

## Seminars by KraussMaffei

### Hands-on – individual – flexible

KraussMaffei injection molding machines set high standards in the industry all over the world. Apart from the most modern machine technology, as always the key to top quality is the personnel at the machine – in operation, process control and maintenance.

Our seminar concept provides your employees with the tools they need to complete these tasks. This allows you to fully exploit the performance potential of your system.



# Man and Machine – United for your Success

Seminar Program Injection Molding Machinery 2016

*Engineering Passion*

***Krauss Maffei***

# Man and Machine Tradition meets innovation

Test Certificate

**KraussMaffei**

Dear Sir or Madam,

Practical relevance, individuality, flexibility—the training opportunities from KraussMaffei are perfectly tailored to your needs. They support your drive to use your machine's potential to the full and to minimize downtime. The goal is to achieve peak productivity with your injection molding system.

The content of our training courses consist of a theory component and intensive practical exercises directly on our machines, e.g. setup and operation, setting special machine functions to increase availability and product quality, maintenance of electrical and hydraulic systems, the detection and elimination of problems, and robot technology or automation.

Your specialist knowledge will be furthered in practical exercises. At the same time, your individual needs are prioritized, as the number of participants in our training courses is limited to twelve persons, and during the seminar you will work on a training machine in small groups. Only in this way can the trainers individually address your specific needs.

For all combined seminar participants, which we have again extended for you for 2016, there is a final exam where you can broaden and self-assess your recently acquired knowledge. Upon successful completion of this exam, you will be awarded our KraussMaffei Test Certificate – an industry-recognized qualification.

We look forward to meeting you and your employees in person!



**Rupert Gruber**

Training and technical information  
KraussMaffei



## Seminars by KraussMaffei Hands-on – individual – flexible

### **KraussMaffei supplies practice:**

Our trainers have many years of experience and make use of state-of-the-art technology to offer you the highest quality of instruction. You will be provided with application-oriented specialist knowledge in practical exercises at our TechCenter. This prepares you in the best possible way to carry out your tasks in the workplace.

### **KraussMaffei offers individuality:**

We limit the number of participants in our training courses. Generally, only a few persons work on a training system at any one time during the seminar. In this way, our trainers can address your individual needs and offer concrete problem solution strategies.

### **KraussMaffei offers flexibility:**

Our program contains training courses for all knowledge levels. We also offer individual seminars on special subjects and special tasks, also for older series. You can attend KraussMaffei training courses at our TechCenter in Munich or Schwaig or at our Sales and Service Center in Verl. We will also be happy to come to your location. Please ask for an individual offer.



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### **Your benefits**

- Experienced seminar instructors
  - Small learning groups
  - Extensive practical training directly on the machine
  - Time for individual questions and problem solution strategies
  - Assistance with arranging hotel accommodation
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# Your guideline to success

## Operation




**Entry-level seminar KM GA**  
 Basics of applications engineering  
 2 days [see page 6]

	Basics	Specialization		Combined Seminars	
<b>Machine</b> 	<b>KM B1 MC5/MC6</b> Operation and setup 3 days → Page 7	<b>KM B2 MC5/MC6</b> Process and product enhancement 2 days → Page 8	<b>KM B3 MC5/MC6</b> Stable processes and quality assurance 2 days → Page 9	<b>KM BM MC5/MC6</b> = KM B1 + KM B2 Combined Seminar 5 days → Page 13 Test Certificate KraussMaffei	
<b>LR robots</b> 	<b>KM LR1 MC5/MC6</b> Operation, setup and programming* 2 days/3 days* → Page 10 *only applicable to MC6	<b>KM LR2 MC5/MC6</b> Free programming 3 days/2 days* → Page 11 *only applicable to MC6	<b>KM LR3 MC5/MC6</b> Advanced free programming 3 days → Page 12	<b>KM BLR MC5/MC6</b> = KM LR1 + KM LR2 Combined Seminar 5 days → Page 14	<b>KM PROLR MC5/MC6</b> = KM LR2 + KM LR3 Combined Seminar 5 days → Page 15 Test Certificate KraussMaffei
<b>System</b> 				<b>KM BA LR MC5/MC6</b> = KM B1 + KM LR1 Combined Seminar 5 days → Page 16	<b>KM BA IR MC6</b> = KM B1 + KM IR1 Combined Seminar 5 days → Page 17 Test Certificate KraussMaffei
<b>IR articulated-arm robots</b> 	<b>KM IR1</b> Operation and setup 4 days → Page 18 Test Certificate KraussMaffei 	<b>KM IR2</b> Operating, setting, programming 5 days → Page 19 Test Certificate KraussMaffei 	<b>Upgrade</b> from KM KRC2 to KM KRC4/MC6 2 days → Page 20 Test Certificate KraussMaffei 	Our articulated-arm robot seminars are certified by KUKA Roboter GmbH and are fully recognized.	



