

UNITED FOR YOUR SUCCESS

MAN AND MACHINE

*SEMINAR PROGRAM
INJECTION MOLDING MACHINERY 2021*



KraussMaffei

Pioneering Plastics

IN PRESENCE TRAINING

HANDS-ON. INDIVIDUALIZED. FLEXIBLE

Practical relevance, individuality, flexibility—the training opportunities from KraussMaffei are perfectly tailored to your needs. They help you to optimize the use of your system's potential while minimizing downtime. The goal is to achieve peak productivity with your injection molding system.

The content of our training courses consists of a theory component and intensive hands-on exercises right on our systems, e.g. setup and operation, setting special machine functions to increase availability and product quality, maintaining electrical and hydraulic systems, detecting and eliminating problems as well as operating and programming the automation unit.

Your specialist knowledge will be furthered in practical exercises. At the same time, individuality is also guaranteed, because during the seminar you work in small groups on one training system. This allows our trainers to address your specific needs on an individual basis.

For all combined seminar participants, there is a final exam that allows you to further expand on everything you have learned and assess your own knowledge. Upon successful completion of this exam, you will be awarded our KraussMaffei Test Certificate—an industry-recognized qualification.



For detailed information about our IN PRESENCE TRAINING, visit:
kraussmaffei.com/trainingIMM

Look out for this icon:



YOUR BENEFITS:

- Extensive hands-on training, right on the system
- Small groups and ample time for specific questions and problem-solving strategies

HYBRID TRAINING

ONLINE TRAINING WITH REAL-WORLD COMPONENT

Getting started in the digital training world of KraussMaffei: Take advantage of the new digital training courses being offered from the training area, which teach knowledge and safety practices to your employees and lead to consistently high system availability by reducing the risk of operator error.

To guarantee that even ONLINE TRAINING results in successful learning, we have subdivided our tried-and-tested IN PRESENCE TRAINING into compact ONLINE modules. To round that out, we also offer individual control system features – such as APC plus – as an ONLINE module.

As part of the HYBRID LEARNING approach, we offer SMART ASSIST, our interactive video calling tool, to support you in implementing the content of the training in a hands-on environment once you have completed the ONLINE TRAINING. As an alternative, we supplement the hands-on component of the online training with an IN PRESENCE unit in our training centers or on site at your facility.

For more information about our additional ONLINE content, visit:

kraussmaffe.com/trainingIMM

Look out for this icon:



YOUR BENEFITS:

- Very high-quality training thanks to experienced trainers
- Take advantage of the benefits of the digital training world





INDIVIDUALIZED TRAINING

Your individualized training program will be based on HYBRID TRAINING—a continuing education concept tailored to your company. Depending on the specific task, this may consist of individual components such as IN PRESENCE TRAINING or ONLINE TRAINING or may include a variety of components. This ensures quick successes for your team and efficient handling of the system.



YOUR BENEFITS:

- Individualized training sessions: topics, duration and training format adapted to your needs
- Development of expertise depending on the qualification of your employees

Seminar telephone:












+ 49 (0)89 88 99 41 50

[**kraussmaffe.com/training/IMM**](https://www.kraussmaffe.com/training/IMM)



YOUR GUIDE TO SUCCESS MACHINE AND SYSTEM: OPERATION & MAINTENANCE

COMBINED SEMINARS










OPERATION / PROGRAMMING	MACHINE	GA Basics of applications engineering 2 days <i>Page 8</i> 	B1 MC5/MC6 Operation and setup 3 days <i>Page 9</i>	B2 MC5/MC6 Process and product enhancement 2 days <i>Page 10</i>	B3 MC5/MC6 Stable processes and quality assurance 2 days <i>Page 11</i>	BM MC6 = B1 + B2 Combined Seminar 5 days <i>Page 12</i> 	
	SYSTEM	 				BA LR MC6 = B1 + LR1 Combined Seminar 5 days <i>Page 18</i> 	BA IR MC6 = B1 + IR1 Combined Seminar 5 days <i>Page 19</i> 
MAINTENANCE	HYDRAULIC SYSTEM	G H Basics of hydraulic systems 2 days <i>Page 29</i> 	HM CX/GX/MX Hydraulic system/mechanical system 3 days <i>Page 30</i>	K CX/GX/MX Calibration 2 days <i>Page 31</i>		GHM CX/GX/MX = G H + HM Combined Seminar 5 days <i>Page 32</i> 	EHM = E + HM combination seminar 5 days <i>Page 33</i> 
	ELECTRICAL SYSTEM	E MC5/MC6 Electrical system 3 days <i>Page 25</i> 	LRW MC5/MC6 Linear robots 2 days <i>Page 26</i>	PX Electrical injection molding machine 2 days <i>Page 27</i>		WA MC6 = E + LRW Combined Seminar 5 days <i>Page 28</i> 	



