages and analyze their causes</li> <li>• analyze relevant safety application conditions and describe related use cases</li> <li>• carry out installation and commissioning</li> <li>• inspect relevant metrics and settings</li> </ul>
Course contents	<ul style="list-style-type: none"> <li>• Fundamentals</li> <li>• Installation and commissioning</li> </ul>

## Az LE – MAINTENANCE

Course reference	KPP6173E
Course language	English or German
Course duration	18 hours (3 days)
Certification	3 hours (0.5 days) written and hands-on examination
Course target	Delivery of required professional knowledge for maintenance of Az LE
Training methods	Lecture/presentation, exercises, hands-on practices
Max. number of participants	8
Target audience	Maintenance staff

Prerequisites	<ul style="list-style-type: none"> <li>• Basic knowledge of signalling engineering is required</li> <li>• Basic knowledge of railway operation is advantageous</li> </ul>
Objectives	<p>By the end of the course, participants will be able to:</p> <ul style="list-style-type: none"> <li>• describe the layout and the components of Az LE and its function</li> <li>• understand operational and technical messages and analyze their causes</li> <li>• analyze relevant safety application conditions and describe related use cases</li> <li>• inspect relevant metrics and settings</li> <li>• carry out maintenance working steps</li> </ul>
Course contents	<ul style="list-style-type: none"> <li>• Fundamentals</li> <li>• Maintenance related installation and commissioning</li> <li>• Preventive and corrective maintenance</li> </ul>

## Az LE – INSTALLATION, COMMISSIONING AND MAINTENANCE

Course reference	KPP6179E
Course language	English or German
Course duration	24 hours (4 days)
Certification	3 hours (0.5 days) written and hands-on examination
Course target	Delivery of required professional knowledge for installation, commissioning and maintenance of Az LE
Training methods	Lecture/presentation, exercises, hands-on practices
Max. number of participants	8

Target audience	Installation and commissioning staff, acceptance inspector, maintenance staff
Prerequisites	<ul style="list-style-type: none"> <li>• Basic knowledge of signalling engineering is required</li> <li>• Basic knowledge of railway operation is advantageous</li> </ul>
Objectives	<p>By the end of the course, participants will be able to:</p> <ul style="list-style-type: none"> <li>• describe the layout and the components of Az LE and its function</li> <li>• understand operational and technical messages and analyze their causes</li> <li>• analyze relevant safety application conditions and describe related use cases</li> <li>• carry out installation and commissioning</li> <li>• inspect relevant metrics and settings</li> <li>• carry out maintenance working steps</li> </ul>
Course contents	<ul style="list-style-type: none"> <li>• Fundamentals</li> <li>• Installation and commissioning</li> <li>• Preventive and corrective maintenance</li> </ul>

## Az LE – PLANNING

Course reference	KPP6174E
Course language	English or German
Course duration	12 hours (2 days)
Certification	3 hours (0.5 days) written examination
Course target	Delivery of required professional knowledge for planning of Az LE
Training methods	Lecture/presentation, exercises
Max. number of participants	8

Target audience	Planning staff
Prerequisites	<ul style="list-style-type: none"> <li>• Basic knowledge of signalling engineering and of railway operation is required</li> </ul>
Objectives	<p>By the end of the course, participants will be able to:</p> <ul style="list-style-type: none"> <li>• describe the layout and the components of Az LE and its function</li> <li>• apply planning according to application rules for planning and project requirements</li> </ul>
Course contents	<ul style="list-style-type: none"> <li>• Fundamentals</li> <li>• Planning</li> </ul>



## Az LE – ENGINEERING AND DATA PREPARATION

Course reference	KPP6175E
Course language	English or German
Course duration	15 hours (2.5 days)
Certification	3 hours (0.5 days) written and hands-on examination
Course target	Delivery of required professional knowledge for planning and engineering, generation of application documentation and application data of Az LE
Training methods	Lecture/presentation, exercises, hands-on practices
Max. number of participants	8
Target audience	Engineering & data preparation staff

