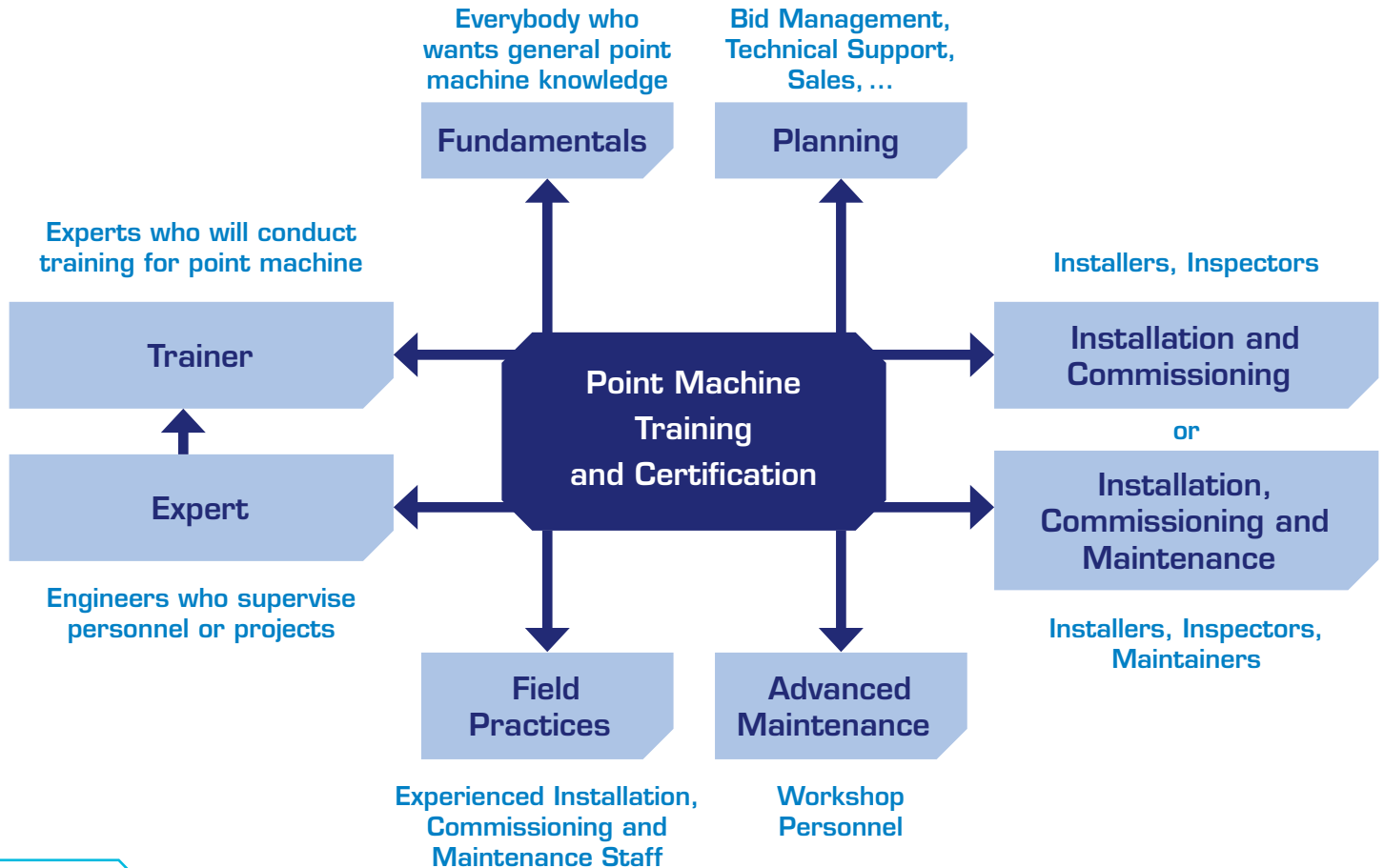


## Point Machine Training and Certification



# Point Machine Training Needs





Validity of certificates: 2 years

# Courses and Certification Level – Overview

Course	Participant	Certificate	Expert	Trainer
Fundamentals	1 day		<b>8 days</b>	<b>5 days</b>
Planning	2 days	+1 day		
Installation and Commissioning	3 days	+1 day		
Installation, Commissioning and Maintenance	4 days	+1 day		
Advanced Maintenance	3 days	+1 day		
Field Practices	2 days			