Seminars also available as ONLINE TRAINING. For more information, visit: www.kraussmaffei.com/trainingIMM

YOUR GUIDE TO SUCCESS AUTOMATION: OPERATION & PROGRAMMING

COMBINED SEMINARS

	LR ROBOTS			COMBINED SEMINARS	
OPERATION / PROGRAMMING	<p>LR1 MC5/MC6/EC Operation, setup and programming*</p> <p>2/3* days Page 13</p>  <p>*only applicable to MC6</p>	<p>LR2 MC5/MC6/EC Free programming</p> <p>2*/3 days Page 14</p> <p>*Only applies to EC</p>	<p>LR3 MC5/MC6 Advanced free programming</p> <p>3 days Page 15</p>	<p>BLR MC6/EC = LR1 + LR2 Combined Seminar</p> <p>4*/5 days Page 16 *Only applies to EC</p> 	<p>PROLR MC6 = LR2 + LR3 Combined Seminar</p> <p>5 days Page 17</p> 
OPERATION / PROGRAMMING	IR ARTICULATED-ARM ROBOTS			COMBINED SEMINARS	
	<p>IR1 Basic Operation and programming</p> <p>3 days Page 20</p> 	<p>IR2 Advance Advanced programming</p> <p>4 days Page 21</p> 		<p>BA IR MC6 = B1 + IR1 Combined Seminar</p> <p>5 days Page 19</p> 	
INTENSIVE SEMINARS	IR ARTICULATED-ARM ROBOTS				
	<p>IR intensive seminar Parallel processes</p> <p>2 days Page 24</p> 	<p>IR intensive seminar Palletizing</p> <p>2 days Page 23</p> 	<p>IR intensive seminar Homing (home position)</p> <p>2 days Page 22</p> 		

SEMINAR GA

BASICS OF APPLICATIONS ENGINEERING BASIC KNOWLEDGE 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 molds
- Design of an injection molding machine
- Basics of the injection molding process
- Overview of special processes in injection molding

Target group

Beginners in injection molding (operating personnel, project engineers, purchasing, management)

Duration

2 days, each day from 8:30 a.m. to 4:30 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffe.com/training/IMM

Prerequisite

No special previous knowledge required



OPERATION /
PROGRAMMING
MACHINE

PRACTICAL SEMINAR B1

OPERATION, SETUP AND PROGRAMMING OF INJECTION MOLDING MACHINES INCLUDING CORE-PULLING

Seminar objectives

- Effective setup of injection molding machines
- Quick and safe operation of injection molding machines
- Quick and reliable 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 clamping 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 machines

Target group

Foremen, applications engineers, toolsetters, operating personnel, beginners

Duration

3 days, each day from 8:30 a.m. to 4:30 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

Prerequisite

Participation in our practical seminar
Basics of applications engineering GA or Basic knowledge of the injection molding process

Select the combined seminar "Machine operation"

B1 + B2 = BM
(see pages 9, 10 and 12)

Select the combined seminar "System operation"

B1 + LR1 = BA LR
(see pages 9, 13 and 18)

Select the combined seminar "System operation"

B1 + IR1 = BA IR
(see pages 9, 19 and 20)

PRACTICAL SEMINAR 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

Subjects

- Profiles for injection/holding pressure/plasticizing
- 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
- APC and APC+ functions (Adaptive Process Control)
- Identifying sources of interference
- Practical exercises on simulators and machine