Prerequisites	<ul style="list-style-type: none"> <li>• Basic knowledge of signalling engineering and of railway operation is required</li> <li>• Advanced knowledge in using PC is required</li> </ul>
Objectives	<p>By the end of the course, participants will be able to:</p> <ul style="list-style-type: none"> <li>• describe the layout and the components of Az LE and its function</li> <li>• apply hardware and software engineering according to application rules for engineering and project requirements</li> <li>• create program plugs for the ACE according to software engineering rules</li> </ul>
Course contents	<ul style="list-style-type: none"> <li>• Fundamentals</li> <li>• Planning</li> <li>• Hardware configuration</li> <li>• Data preparation</li> </ul>

## Az LE – ENGINEERING AND DATA VERIFICATION

Course reference	KPP6176E
Course language	English or German
Course duration	18 hours (3 days)
Certification	3 hours (0.5 days) written and hands-on examination
Course target	Delivery of required professional knowledge for planning and engineering as well as application approval of Az LE
Training methods	Lecture/presentation, exercises, hands-on practices
Max. number of participants	8
Target audience	Data verification staff

Prerequisites	<ul style="list-style-type: none"> <li>• Basic knowledge of signalling engineering and of railway operation is required</li> <li>• Advanced knowledge in using PC is required</li> </ul>
Objectives	<p>By the end of the course, participants will be able to:</p> <ul style="list-style-type: none"> <li>• describe the layout and the components of Az LE and its function</li> <li>• apply hardware and software engineering according to application rules for engineering and project requirements</li> <li>• check configurations and settings of the Az LE application on conformity with detailed design documents</li> </ul>
Course contents	<ul style="list-style-type: none"> <li>• Fundamentals</li> <li>• Planning</li> <li>• Hardware configuration</li> <li>• Data verification</li> </ul>

# Az LE – ENGINEERING, DATA PREPARATION AND DATA VERIFICATION

Course reference	KPP6177E
Course language	English or German
Course duration	21 hours (3.5 days)
Certification	3 hours (0.5 days) written and hands-on examination
Course target	Delivery of required professional knowledge for planning and engineering, generation of application documentation and application data, as well as application approval of Az LE
Training methods	Lecture/presentation, exercises, hands-on practices
Max. number of participants	8
Target audience	Engineering & data preparation staff, data verification staff

Prerequisites	<ul style="list-style-type: none"> <li>• Basic knowledge of signalling engineering and of railway operation is required</li> <li>• Advanced knowledge in using PC is required</li> </ul>
Objectives	<p>By the end of the course, participants will be able to:</p> <ul style="list-style-type: none"> <li>• describe the layout and the components of Az LE and its function</li> <li>• apply hardware and software engineering according to application rules for engineering and project requirements</li> <li>• create program plugs for the ACE according to software engineering rules</li> <li>• check configurations and settings of the Az LE application on conformity with detailed design documents</li> </ul>
Course contents	<ul style="list-style-type: none"> <li>• Fundamentals</li> <li>• Planning</li> <li>• Hardware configuration</li> <li>• Data preparation and data verification</li> </ul>

## Az LE – CERTIFIED EXPERT

Course reference	KPP6147E
Course language	English or German
Course duration	39 hours (6.5 days)
Certification	6 hours (1 day) written and hands-on examination
Course target	Delivery of required professional knowledge for installation, commissioning, maintenance, planning and engineering, generation of application documentation and application data, as well as application approval of Az LE
Training methods	Lecture/presentation, exercises, hands-on practices
Max. number of participants	4
Target audience	Engineers who supervise personnel or projects and need thorough understanding

Prerequisites	<ul style="list-style-type: none"> <li>• Basic knowledge of signalling engineering and of railway operation is required</li> <li>• Advanced knowledge in using PC</li> </ul>
Objectives	<p>By the end of the course, participants will be able to:</p> <ul style="list-style-type: none"> <li>• describe the layout and the components of Az LE and its function</li> <li>• apply planning and engineering according to application rules for engineering and project requirements</li> <li>• create program plugs for the ACE according to software engineering rules</li> <li>• check configurations and settings of the Az LE application on conformity with detailed design documents</li> <li>• analyze safety application conditions and describe related use cases</li> <li>• carry out installation, commissioning and maintenance</li> <li>• understand operational and technical messages and analyze their causes</li> <li>• apply advanced engineering and maintenance</li> </ul>
Course contents	<ul style="list-style-type: none"> <li>• Fundamentals</li> <li>• Planning</li> <li>• Hardware configuration</li> <li>• Data Preparation and Verification</li> <li>• Installation and commissioning</li> <li>• Preventive and corrective maintenance</li> </ul>