# Point Machine Types & Characteristics



## Point Machine Types & Characteristics

Characteristics	L700H	L710H	L910H	L826H
Trailable	✓	✓	✓	✓
Non-trailable	✓	✓	✓	✓
Installation between the rails				✓
Electro-Hydraulic Drive	✓	✓	✓	✓
Adjustable throwing stroke				✓
Adjustable throwing force				✓
Internal lock		✓	✓	
External lock	✓			✓

# Courses and Certification



# Point Machine – Fundamentals

## Learning objectives

- > Understand the basics of point machines
- > Understand the electrical circuits
- > Understand the hydraulic system
- > Understand the mechanics



## Duration

- > 1 day

## Prerequisites

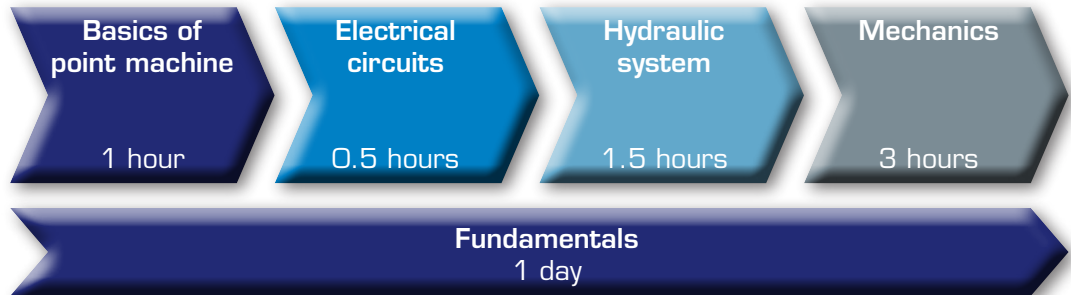
- > Basic railway signalling knowledge

## Audience

- > Everybody who wants general point machine knowledge

## Maximum number of participants

- > 16





## Duration

> 2 days

## Prerequisites

> Basic railway signalling knowledge

## Audience

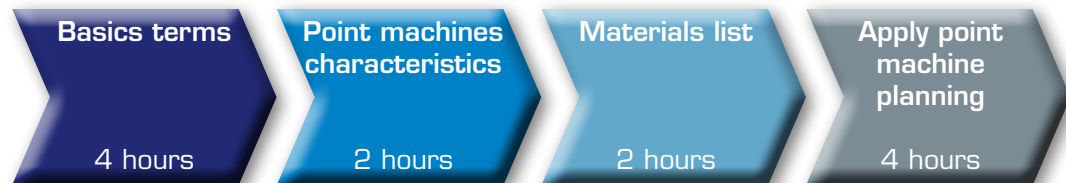
> Bid Management, Technical Support, Sales, ...

## Maximum number of participants

> 16

## Learning objectives

- > Understand the basics terms
- > Understand point machine characteristics
- > Know-how to calculate material lists
- > Apply point machine planning to a situation given



# Point Machine – Installation and Commissioning

## Learning objectives

- > Understand the fundamentals of point machines
- > Applying installation and commissioning



## Duration

- > 3 days

## Prerequisites

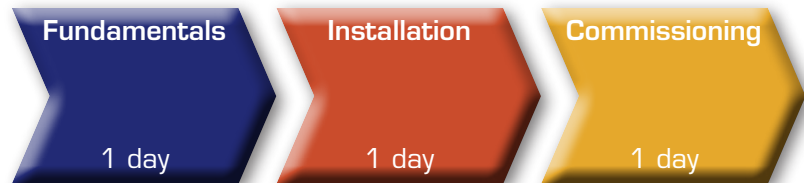
- > Basic railway signalling knowledge, safety for work gangs