# Your guideline to success

## Maintenance

	Basics		Specialization	Combined Seminars
<p>Electrical system</p> 	<p><b>KM WE MC5/MC6</b> Electrical system/ electronics</p> <p>3 days</p> <p>→ Page 21</p>	<p><b>KM LRW MC5/MC6</b> Linear robots</p> <p>2 days</p> <p>→ Page 22</p>		<p><b>KM WA MC5/MC6</b> = KM WE + KM LRW Combined Seminar</p> <p>5 days → Page 26</p> <p>Test Certificate <b>KraussMaffei</b></p>
<p>Hydraulic system</p> 	<p><b>KM HM CX/GX/MX</b> Hydraulic system/ mechanical system</p> <p>3 days</p> <p>→ Page 23</p>	<p><b>KM K CX/GX</b> Calibration</p> <p>2 days</p> <p>→ Page 24</p>		
<p>Electrical system + hydraulic system</p> 				<p><b>KM WM</b> = KM WE + KM HM Combined Seminar</p> <p>5 days → Page 25</p> <p>Test Certificate <b>KraussMaffei</b></p>
<p>Individualized seminars</p>	<p><b>Individualized training for your team</b></p> <p>→ Page 28</p>		<p><b>Industrial robot training with the KraussMaffei training cell</b></p> <p>→ Page 27</p>	



# Seminar KM GA

## Basics of applications engineering

## Basics of the injection molding process

### Seminar objectives

- Basics of thermoplastics
- Basics of the injection molding process

### Subjects

- Basics of plastics (thermoplastics)
- Basics of injection molding machines
- Basics of injection molding tools
- Design of an injection molding machine
- Basic setup of an injection molding process
- Overview of special processes in injection molding

### Target group

Beginners in injection molding (operating personnel, project engineers, purchasing and sales staff)

### Duration

2 days, from 8:30 hours to 16:30 hours

### Costs and Dates

Details upon request

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### Prerequisite

No special previous knowledge required

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# Practical seminar KM B1

## Operation, setup and programming of injection molding machines incl. core-pulling

### Seminar objectives

- Effective setup of injection molding machines
- Quick and safe operation of injection molding machines
- Quick and safe programming of core-pulling processes
- Recognition and independent handling of error messages

### Subjects

- Safety devices on the injection molding machine
- Configuration of the machine control unit and core puller program
- Procedure for setting up the machine
- Setting up the locking unit and programming core-pulling processes
- Setting up the injection unit and determining the basic settings, mold filling study
- Optimization of machine settings
- Monitoring options
- Error messages and event log
- Practical exercises on simulators and machine

### Target group

Foremen, applications engineers, toolsetters, operating personnel, beginners

### Duration

3 days, from 8:30 hours to 16:30 hours

### Costs and Dates

Details upon request

### Prerequisite

Participation in our practical seminar KM GA (see p. 6) or a basic knowledge of the injection molding process

Select the combined seminar "Machine operation"

**KM B1 + KM B2 = KM BM**  
(see pages 7, 8 and 13)

Select the combined seminar "System operation"

**KM B1 + KM LR1 = KM BA LR**  
(see page 16)





# Practical seminar KM B2

## Process and product enhancement on injection molding machines

### Seminar objectives

- Efficient process and product enhancement
- Continuous monitoring of product quality
- Clearly and graphically represented processes

### Duration

2 days, from 8:30 hours to 16:30 hours

### Costs and Dates

Details upon request

### Subjects

- Profiles for injection/holding pressure/plasticization
- Identification and rectification of surface and injection defects
- Quality monitoring
- Design and functional principle of the curve calculator
- Use of the curve calculator for process and product enhancement
- Use of the curve calculator for Quality monitoring
- Identifying sources of interference, alarm statistics
- Practical exercises on simulators and machine