Target group

Foremen, applications engineers, assistant foremen, toolsetters

Duration

2 days, each day from 8:30 a.m. to 4:30 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

Prerequisite

Participation in practical seminar B1

Select the combined seminar "Machine operation"

B1 + B2 = BM
(see pages 9, 10 and 12)



OPERATION /
PROGRAMMING
MACHINE

PRACTICAL SEMINAR 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
- Greater process stability, shot weight consistency

Subjects

- ECO assistant function*
- APC and APC+ functions (Adaptive Process Control)*
- 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
- Hands-on exercises on simulators and machine

**Only applies to MC6 control system*

Target group

Foremen, applications engineers, assistant foremen, toolsetters

Duration

2 days, each day from 8:30 a.m. to 4:30 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

Prerequisite

Participation in practical seminar B2

PRACTICAL SEMINAR

BM = B1 + B2

COMBINED OPERATION AND PROCESS OPTIMIZATION OF INJECTION MOLDING MACHINES

PRACTICAL SEMINAR 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 reliable 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 clamping 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 machines

Target group

Foremen, applications engineers, toolsetters, operating personnel, beginners

Duration

5 days, each day from 8:30 a.m. to 4:30 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

PRACTICAL SEMINAR 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

Subjects

- Profiles for injection/holding pressure/plasticizing
- 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
- APC and APC+ functions (Adaptive Process Control)
- Identifying sources of interference
- Practical exercises on simulators and machine

KraussMaffei
Test Certificate

YOUR ADVANTAGE

Compact, in-depth practical seminar with KraussMaffei certification

Prerequisite

Participation in our practical seminar GA or Basic knowledge of the injection molding process



OPERATION /
PROGRAMMING
MACHINE

PRACTICAL SEMINAR LR1

OPERATION, SETUP AND PROGRAMMING OF LINEAR ROBOTS WITH WIZARDX*

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 the WizardX* programming assistant

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 computer software:
LR-ON-PC/LRX-ON-PC/EasyControl-ON-PC
- Hands-on exercises on simulators and robots

**Only applies to MC6 and EasyControl control systems*

Target group

Machine operators, toolsetters, sampling personnel, automation personnel

Duration

LR1 MC5 – 2 days, each 8:30 am to 4:30 pm
LR1 MC6 – 3 days, each 8:30 am to 4:30 pm
LR1 EC – 2 days, each 8:30 am to 4:30 pm

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

Prerequisite

No special previous knowledge required

Select the combined seminar "System operation"

B1 + LR1 = BA LR
(see pages 9, 13 and 18)

Select the combined seminar "Linear robot operation"

LR1 + LR2 = BLR
(see pages 13, 14 and 16)

PRACTICAL SEMINAR LR2

FREE PROGRAMMING OF LINEAR ROBOTS

Seminar objectives

- Master 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 and basic program structure
- Modifying basic programs (e.g. using WizardX*)
- Procedure for testing program modifications
- Adapting program add-ons quickly and safely
- Working with computer software: LR-ON-PC/ LRX-ON-PC/EasyControl-ON-PC
- Hands-on exercises on simulators and robots

**Only applies to MC6 and EasyControl control systems*

Target group

Advanced toolsetters, sampling personnel with advanced automation tasks, automation personnel

Duration

LR2 MC5 – 3 days, 8:30 am to 4:30 pm each day

LR2 MC6 – 3 days, 8:30 am to 4:30 pm each day

LR2 EC – 2 days, 8:30 am to 4:30 pm each day

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

Prerequisite

Participation in practical seminar LR1

Select the combined seminar "Linear robot operation"

LR1 + LR2 = BLR
(see pages 13, 14 and 16)

Select the combined seminar "Linear robot programming"

LR2 + LR3 = PROLR
(see pages 14, 15 and 17)



OPERATION /
PROGRAMMING
LR ROBOTS

PRACTICAL SEMINAR LR3

ADVANCED PROGRAMMING OF LINEAR ROBOTS

Seminar objectives

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

Subjects

- Free 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)
- Special features of applications with multiple kinematics
- Testing and adapted created program parts
- Identifying and correcting program errors
- Practical exercises on simulators and robots