Course reference	KPP6167E
Course language	English or German
Course duration	18 hours (3 days)
Certification	12 hours (2 days) test teaching
Course target	Delivery of required professional knowledge for teaching fundamentals, installation, commissioning and maintenance of Az LE
Training methods	Lecture/presentation, exercises
Max. number of participants	1

Target audience	Engineers who conduct training for Az LE
Prerequisites	<ul style="list-style-type: none"> <li>• Successful Az LE expert Certification</li> <li>• Basics in presentation methods and tendency to free lecture are advantageous</li> </ul>
Objectives	<p>By the end of the course, participants will be able to:</p> <ul style="list-style-type: none"> <li>• teach fundamentals, installation, commissioning and maintenance of Az LE</li> </ul>
Course contents	<ul style="list-style-type: none"> <li>• Basics of adult education</li> <li>• Test teaching in front of real audience</li> <li>• Feed back analysis</li> <li>• Trainer coaching</li> </ul>

## Az LE – RECERTIFICATION COURSES\*

Course reference	KPP61XXE	Max. number of participants	4 (Certification Expert) / 1 (Certified Trainer)
Course language	English or German	Target audience	Staff who need to refresh their Az LE knowledge
Course duration	9 to 15 hours (1.5 to 2.5 days)	Prerequisites	Participation in the course "Az LE Certified Expert" or "Az LE Certified Trainer"
Certification	3 hours (0.5 days) written and hands-on examination	Objectives	By the end of the course, participants will be able to: <ul style="list-style-type: none"> <li>• fulfill their required job tasks with the help of the refreshed Az LE knowledge</li> </ul>
Course target	Delivery of required refreshed professional knowledge for installation, commissioning, maintenance, planning and engineering, generation of application documentation and application data, as well as application approval of Az LE	Course contents	Related to the specific recertification course
Training methods	Lecture/presentation, exercises, hands-on practices		

\* For other courses than "Az LE Certified Expert" or "Az LE Certified Trainer" recertification is performed by "Records of Work Experience" and online examination.

Course reference	KPP6178E
Course language	English or German
Course duration	15 hours (2.5 days)
Certification	None
Course target	Delivery of required upgraded professional knowledge for installation, commissioning, maintenance, planning and engineering, generation of application documentation and application data, as well as application approval of Az LE
Training methods	Lecture/presentation, exercises, hands-on practices
Max. number of participants	8
Target audience	Staff who need to refresh their Az LE knowledge

Prerequisites	<p>Participation in courses</p> <p>“Az LE Installation and Commissioning”</p> <p>“Az LE Maintenance”</p> <p>“Az LE Installation, Commissioning and Maintenance”</p> <p>“Az LE Planning”</p> <p>“Az LE Engineering and Data Preparation”</p> <p>“Az LE Engineering and Data Verification”</p> <p>“Az LE Engineering, Data Preparation and Data Verification”</p> <p>“Az LE Certified Expert” or</p> <p>“Az LE Certified Trainer”</p>
Objectives	<p>By the end of the course, participants will be able to:</p> <ul style="list-style-type: none"> <li>• understand the difference between latest and previous releases</li> <li>• understand and apply changes in their job tasks due to the release changes</li> </ul>
Course contents	Related to the specific upgrade course





**Impressum**

Az LE Training and Certification

**Publisher:**

Thales Transportation Systems GmbH  
Thalesplatz 1, 71254 Ditzingen

**Editorial:**

Product Business, Thales Deutschland

**Photos:**

Cover: Dirk Kittelberger  
Bild auf S.5: Fotolia  
Bild auf S.19: Thomas Mack  
Bild auf S.32: Dirk Kittelberger

**Layout:**

Elanders Germany GmbH, Waiblingen  
[www.elanders-germany.com](http://www.elanders-germany.com)

**Print:**

Elanders Germany GmbH, Waiblingen  
Printed in Germany

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**Edition June 2016**