### Target group

Foremen, applications engineers, assistant foremen, toolsetters

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### Prerequisite

Participation in practical seminar  
KM B1 (see p. 7)

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Select the combined seminar "Machine operation"

**KM B1 + KM B2 = KM BM**  
(see pages 7, 8 and 13)



# Practical seminar KM B3

## Stable processes and quality assurance on injection molding machines

### Seminar objectives

- Long-term product quality assurance and documentation
- Recognition and effective exploitation of potential savings
- Energy-conscious machine setup
- Stable processes, shot weight consistency

### Duration

2 days, from 8:30 hours to 16:30 hours

### Costs and Dates

Details upon request

### Subjects

- ECO assistant function\*
- Batch change control and APC function\*
- Application of the energy analysis
- Energy consumption, energy-conscious machine setup
- Process parameters, impacts on product quality and energy consumption
- SPC functions (quality statistics)
- Quality assurance and application of quality statistics
- Practical exercises on simulators and machine

\*only applicable to MC6

### Target group

Foremen, applications engineers,  
assistant foremen, toolsetters

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### Prerequisite

Participation in practical seminar  
KM B2 (see p. 8)

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# Practical seminar KM LR1

## Operation, setup (programming WizardX\*) of linear robots

### Seminar objectives

- Quick and safe operation and setup of linear robots
- Effective setup of grippers
- Independent recognition and handling of error messages
- Simple creation of programs using program assistant WizardX\*

### Subjects

- Safety devices on the robot
- Data and parameter management
- Procedure for operating the robot
- "Teach-in" and adaptation of point coordinates
- Setting up the area monitoring
- Creating basic programs using WizardX\*
- Application of basic programs
- Starting up and optimizing the production system
- Error messages and event log
- Presentation of the LR-ON-PC/LRX-ON-PC software
- Practical exercises on simulators and robots

\*only applicable to MC6

### Target group

Toolsetters, machine operators, sampling personnel, automation personnel

### Duration

KM LR1 MC5: 2 days

KM LR1 MC6: 3 days

from 8:30 hours to 16:30 hours

### Costs and Dates

Details upon request

### Prerequisite

Participation in practical seminar KM B1 (see p. 7).

Select the combined seminar "System operation"

KM B1 + KM LR1 = KM BA LR  
(see pages 16)

Select the combined seminar "Linear robot operation"

KM LR1 + KM LR2 =  
KM BLR  
(see pages 10, 11 and 14)



# Practical seminar KM LR2

## Free programming of linear robots

### Seminar objectives

- Operating the free programming interface
- Modifying programs quickly and safely
- Creating new program parts effectively

### Subjects

- Free programming interface and command structure
- Explanation of the basic programs, program structure
- Modifying basic programs
- Procedure for testing program modifications
- Adapting program add-ons quickly and safely
- Working with the LR-ON-PC/ LRX-ON-PC software
- Practical exercises on simulators and robots

### Target group

Toolsetters, machine operators, sampling personnel with advanced automation tasks, automation personnel

### Duration

KM LR2 MC5: 3 days  
KM LR2 MC6: 2 days  
from 8:30 hours to 16:30 hours

### Costs and Dates

Details upon request

### Prerequisite

Participation in practical seminar KM LR1 (see p. 10).

Select the combined seminar "Linear robot operation"

KM LR1 + KM LR2 =  
KM BLR  
(see pages 10, 11 and 14)

Select the combined seminar "Programming linear robots"

KM LR2 + KM LR3 =  
KM PROLR  
(see pages 11, 12 and 15)

# Practical seminar KM LR3

## Advanced programming of linear robots

### Seminar objectives

- Expert knowledge of the free programming interface
- Recognition and utilization of enhancement options
- Programming of complex automation sequences and applications with multiple kinematics

### Subjects

- Programming interface with advanced command structure
- Efficient enhancement of predefined program flows
- Independent development and programming of complex program parts
- Integration of peripheral systems (freely programmable I/Os)
- Testing and adapted created program parts
- Special features regarding applications with multiple kinematics
- Identifying and correcting program errors
- Practical exercises on simulators and robots

### Target group

Advanced toolsetters, machine operators, sampling personnel, automation personnel

### Duration

3 days, from 8:30 hours to 16:30 hours

### Costs and Dates

Details upon request

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### Prerequisite

Participation in practical seminar KM LR2 (see p. 11).