## Audience

- > Installers, inspectors

## Maximum number of participants

- > 8



# Point Machine – Installation, Commissioning and Maintenance

## Duration

> 4 days

## Prerequisites

> Basic railway signalling knowledge, safety for work gangs

## Audience

> Installers, inspectors, maintainers

## Maximum number of participants

> 8

## Learning objectives

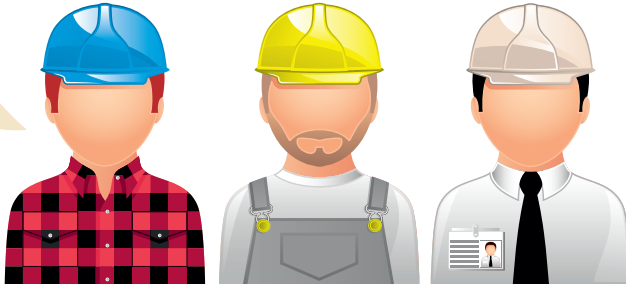
- > Understand the fundamentals of point machines
- > Applying installation and commissioning
- > Applying preventive and corrective maintenance



# Point Machine – Advanced Maintenance\*

## Learning objectives

- > Understand the fundamentals of point machines
- > Applying advanced maintenance



## Duration

- > 3 days

## Prerequisites

- > Basic railway signalling knowledge, safety for work

## Audience

- > Workshop personnel

## Maximum number of participants

- > 8

Fundamentals

1 day

Advanced  
Maintenance

2 days

# Point Machine – Field Practices\*

## Duration

- > 2 days

## Prerequisites

- > Basic railway signalling knowledge, safety for work gangs and point machine

## Audience

- > Installation, commissioning and maintenance personal and inspection personal

## Maximum number of participants

- > 8

## Learning objectives

- > Share field practices
- > Practical instructions additional to manual
- > Tips and hints for faster maintenance
- > Knowing preventive and corrective maintenance



\* Minimum one year experience with the product

# Point Machine – Certification

## Theoretical certification

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

## Hands-on certification

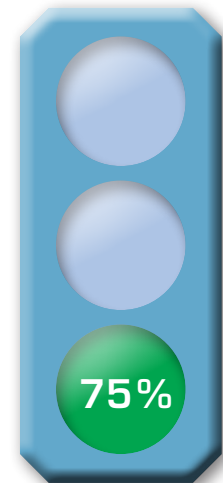
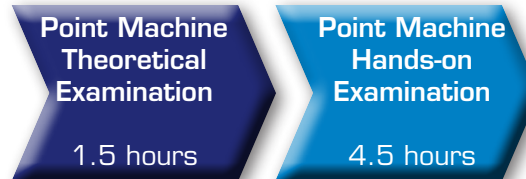
- > Participants have to prove that they are able to conduct the practical contents to fulfill the certification level
- > Exams are according to the learning objectives

## Duration

- > 1 day

## Prerequisites

- > Completion of appropriate course



# Point Machine – Certified Expert

## Duration

> 8 days (including 1 day of certification)

## Prerequisites

> Basic railway signalling knowledge

## Audience

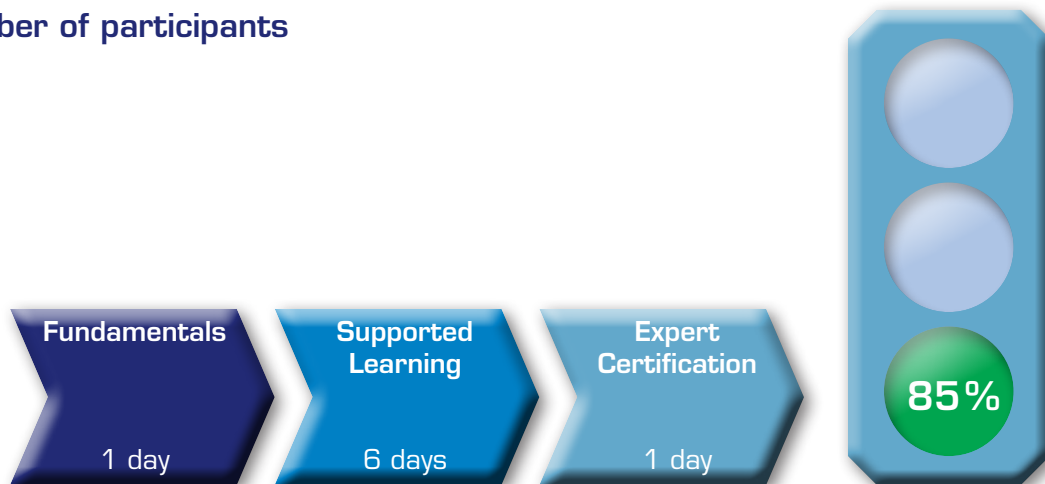
> Engineers who supervise personnel or projects and need thorough understanding