Target group

Sampling personnel with advanced automation tasks, automation personnel

Duration

3 days, each day from 8:30 a.m. to 4:30 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

Prerequisite

Participation in practical seminar LR2

Select the combined seminar "Linear robot programming"

LR2 + LR3 = PROLR
(see pages 14, 15 and 17)

PRACTICAL SEMINAR

BLR = LR1 + LR2

COMBINED OPERATION AND PROGRAMMING OF LINEAR ROBOTS

PRACTICAL SEMINAR LR1

Operation, setup and programming of linear robots with WizardX*

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 the WizardX* programming assistant

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 computer software: LR-ON-PC/ LRX-ON-PC/EasyControl-ON-PC
- Hands-on exercises on simulators and robots

**Only applies to MC6 and EasyControl control systems*

Target group

Advanced toolsetters, sampling personnel with advanced automation tasks, automation personnel

Duration

BLR MC6 – 5 days, 8:30 am to 4:30 pm each day
BLR EC – 4 days, 8:30 am to 4:30 pm each day

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

PRACTICAL SEMINAR LR2

Free programming of linear robots

Seminar objectives

- Master 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 and basic program structure
 - Modifying basic programs (e.g. using WizardX*)
 - Procedure for testing program modifications
 - Adapting program add-ons quickly and safely
 - Working with computer software: LR-ON-PC/ LRX-ON-PC/EasyControl-ON-PC
 - Hands-on exercises on simulators and robots
- *Only applies to MC6 and EasyControl control systems*

KraussMaffei
Test Certificate

YOUR ADVANTAGE

Compact, in-depth practical seminar with KraussMaffei certification

Prerequisite

No special previous knowledge required



OPERATION /
PROGRAMMING
LR ROBOTS

PRACTICAL SEMINAR PROLR = LR2 + LR3 COMBINED EXPERT PROGRAMMING OF LINEAR ROBOTS

PRACTICAL SEMINAR LR2

Free programming of linear robots

Seminar objectives

- Master 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 and basic program structure
- Modifying basic programs (e.g. using WizardX*)
- Procedure for testing program modifications
- Adapting program add-ons quickly and safely
- Working with the LR-ON-PC/LRX-ON-PC software
- Hands-on exercises on simulators and robots

**Only applies to MC6 control system*

PRACTICAL SEMINAR LR3

Advanced programming of linear robots

Seminar objectives

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

Subjects

- Free 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)
- Special features of applications with multiple kinematics
- Testing and adapted created program parts
- Identifying and correcting program errors
- Practical exercises on simulators and robots

KraussMaffei
Test Certificate

Target group

Advanced toolsetters, sampling personnel with advanced automation tasks, automation personnel

Duration

5 days, each day from 8:30 a.m. to 4:30 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

YOUR ADVANTAGE

Compact, in-depth practical seminar with KraussMaffei certification

Prerequisite

Participation in practical seminar LR1



PRACTICAL SEMINAR

BA LR = B1 + LR1

COMBINED OPERATION AND PROGRAMMING OF INJECTION MOLDING MACHINES AND LINEAR ROBOTS

PRACTICAL SEMINAR 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 reliable 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 clamping 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 machines

Target group

Machine operators, toolsetters, sampling personnel, automation personnel

Duration

5 days, each day from 8:30 a.m. to 4:30 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

PRACTICAL SEMINAR LR1

Operation, setup and programming of linear robots with WizardX*

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 the WizardX* programming assistant

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
- Hands-on exercises on simulators and robots

**Only applies to MC6 control system*

KraussMaffei
Test Certificate

YOUR ADVANTAGE

Compact, in-depth practical seminar with KraussMaffei certification

Prerequisite

Participation in our practical seminar Basics of applications engineering GA or Basic knowledge of the injection molding process



OPERATION /
PROGRAMMING
SYSTEM

PRACTICAL SEMINAR

BA IR = B1 + IR1

COMBINED OPERATION AND PROGRAMMING OF INJECTION MOLDING MACHINES AND ARTICULATED-ARM ROBOTS

PRACTICAL SEMINAR 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 reliable 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 clamping 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 machines

PRACTICAL SEMINAR IR1 BASIC

Operation and programming of articulated-arm robots

Seminar objectives

The objective of the seminar is to gain all the essential skills required to operate and create simple handling tasks for the KM robot system.