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Select the combined seminar  
"Programming linear robots"

KM LR2 + KM LR3 =  
KM PROLR  
(see pages 11, 12 and 15)



# Practical seminar KM BM = KM B1 + KM B2

## Combined operation and process optimization of injection molding machines

### Seminar objectives

- Effective setup of injection molding machines
- Quick and safe operation of injection molding machines
- Quick and safe programming of core-pulling processes
- Recognition and independent handling of error messages
- Efficient process and product enhancement
- Continuous monitoring of product quality
- Clearly and graphically represented processes

### Subjects

- Consisting of practical seminar KM B1 (see p. 7) and KM B2 (see p. 8)
- Practical exercises on simulators and machine
- Final test

### Target group

Foremen, applications engineers, toolsetters, operating personnel, beginners

### Duration

5 days, from 8:30 hours to 16:30 hours

### Costs and Dates

Details upon request

### Your benefits:

Compact and streamlined practical seminar with KraussMaffei certification

### Prerequisite

Participation in our practical seminar KM GA (see p. 6) or a basic knowledge of the injection molding process

Test Certificate

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# Practical seminar KM LR1 + KM LR2 = KM BLR

## Combined operation and programming of linear robots

### Seminar objectives

- Quick and safe operation and setup of linear robots
- Effective setup of grippers
- Independent recognition and handling of error messages
- Simple creation of programs using program assistant WizardX\*
- Operating the free programming interface
- Modifying programs quickly and safely
- Creating new program parts effectively

### Subjects

- Consisting of practical seminar KM LR1 (see p. 10) and KM LR2 (see p. 11)
- Practical exercises on simulators and robots
- Final test

\*only applicable to MC6

### Target group

Toolsetters, machine operators, sampling personnel with advanced automation tasks, automation personnel

### Duration

5 days, from 8:30 hours to 16:30 hours

### Costs and Dates

Details upon request

### Your benefits:

Compact and streamlined practical seminar with KraussMaffei certification

### Prerequisite

Participation in practical seminar KM B1 (see p. 7). Valid for LR/LRX series and LR-S/LRX-S series equipment.

Test Certificate

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# Practical seminar KM PROLR = KM LR2 + KM LR3

## Combined expert programming of linear robots

### Seminar objectives

- Operating the free programming interface
- Modifying programs quickly and safely
- Creating new program parts effectively
- Expert knowledge of the free programming interface
- Recognition and utilization of enhancement options
- Programming complex automation processes and applications with multiple kinematics

### Subjects

- Consisting of practical seminar KM LR2 (see p. 11) and KM LR3 (see p. 12)
- Practical exercises on simulators and robots
- Final test

### Target group

Advanced toolsetters/machine operators with advanced automation tasks, automation personnel

### Duration

5 days, from 8:30 hours to 16:30 hours

### Costs and Dates

Details upon request

### Your benefits:

Compact and streamlined practical seminar with KraussMaffei certification

### Prerequisite

Participation in practical seminar KM LR1 (see p. 10).

Test Certificate

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# Practical seminar KM BA LR = KM B1 + KM LR1

## Combined operation and programming of injection molding machines and linear robots

### Seminar objectives

- Effective setup of injection molding machines
- Quick and safe operation of injection molding machines
- Quick and safe programming of core-pulling processes
- Quick and safe operation and setup of linear robots
- Effective setup of grippers
- Simple creation of programs using program assistant WizardX\*
- Independent recognition and handling of error messages

### Subjects

- Consisting of practical seminar KM B1, (see p. 7) and KM LR1 (see p. 10)
- Practical exercises on simulators and systems
- Final test

\*only applicable to MC6

### Target group

Toolsetters, machine operators, sampling personnel with advanced automation tasks, automation personnel

### Duration

5 days, from 8:30 hours to 16:30 hours

### Costs and Dates

Details upon request

### Your benefits:

Compact and streamlined practical seminar with KraussMaffei certification

### Prerequisite

Participation in our practical seminar KM GA (see p. 6) or a basic knowledge of the injection molding process.