## Maximum number of participants

> 4

## Expert course certification

- > Comprehensive knowledge and deep practice in installation, commissioning and maintenance
- > Enable engineers to be certified as point machine expert



# Point Machine – Certified Trainer\*

## Trainer certification for Certified Experts

### > Specific training preparation

Supported preparation of test training through mentor (Train the Trainer Skills)

### > Trainer skills

Proven through test training of one specific course out of Fundamentals, Installation Commissioning and Maintenance

### > Debriefing

Feedback and wrap-up discussion, graduation

## Duration

> 5 days

## Prerequisites

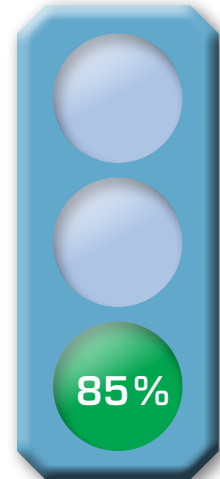
> Certified Expert

## Audience

> Engineers who will conduct training for point machines and need a thorough understanding

## Maximum number of participants

> 1





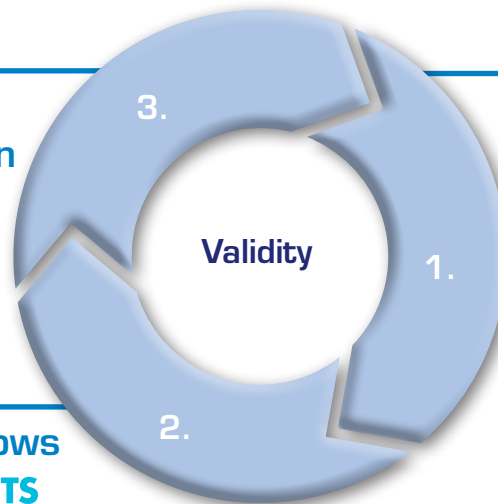
## Validity

> 2 years, project-related, country-related

## Validity extension

- > Renewal of Certification through knowledge review for all Certificates
- > Optional refresher courses for preparation of all re-certification available

Recertification  
when the certification  
expires



Certification granted  
after successful  
certification test

Valid certification allows  
access to *my* **PRODUCTS**

# Refresher and Upgrade Courses

## Refresher Courses

### Planning

> 0.5 days + 0.5 days of Certification

### Installation and Commissioning

> 1 day + 0.5 days of Certification

### Installation, Commissioning and Maintenance

> 1.5 days + 0.5 days of Certification

### Advanced Maintenance

> 1 day + 0.5 days of Certification

### Certified Expert

> 2 days + 1 day of Certification

### Certified Trainer

> 1 day + 1 day of Certification

## Upgrade Courses

### Upgrade

- > Refers to a system upgrade of point machines
- > Available for all types of point machines

# Course Outline



# Point Machine – Fundamentals

<b>Course reference</b>	KPP6131E
<b>Teaching language</b>	English or German
<b>Course duration</b>	6 hours (1 day)
<b>Training methods</b>	Lecture and hands-on practice using most advanced presentation techniques with suitable media
<b>Max. number of participants</b>	16
<b>Audience</b>	Everybody who wants general point machine knowledge

<b>Prerequisites</b>	Basic railway signalling knowledge
<b>Objectives</b>	By the end of this course, participants will be able to: <ul style="list-style-type: none"><li>• understand the basics of point machine</li><li>• understand the electrical circuits</li><li>• understand the hydraulic system</li><li>• understand the mechanics</li></ul>
<b>Course contents</b>	<ul style="list-style-type: none"><li>• Basics of point machine</li><li>• Electrical circuits</li><li>• Hydraulic system</li><li>• Mechanics</li></ul>