Subjects

- 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

Target group

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

Duration

5 days, each day from 8:30 a.m. to 4:30 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffe.com/training/IMM

YOUR ADVANTAGE

Compact, in-depth practical seminar with KraussMaffei certification

Prerequisite

Participation in our practical seminar Basics of applications engineering GA or Basic knowledge of the injection molding process



OPERATION /
PROGRAMMING
SYSTEM

PRACTICAL SEMINAR IR1 BASIC OPERATION AND PROGRAMMING OF ARTICULATED-ARM ROBOTS

Seminar objectives

The objective of the seminar is to gain all the essential skills required to operate and create simple handling tasks for the KM robot system.

Subjects

- Setup and operation of a KUKA robot system
- Moving robots, reading and interpreting messages from the robot control system
- Operation with VisuX
- Programming with ProgTechX
- Using robot programs
- Handling program files, creating program modules
- Creating and changing programmed movements, generating new movement commands

Target group

Operators and toolsetters

Remarks

The course ends with a final test. A KraussMaffei certificate is awarded on successful completion of the course.

Duration

3 days, starting on the first day at 9:00 a.m. otherwise from 8:00 a.m. to 4:00 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

Prerequisite

No special previous knowledge required

KraussMaffei
Test Certificate

Select the combined seminar "System operation"

B1 + IR1 = BA IR
(see pages 9, 20 and 19)



OPERATION /
PROGRAMMING
IR ROBOTS

PRACTICAL SEMINAR IR2 ADVANCE OPERATION, SETUP AND PROGRAMMING OF ARTICULATED-ARM ROBOTS

Seminar objectives

The objective of the seminar is to gain the additional skills required to set up and create complex handling tasks for the KM robot system.

Subjects

- Operation with VisuX
- Commissioning activities at the robot, principle of adjustment
- Programming collision detection
- Using logic functions in the robot program, introduction to logic programming
- Variables and agreements
- Successful programming in KRL structure and configuration of robot programs
- Use of program sequence controls, programming requests or branchings
- Programming with ProgTechX
- Parallel processes

Target group

Toolsetters, maintenance personnel and programmers

Remarks

The course ends with a final test. A KM/KUKA certificate is awarded on successful completion of the course. 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

Duration

4 days, starting at 9:00 a.m. on the first day and otherwise from 8:00 a.m. to 4:00 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

Prerequisite

Participation in our practical seminar IR1, basic knowledge of programming or experience with automation systems



PRACTICAL SEMINAR IR INTENSIVE HOMING (HOME POSITION)

Seminar objectives

- Safe creation of retraction programs

Subjects

- Backward movement to the home position
- Forward movement to the home position
- Special movement to the home position
- Conditional home traverse

Target group

Operators and toolsetters

Remarks

The course ends with a final test. The KraussMaffei certificate is awarded on successful completion of the course.

Duration

2 days, starting at 9:00 am on the first day, otherwise from 8:00 am to 4:00 pm

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

Prerequisite

Participation in practical seminar IR1 or Knowledge of VisuX and ProgTechX



PRACTICAL SEMINAR IR INTENSIVE PALLETIZING

Seminar objectives

- Mastery and efficient creation of palletizing tasks
- Working with StackingX

Subjects

- Simple palletizing
- Nested palletizing
- Staggered palletizing
- Palletizing with intermediate storage
- Special palletizing methods

Target group

Operators and toolsetters

Remarks

The course ends with a final test. The KraussMaffei certificate is awarded on successful completion of the course.