Test Certificate

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# Practical seminar KM BA IR = KM B1 + KM IR1

## Combined operation and programming of injection molding machines and industrial robots

### Seminar objectives

- Effective setup of injection molding machines
- Quick and safe operation of injection molding machines
- Quick and safe programming of co-re-pulling processes
- Recognition and independent handling of error messages
- Quick and safe operation of industrial robots
- Effective setup of grippers

### Subjects

- Consisting of practical seminar KM B1 (see p. 7) and parts of KM IR1 (see p. 18)

### Parts of KM IR1:

- Safety instructions for industrial robots and the automation cell
- Operation of the robot system
- Knowledge and application of coordinate systems
- Inserting, deleting and correcting points
- Working in automatic mode
- Starting and stopping production
- Teach-in/adaptation of existing article programs
- Operating the KMA user interface
- Functions of the KMA inline forms
- Practical exercises on simulators and systems
- Final test

### Target group

Toolsetters, machine operators, sampling personnel with advanced automation tasks, automation personnel

### Duration

5 days, from 8:30 hours to 16:30 hours

### Costs and Dates

Details upon request

### Your benefits:

Compact and streamlined practical seminar with KraussMaffei certification

### Prerequisite

Participation in our practical seminar KM GA (see p. 6) or a basic knowledge of the injection molding process

Test Certificate

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# Practical seminar KM IR1

## Operation and setup of articulated-arm robots

### Seminar objectives

- Safe working practice with the production cell
- Manual operation of the articulated-arm robot to restore automatic operation
- Familiarization with robot functions
- Interpreting error messages

### Subjects

- Safety instructions for industrial robots and the automation cell
- Operation of the robot system
- Knowledge and application of coordinate systems
- Making adjustments
- Methods of tool measurement and tool load data
- Workpiece measurement
- Use of the navigator, program building and archiving
- Application of motion programming
- Inserting, deleting and correcting points
- Application of logic and gripper programming
- Introduction to the expert level
- Working in automatic mode
- Starting and stopping production
- Teach-in/adaptation of existing article programs
- Operating the KMA user interface
- Functions of KMA inline forms

### Target group

Machine setters and production personnel

### Duration

4 days, starting on the first day at 9:00 hours otherwise from 8:00 hours to 16:30 hours

### Costs and Dates

Details upon request

### Remarks

Participants who successfully complete this course will be eligible to attend continue courses at the KUKA College. For example: advanced robot programming, electrical service, mechanical service

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### Prerequisite

No special previous knowledge required

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Test Certificate

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# Practical seminar KM IR2

## Operation, setup and programming of articulated-arm robots

### Seminar objectives

- Correct and safe operation of the production cell
- Safe and efficient modification of production processes
- Creating new production processes
- Application of the KRL instruction set

### Subjects

- Safety instructions for industrial robots and the automation cell
- Operation of the robot system
- Knowledge and application of coordinate systems
- Making adjustments
- Methods of tool measurement and tool load data
- Workpiece measurement
- Use of the navigator, program building and archiving
- Application of motion programming
- Inserting, deleting and correcting points
- Application of logic and gripper programming
- Introduction to the expert level
- Working in automatic mode
- Startup after system shutdown
- Modification of existing production programs on the simulator
- Operating the KMA user interface
- Integration of additional functions into the existing production process
- Interpretation of error messages, process optimization
- KUKA WorkVisual
- Functions of KMA inline forms
- Parallel processes

### Target group

Automation personnel, advanced toolsetters, process optimizers

### Duration

5 days, starting on the first day at 9:00 hours otherwise from 8:00 hours to 16:30 hours

### Costs and Dates

Details upon request

### Remarks

Participants who successfully complete this course will be eligible to attend continuative courses at the KUKA College. For example: advanced robot programming, electrical service, mechanical service.

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### Prerequisite

Basic knowledge of programming or experience with automation systems

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Test Certificate

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# Practical seminar KM Upgrade

## Upgrade from robot control system KM KRC2 to KM KRC4

### Seminar objectives

- Correct and safe operation of the production cell
- Safe and efficient modification of production processes
- Creation of new production processes for KRC4
- Application of the KRL instruction set

### Subjects

- Safety instructions for industrial robots and the automation cell
- Introduction to operation, adjustment, mold measurement
- Overview of KRC4 hardware and software
- Overview of KRC4 interfaces
- Differences between KUKA KCP and SmartPad
- KRC System Recovery
- KUKA WorkVisual functions
- KMA in-line forms
- KMA program structure
- Operating the KMA user interface MC6
- Modification of existing production programs on the injection molding machine simulator
- Integration of additional functions into the existing production process
- Interpretation of error messages, process optimization