## Point Machine – Planning

<b>Course reference</b>	KPP6136E
<b>Teaching language</b>	English or German
<b>Course duration</b>	12 hours (2 days)
<b>Certification</b>	6 hours (1 day)
<b>Training methods</b>	Lecture and hands-on practice using most advanced presentation techniques with suitable media
<b>Max. number of participants</b>	12
<b>Audience</b>	Bid Management, Technical Support, Sales, ...
<b>Prerequisites</b>	Basic railway signalling knowledge

<b>Objectives</b>	By the end of the course, participants will be able to: <ul style="list-style-type: none"><li>• understand the basics terms</li><li>• understand point machine characteristics</li><li>• know-how to calculate materials list</li><li>• apply point machine planning to a situation given</li></ul>
<b>Course contents</b>	<ul style="list-style-type: none"><li>• Basic terms</li><li>• Point machine characteristics</li><li>• Material list</li><li>• Apply point machine planning</li></ul>
<b>Certification</b>	Theoretical and practical examination

# Point Machine – Installation and Commissioning

<b>Course reference</b>	KPP6132E
<b>Teaching language</b>	English or German
<b>Course duration</b>	18 hours (3 days)
<b>Certification</b>	6 hours (1 day)
<b>Training methods</b>	Lecture and hands-on practice using most advanced presentation techniques with suitable media
<b>Max. number of participants</b>	8
<b>Audience</b>	Installers and inspectors of point machines

<b>Prerequisites</b>	<ul style="list-style-type: none"><li>• Basic railway signalling knowledge</li><li>• Safety for work gangs</li><li>• Point machine fundamentals</li></ul>
<b>Objectives</b>	By the end of this course, participants will be able to: <ul style="list-style-type: none"><li>• understand the fundamentals of point machine</li><li>• apply installation and commissioning</li></ul>
<b>Course contents</b>	<ul style="list-style-type: none"><li>• Basics of point machine</li><li>• Electrical circuits</li><li>• Hydraulic system</li><li>• Mechanics</li><li>• Installation</li><li>• Commissioning</li></ul>
<b>Certification</b>	Theoretical and practical examination

# Point Machine – Installation, Commissioning and Maintenance

<b>Course reference</b>	KPP6133E
<b>Teaching language</b>	English or German
<b>Course duration</b>	24 hours (4 days)
<b>Certification</b>	6 hours (1 day)
<b>Training methods</b>	Lecture and hands-on practice using most advanced presentation techniques with suitable media
<b>Max. number of participants</b>	8
<b>Audience</b>	Installers, inspectors and maintainers of point machines

<b>Prerequisites</b>	<ul style="list-style-type: none"> <li>• Basic railway signalling knowledge</li> <li>• Safety for work gangs</li> <li>• Point machine fundamentals</li> </ul>
<b>Objectives</b>	<p>By the end of this course, participants will be able to:</p> <ul style="list-style-type: none"> <li>• understand the fundamentals of point machine</li> <li>• apply installation and commissioning</li> <li>• apply maintenance</li> </ul>
<b>Course contents</b>	<ul style="list-style-type: none"> <li>• Basics of point machine</li> <li>• Electrical circuits</li> <li>• Hydraulic system</li> <li>• Mechanics</li> <li>• Installation</li> <li>• Commissioning</li> <li>• Maintenance</li> </ul>
<b>Certification</b>	Theoretical and practical examination

## Point Machine – Advanced Maintenance\*

Course reference	KPP6134E
Teaching language	English or German
Course duration	18 hours (3 days)
Certification	6 hours (1 day)
Training methods	Lecture and hands-on practice using most advanced presentation techniques with suitable media
Max. number of participants	8
Audience	Workshop personnel