Duration

2 days, starting on the first day at 9:00 a.m. otherwise from 8:00 a.m. to 4:00 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

Prerequisite

Participation in practical seminar IR1 or knowledge of VisuX and ProgTechX



PRACTICAL SEMINAR IR INTENSIVE PARALLEL PROCESSES

Seminar objectives

- Mastery of writing parallel processes and functions
- Working with ParallelX

Subjects

- Kuka Submit interpreter
- KRL (Kuka Robot Language)
- Parallel processes in KRL
- Parallel processes with ParallelX

Target group

Operators and toolsetters

Remarks

The course ends with a final test. The KraussMaffei certificate is awarded on successful completion of the course.

Duration

2 days, starting on the first day at 9:00 a.m. otherwise from 8:00 a.m. to 4:00 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

Prerequisite

Participation in practical seminar IR1 or knowledge of VisuX and ProgTechX



PRACTICAL SEMINAR E

TROUBLESHOOTING OF ELECTRICAL SYSTEM ON INJECTION MOLDING MACHINES

Seminar objectives

- Rapid detection and clearance of faults
- Systematic troubleshooting in electrical systems

Subjects

- Machine operation for maintenance personnel
- Error messages and event log
- Design and functional principle 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

Maintenance and servicing personnel for electrical systems/electronics

Duration

3 days, each day from 8:30 a.m. to 4:30 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

Prerequisite

- Electrically skilled person
 - Basic knowledge of how to operate KraussMaffei injection molding machines recommended
-

Select the combined seminar "Plant maintenance"

E + LRW = WA
(see pages 25, 26 and 28)

Select the combined seminar "Machine maintenance"

E + HM = EHM
(see pages 25, 30 and 33)



PRACTICAL SEMINAR LRW

MAINTENANCE AND TROUBLESHOOTING OF LINEAR ROBOTS

Seminar objectives

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

Subjects

- Robot operation for maintenance personnel
- 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 for electrical systems/electronics and/or automation

Duration

2 days, each day from 8:30 a.m. to 4:30 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffe.com/training/IMM

Prerequisite

Electrically skilled person

Select the combined seminar "Plant maintenance"

E + LRW = WA

(see pages 25, 26 and 28)



MAINTENANCE
ELECTRICAL SYSTEM

PRACTICAL SEMINAR PX

MAINTENANCE AND TROUBLESHOOTING OF PX ELECTRICAL INJECTION MOLDING MACHINES

Seminar objectives

- Differences in relation to hydraulic machines
- Optimal maintenance of the PX electrical injection molding machine
- Rapid detection and clearance of faults

Subjects

- Special features of operation (zero points, mold area protection, clamping force measurement)
- Mechanical design of the locking and injection unit
- Knowledge of electrical drive systems
- Preventive maintenance
- Expert use of electric circuit diagrams
- MC6 control concept with S-DIAS module
- Modules in the converter network
- Bus connections
- Diagnosis functions
- Troubleshooting in the control system
- Configuring displacement/force transducers

Target group

Maintenance and servicing personnel for electrical systems/electronics

Duration

2 days, each day from 8:30 a.m. to 4:30 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

Prerequisite

- Participation in practical seminar E MC6
 - Basic knowledge of how to operate KraussMaffei injection molding machines recommended
-



PRACTICAL SEMINAR WA = E + LRW

COMBINED MAINTENANCE AND TROUBLESHOOTING OF SYSTEMS, INJECTION MOLDING MACHINE AND LINEAR ROBOTS

PRACTICAL SEMINAR E

Troubleshooting of electrical system on injection molding machines

Seminar objectives

- Rapid detection and clearance of faults
- Systematic troubleshooting in electrical systems

Subjects

- Machine operation for maintenance personnel
- Error messages and event log
- Design and functional principle 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

PRACTICAL SEMINAR LRW

Maintenance and troubleshooting of linear robots

Seminar objectives

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

Subjects

- Robot operation for maintenance personnel
- 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 for electrical systems/electronics and/or automation

Duration

5 days, each day from 8:30 a.m. to 4:30 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffe.com/training/IMM

KraussMaffei
Test Certificate

YOUR ADVANTAGE

Compact, in-depth practical seminar with KraussMaffei certification

Prerequisite

- Electrically skilled person
 - Basic knowledge of how to operate KraussMaffei injection molding machines recommended
-