### Target group

Machine setters, production personnel, programmers with knowledge of KRC2

### Duration

2 days, from 8:00 hours to 16:30 hours

### Costs and Dates

Details upon request

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### Prerequisite

Knowledge of KRC2

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Test Certificate

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# Practical seminar KM WE

## Maintenance and troubleshooting of electrics/ electronics on injection molding machines

### Seminar objectives

- Optimal maintenance of injection molding machines
- Rapid detection and clearance of faults
- Systematic troubleshooting in electrical systems

### Subjects

- Procedure for setting up the machine
- Error messages and event log
- Design and function of the control unit
- Cycle flow chart and on-screen step display
- Expert use of electric circuit diagrams
- Diagnosis functions
- Systematic approach to troubleshooting
- Procedure for hardware component replacement
- Preventive maintenance
- Practical exercises on simulators and machine

### Target group

Electrical/electronic maintenance and servicing personnel

### Duration

3 days, from 8:30 hours to 16:30 hours

### Costs and Dates

Details upon request

### Prerequisite

Basic training in the electrical system/  
electronics

Select the combined seminar  
"Plant maintenance"

**KM WE + KM LRW = KM WA**  
(see pages 21, 22 and 26)

Select the combined seminar  
"Machine maintenance"

**KM WE + KM HM = KM WM**  
(see pages 21, 23 and 25)



# Practical seminar KM LRW

## Maintenance and troubleshooting of linear robots

### Seminar objectives

- Optimal maintenance of linear robots
- Rapid detection and clearance of faults

### Subjects

- Procedure for setting up robot
- System configuration of linear robots
- Diagnosis functions
- Systematic approach to troubleshooting
- Calibrating robot axes
- Preventive maintenance
- Practical exercises on simulators and robots

### Target group

Maintenance and servicing personnel  
Electrical systems/electronics and/or automation

### Duration

2 days, from 8:30 hours to 16:30 hours

### Costs and Dates

Details upon request

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### Prerequisite

Basic training in the electrical system/  
electronics

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Select the combined seminar  
"Plant maintenance"

**KM WE + KM LRW = KM WA**  
(see pages 21, 22 and 26)



# Practical seminar KM HM

## Maintenance and troubleshooting of hydraulics/ mechanical system on injection molding machines

### Seminar objectives

- Optimal maintenance of the injection molding machine
- Rapid detection and clearance of faults
- Professional, systematic troubleshooting in hydraulics/mechanical system

### Subjects

- Procedure for setting up the machine
- Error messages and event log
- Hydraulic components and their mode of operation in machine hydraulics
- Diagnosis functions
- Systematic approach to hydraulic troubleshooting
- Design and handling of the hydraulic diagram
- Mechanical design of the locking and injection unit
- Preventive maintenance
- Practical exercises on simulators and machine

### Target group

Maintenance personnel

### Duration

3 days, from 8:30 hours to 16:30 hours

### Costs and Dates

Details upon request

### Prerequisite

A basic knowledge of hydraulics/  
mechanics

Select the combined seminar "Machine maintenance"

**KM WE + KM HM = KM WM**  
(see pages 21, 23 and 25)



# Practical seminar KM K

## Calibrating injection molding machines

### Seminar objectives

- Independent calibration and adjustment
- Increasing process and machine capability

### Subjects

- Calibration after module replacement
- Functional principle of the controller
- Calibration of pressure and displacement transducers
- Calibrating proportional valves and variable delivery pumps
- Practical exercises on simulators and machine

### Target group

Maintenance personnel

### Duration

2 days, from 8:30 hours to 16:30 hours

### Costs and Dates

Details upon request

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### Prerequisite

Participation in practical seminar KM WE (see p. 21) or KM HM (see p. 23)

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# Practical seminar KM WM = KM WE + KM HM

## Combined maintenance and troubleshooting machine (electrical system/electronics and hydraulics/mechanical system)

### Seminar objectives

- Optimal maintenance of injection molding machines
- Rapid detection and clearance of faults
- Systematic troubleshooting in the hydraulics/mechanical system
- Systematic troubleshooting in electrical systems