Prerequisites	<ul style="list-style-type: none"> <li>• Basic railway signalling knowledge</li> <li>• Safety for work gangs</li> <li>• Point machine fundamentals</li> </ul>
Objectives	<p>By the end of this course, participants will be able to:</p> <ul style="list-style-type: none"> <li>• understand the fundamentals of point machine</li> <li>• apply advanced maintenance</li> </ul>
Course contents	<ul style="list-style-type: none"> <li>• Basics of point machine</li> <li>• Electrical circuits</li> <li>• Hydraulic system</li> <li>• Mechanics</li> <li>• Advanced maintenance</li> </ul>
Certification	Theoretical and practical examination



# Point Machine – Field Practices

<b>Course reference</b>	KPP6137E
<b>Teaching language</b>	English or German
<b>Course duration</b>	12 hours (2 days)
<b>Training methods</b>	Lecture and hands-on practice using most advanced presentation techniques with suitable media
<b>Max. number of participants</b>	8
<b>Audience</b>	Installation, commissioning and maintenance personal and inspection personal

<b>Prerequisites</b>	<p>Participation in courses:</p> <ul style="list-style-type: none"> <li>• KPP6136E Point machine planning</li> <li>• KPP6132E Installation and Commissioning, or</li> <li>• KPP6133E Installation, Commissioning and Maintenance or</li> <li>• KPP6134E Advanced Maintenance</li> <li>• Minimum 1 year experience with this product</li> </ul>
<b>Objectives</b>	<p>By the end of the course, participants will be able to:</p> <ul style="list-style-type: none"> <li>• share field practices</li> <li>• know practical instructions</li> <li>• know tips and hints</li> <li>• know preventive and corrective maintenance experience</li> </ul>
<b>Course contents</b>	<ul style="list-style-type: none"> <li>• Share field practices</li> <li>• Practical instructions</li> <li>• Tips and hints</li> <li>• Preventive and corrective maintenance experience</li> </ul>

# Point Machine – Certified Expert

<b>Course reference</b>	KPP6143E
<b>Teaching language</b>	English or German
<b>Course duration</b>	42 hours (7 days)
<b>Certification</b>	6 hours (1 day)
<b>Training methods</b>	Lecture and hands-on practice using most advanced presentation techniques with suitable media
<b>Max. number of participants</b>	4
<b>Audience</b>	Engineers who supervise personnel or projects and need thorough understanding
<b>Prerequisites</b>	<ul style="list-style-type: none"> <li>• Basic railway signalling knowledge</li> <li>• Safety for work gangs</li> <li>• Basic point machine knowledge</li> </ul>

<b>Objectives</b>	<p>By the end of this course, participants will be able to:</p> <ul style="list-style-type: none"> <li>• understand the fundamentals of point machine</li> <li>• apply installation and commissioning</li> <li>• apply maintenance and advanced maintenance</li> <li>• apply field practice</li> </ul>
<b>Course contents</b>	<ul style="list-style-type: none"> <li>• Basics of point machine</li> <li>• Electrical circuits</li> <li>• Hydraulic system</li> <li>• Mechanics</li> <li>• Installation</li> <li>• Commissioning</li> <li>• Maintenance</li> <li>• Advanced maintenance</li> <li>• Fault finding</li> <li>• Frequently made mistakes</li> </ul>
<b>Certification</b>	Theoretical and practical examination

## Point Machine – Certified Trainer

<b>Course reference</b>	KPP6163E
<b>Teaching language</b>	English or German
<b>Course duration</b>	18 hours (3 days)
<b>Certification</b>	12 hours (2 days)
<b>Training methods</b>	Lecture and hands-on practice using most advanced presentation techniques with suitable media
<b>Max. number of participants</b>	1
<b>Audience</b>	Engineers who will conduct training for point machine and need a thorough understanding

<b>Prerequisites</b>	<ul style="list-style-type: none"><li>• Successful expert Certification</li><li>• Basics in presentation methods</li><li>• Tendency to free lecture</li></ul>
<b>Objectives</b>	By the end of this course, participants will be able to: <ul style="list-style-type: none"><li>• teach Fundamentals, Installation and Commissioning, Maintenance and Advanced Maintenance</li><li>• teach field practice</li></ul>
<b>Course contents</b>	<ul style="list-style-type: none"><li>• Basics of adult education</li><li>• Test teaching in front of real audience</li><li>• Feedback analysis</li><li>• Trainer coaching</li></ul>
<b>Certification</b>	Test teaching

# Point Machine – Refresher course

<b>Course reference</b>	KPP61XXE_Refresher
<b>Teaching language</b>	English or German
<b>Course duration</b>	0.5 to 2 days
<b>Certification</b>	0.5 to 1 day
<b>Training methods</b>	Lecture and hands-on practice using most advanced presentation techniques with suitable media
<b>Max. number of participants</b>	8
<b>Audience</b>	Installers, inspectors and maintainers of point machines who need to refresh their knowledge

<b>Prerequisites</b>	<p>Participation in courses:</p> <ul style="list-style-type: none"> <li>• KPP6136E Point machine planning</li> <li>• KPP6132E Installation and Commissioning, or</li> <li>• KPP6133E Installation, Commissioning and Maintenance or</li> <li>• KPP6134E Advanced Maintenance</li> </ul>
<b>Objectives</b>	<p>By the end of this course, participants will be able to:</p> <ul style="list-style-type: none"> <li>• do their tasks related to Installation, Commissioning or Maintenance</li> <li>• have the full knowledge refreshed</li> </ul>
<b>Course contents</b>	<ul style="list-style-type: none"> <li>• Installation</li> <li>• Commissioning</li> <li>• Maintenance</li> <li>• Advanced maintenance</li> </ul>
<b>Certification</b>	Theoretical and practical examination

## Point Machine – Upgrade course

<b>Course reference</b>	KPP6135E
<b>Teaching language</b>	English or German
<b>Course duration</b>	6 hours (1 day)
<b>Training methods</b>	Lecture and hands-on practice using most advanced presentation techniques with suitable media
<b>Max. number of participants</b>	8
<b>Audience</b>	Installers, inspectors and maintainers on previous versions of point machines

<b>Prerequisites</b>	Participation in courses: <ul style="list-style-type: none"><li>• KPP6136E Point machine planning</li><li>• KPP6132E Installation and Commissioning, or</li><li>• KPP6133E Installation, Commissioning and Maintenance or</li><li>• KPP6134E Advanced Maintenance</li></ul>
<b>Objectives</b>	By the end of this course, participants will be able to: <ul style="list-style-type: none"><li>• understand the difference between latest and previous versions of point machines</li><li>• understand changes in their job tasks due to the point machine changes</li></ul>
<b>Course contents</b>	<ul style="list-style-type: none"><li>• Installation</li><li>• Commissioning</li><li>• Maintenance</li><li>• Advanced maintenance</li></ul>