### Subjects

- Consisting of practical seminar KM WE (see p. 21) and KM HM (see p. 23)
- Practical exercises on simulators and machine
- Final test

### Target group

Electrical/electronic maintenance and servicing personnel

### Duration

5 days, from 8:30 hours to 16:30 hours

### Costs and Dates

Details upon request

### Your benefits:

Compact and streamlined practical seminar with KraussMaffei certification

### Prerequisite

Basic training in the electrical system/electronics

Test Certificate

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# Practical seminar KM WA = KM WE + KM LRW Combined maintenance and troubleshooting of systems (injection molding machine and linear robot)

## Seminar objectives

- Optimal maintenance of injection molding machines and linear robots
- Rapid detection and clearance of faults
- Systematic troubleshooting in electrical systems

## Subjects

- Consisting of practical seminar KM WE (see p. 21) and KM LRW (see p. 22)
- Practical exercises on simulators and machine
- Final test

## Target group

Maintenance and servicing personnel for electrical systems/electronics and/or automation

## Duration

5 days, from 8:30 hours to 16:30 hours

## Costs and Dates

Details upon request

## Your benefits:

Compact and streamlined practical seminar with KraussMaffei certification

## Prerequisite

Basic training in the electrical system/electronics

Test Certificate

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## Industrial robot trainings with the mobile and compact training cell



With our mobile and compact training cell, all necessary industrial robot training sessions can be conveniently held at your plant. Prevent any potential interruption of production, save yourself the cost of travel and accommodation—we will come to you.

Our training cell is equipped with a full-fledged industrial robot from Kuka, which offers all the functionalities of an industrial robot in real use. Moreover, the cell includes a model of an injection molding machine that represents the entire interface for a real injection molding machine.

The cell also has other peripheral equipment, such as gripper, conveyor belt etc. Using this peripheral equipment, you can program and simulate all standard procedures of an actual production process in a realistic environment.

The compact dimensions of the training cell (only 2.6 ft wide by 4.6 ft long) enable it to be set up in almost any conference room.

Power is supplied via a 16 A Schuko socket. The compressed air for gripper functions is generated by a quiet, integrated compressor.



## Individualized training for your team



### **Questions about injection molding machinery with associated automation**

- How can the performance of the system be increased?
- How can quality improvements be realized?
- How is the consumption of resources in the production plant reduced?

With individualized training you rely on continuing education measures tailored to your plant, which can take place in your production plant or at our training sites, depending on your task description.

An individualized definition of the training units ensures quick success for your team.

**Do you have more questions?  
We would be happy to answer them for  
you. Our contact information is provided  
on page 29.**

## Injection molding machinery Seminar registration

**Call:** +49 (0)89 8899 4150

**e-mail:** [Schulung.SGM@kraussmaffei.com](mailto:Schulung.SGM@kraussmaffei.com)

**Write:** Waltraud Behner-Freisinger  
Department IA1123  
KraussMaffei Technologies GmbH  
Krauss-Maffei-Strasse 2  
80997 Munich

**Fax:** +49 (0)89 8899 154150  
See rear side for fax template

**Internet:** [www.kraussmaffei.com](http://www.kraussmaffei.com)

Please fill in and fax to: +49 (0)89 88 99 15 41 50

We are familiar with and acknowledge the terms and conditions of participation in the registration documents.

You can register online at [www.kraussmaffei.com/imm-seminar](http://www.kraussmaffei.com/imm-seminar).

# Fax template

## Seminar registrations 2016

### Personal details

Company		Contact person
e-mail address		Telephone
Zip code	Town/city	Fax
Street, no. / post office box		Customer order number

### Seminar attendance

1st seminar type / seminar no.	2nd seminar type / seminar no.
Date	Date
Name of 1st participant	Name of 1st participant
Name of 2nd participant	Name of 2nd participant

Please bring your safety shoes to the seminars.

### Hotel booking by KraussMaffei desired?

Yes  No

Date of arrival	Date of arrival
-----------------	-----------------

.....  
Venue / date

.....  
Signature



# General notes

## Terms and conditions of participation

### 1. Please forward registrations to:

KraussMaffei Technologies GmbH  
Department IA1123, Ms Behner-Freisinger  
Krauss-Maffei-Strasse 2, 80997 Munich  
Tel. +49 (0)89 88 99 41 50  
Fax +49 (0)89 88 99 15 41 50  
waltraud.behner-freisinger@kraussmaffei.com

Please use our application form:  
[www.kraussmaffei.com/imm-seminar](http://www.kraussmaffei.com/imm-seminar)

### 2. Applicability

These Special Conditions for Participation apply only to companies referred to in section 14, 310 subsection 1 of the German Civil Code [BGB].

### 3. Registration and conclusion of contract

Registration implies acceptance of the terms and conditions of participation on the part of the participant. Registration can be in writing or by means of the online registration form. Consideration shall always be given to registrations in the order their arrival. The contract is concluded upon receipt of the registration confirmation. Register in good time to guarantee your place in the seminar! Please register no later than four weeks prior to the start of the seminar. Please use our registration form provided. "Your" seminar is not on offer? Just contact us! Deviations from the scheduled seminar dates are possible upon consultation.

### 4. Prerequisites for participation

Practical exercises are carried out with the seminar participants during the seminar. To guarantee the success of the seminar, therefore, the number of participants is limited. Please reserve your seminar in good time so that we meet your date request. You will receive confirmation of participation when your written registration has been received.

### 5. Services

Participants will receive training from the presenters in theory and practice. At the start of the seminar, each participant receives documents on the respective seminar, and a confirmation of participation/certificate upon completion. This further training uses the most modern technical aids. The registration fees cover the costs of all seminar documents, the use of the technical equipment, beverages in the breaks and lunch in the company canteen. Travel and overnight accommodation costs shall be borne by the participant.

### 6. Booking of a room

Hotel room booking by KraussMaffei is possible. If you require this, please enter it in the seminar registration accordingly. However, KraussMaffei cannot provide a guarantee, in any form whatsoever, on the availability or hotel services. Overnight accommodation costs shall be borne by the participant. Customers themselves are responsible for canceling a booked hotel room. Any cancellation costs thus incurred shall be paid directly to the hotel.

### 7. Terms and conditions of payments

A flat rate without cash discount (30 days net) shall be charged to each participant for the individual seminars. Please refer to the respective seminar contents for the costs of the German-language seminars. All prices quoted exclude the statutory value-added tax. Please specify the seminar title or code in all correspondence or money transfers. The participation fee shall become due when the invoice is issued. Please quote the invoice number when making the payment.

### 8. Withdrawal

Participants can withdraw up to 14 days before the start of the seminar. If cancellation is made in writing after this period, the seminar organizer shall be entitled to demand or retain 50% of the seminar fee as a lump-sum settlement. This lump-sum settlement shall amount to 100% in the case of withdrawals within one week before the start of the seminar. The lump-sum settlement shall not apply if a substitute participant is named. If the organizer is forced to cancel the event, any payments already received will be refunded; any other claims are excluded.

### 9. Cancellation of seminars and changes

KraussMaffei reserves the right to cancel, postpone or combine the scheduled seminars if the number of participants is too low, if presenters cannot attend, due to force majeure or for other important reasons for which KraussMaffei is not responsible. Participants shall be informed immediately and payments that have already been made shall be reimbursed. Further claims, irrespective of the form, shall be excluded unless the organizer has acted with intent or gross negligence. The organizer has the right to replace trainers or to postpone dates in the schedule for a good reason, e.g. if the trainer is sick, insofar as this can be reasonably expected of the seminar participants.

### 10. Liability

The organizer shall be liable for damages only in the case of willful or grossly negligent conduct. Liability for a violation of major contractual obligations and injuries to life and limb or health is not affected. In the event of a violation of the above-mentioned contractual obligations, the claim for damages shall be limited to typically foreseeable damages.

### 11. Copyright

Work documents and the computer software used are protected by copyright. The reproduction of seminar documents for unapproved purposes, as well as the dissemination, utilization and disclosure of the contents to third parties, is not permitted. Violations shall result in mandatory damage compensation.

### 12. Severability Clause

In the event that individual provisions of these conditions are invalid, this does not affect the validity of the remaining provisions. The invalid clause will then be replaced with another clause that meets the economic intent of the invalid clause.

### 13. Applicable law and place of jurisdiction

German law applies to all disputes regarding and in connection with the legal relationship between the parties. The agreed place of jurisdiction of the courts is Munich.