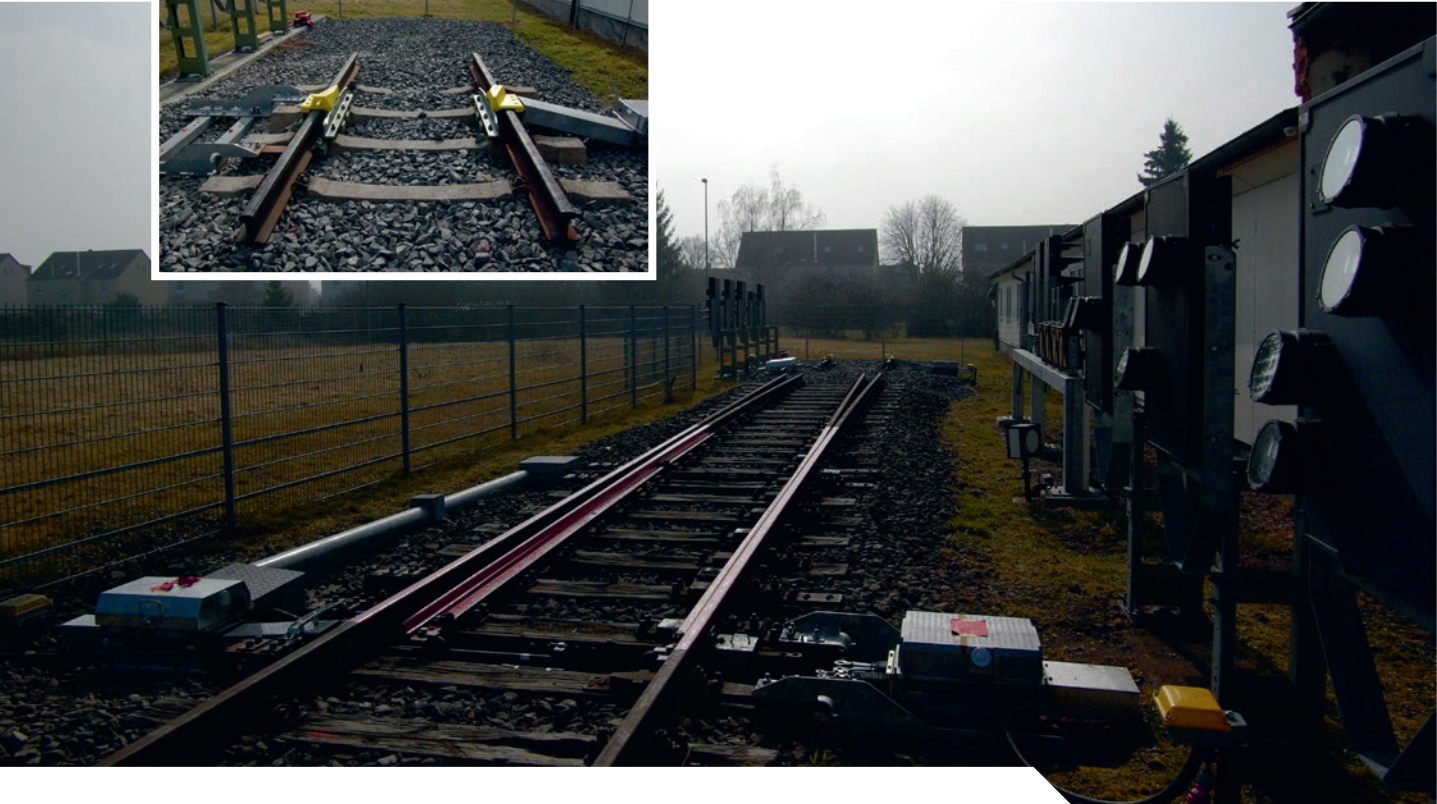
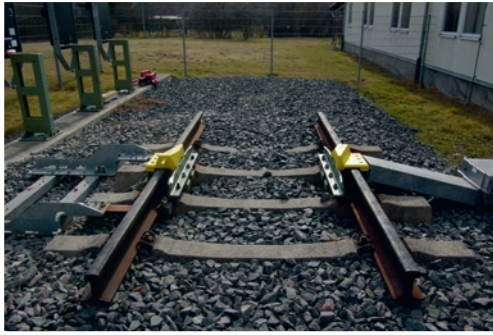
# Point Machine – Training facility in Arnstadt factory



## Point Machine – Production



# Point Machine – Training location at Arnstadt factory





**Impressum**

Point Machine Training and Certification

**Publisher:**

Thales Transportation Systems GmbH  
Thalesplatz 1, 71254 Ditzingen

**Editorial:**

Product Business, Thales Deutschland

**Photos:**

Cover: © Dirk Kittelberger  
P. 5: © Thales  
P. 7: © Dirk Kittelberger  
P. 19: © Thomas Ludmann  
P. 30: © Dirk Kittelberger  
P. 31: © Dirk Kittelberger  
P. 32: © Ciprian Paduraru

**Layout:**

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

**Print:**

Elanders Germany GmbH, Waiblingen  
Printed in Germany

**Copyright:**

© Thales Transportation Systems GmbH, 2014  
All rights reserved. Reproduction of this document or its contents is not permitted, unless expressly granted! Subject to technical changes. The information in this document contains general descriptions of technical options available, which in individual case must not always be available.  
[www.thalesgroup.com/germany](http://www.thalesgroup.com/germany)

**Thales Deutschland**  
Transportation Systems  
Thalesplatz 1  
71254 Ditzingen  
Germany  
E-Mail: [products@thalesgroup.com](mailto:products@thalesgroup.com)  
[www.thalesgroup.com/germany](http://www.thalesgroup.com/germany)

Edition August 2014