MAINTENANCE
ELECTRICAL SYSTEM

PRACTICAL SEMINAR G H

BASICS OF HYDRAULIC SYSTEMS ON INJECTION MOLDING MACHINES

Seminar objectives

- Basics of hydraulic systems
- Design and handling of hydraulic circuit diagrams

Subjects

- Physical principles of, and interconnections within the hydraulic system
- Hydraulic components
- Design and functional principle of the hydraulic system
- Functional principle and characteristics of the hydraulic components used
- Practical exercises on the machine

Target group

Maintenance and servicing personnel for electrical systems/electronics

Duration

2 days, each day from 8:30 a.m. to 4:30 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

Prerequisite

No special previous knowledge required

Select the combined seminar "Plant maintenance"

G H + HM = GHM

(see pages 29, 30 and 32)



**MAINTENANCE
HYDRAULIC SYSTEM/
MECHANICAL SYSTEM**

PRACTICAL SEMINAR HM

TROUBLESHOOTING OF THE HYDRAULIC/MECHANICAL SYSTEM ON INJECTION MOLDING MACHINES

Seminar objectives

- Rapid detection and clearance of faults
- Professional, systematic troubleshooting in hydraulic/mechanical systems

Subjects

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

Target group

Maintenance and servicing personnel

Duration

3 days, each day from 8:30 a.m. to 4:30 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

Prerequisite

Basic knowledge of hydraulic/mechanical systems and participation in practical seminar G H.

Select the combined seminar "Machine maintenance"

E + HM = EHM
[see pages 25, 30 and 33]

Select the combined seminar "Plant maintenance"

G H + HM = GHM
[see pages 29, 30 and 32]



**MAINTENANCE
HYDRAULIC SYSTEM/
MECHANICAL SYSTEM**

PRACTICAL SEMINAR K

CALIBRATING INJECTION MOLDING MACHINES

Seminar objectives

- Independent calibration and adjustment
- Increasing process and machine capability

Subjects

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

Target group

Maintenance and servicing personnel

Duration

2 days, each day from 8:30 a.m. to 4:30 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

Prerequisite

Participation in practical seminar E or HM



PRACTICAL SEMINAR GHM = G H + HM

COMBINED BASICS AND TROUBLESHOOTING OF HYDRAULIC/MECHANICAL SYSTEMS OF INJECTION MOLDING MACHINES

PRACTICAL SEMINAR G H

Basics of hydraulic systems on injection molding machines

Seminar objectives

- Basics of hydraulic systems
- Design and handling of hydraulic circuit diagrams

Subjects

- Physical principles of, and interconnections within the hydraulic system
- Hydraulic components
- Design and functional principle of the hydraulic system
- Functional principle and characteristics of the hydraulic components used
- Practical exercises on the machine

PRACTICAL SEMINAR HM

Troubleshooting of the hydraulic/mechanical system on injection molding machines

Seminar objectives

- Rapid detection and clearance of faults
- Professional, systematic troubleshooting in hydraulic/mechanical systems

Subjects

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

Target group

Maintenance and servicing personnel

Duration

5 days, each day from 8:30 a.m. to 4:30 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

KraussMaffei
Test Certificate

YOUR ADVANTAGE

Compact, in-depth practical seminar with KraussMaffei certification

Prerequisite

Basic knowledge of how to operate KraussMaffei injection molding machines recommended

PRACTICAL SEMINAR EHM = E + HM

COMBINED TROUBLESHOOTING OF INJECTION MOLDING MACHINES (ELECTRICAL/HYDRAULIC/MECHANICAL SYSTEMS)

PRACTICAL SEMINAR E

Troubleshooting of electrical system on injection molding machines

Seminar objectives

- Rapid detection and clearance of faults
- Systematic troubleshooting in electrical systems

Subjects

- Machine operation for maintenance personnel
- Error messages and event log
- Design and functional principle 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

PRACTICAL SEMINAR HM

Troubleshooting of the hydraulic/mechanical system on injection molding machines

Seminar objectives

- Rapid detection and clearance of faults
- Professional, systematic troubleshooting in hydraulic/mechanical systems

Subjects

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

KraussMaffei
Test Certificate

Target group

Maintenance and servicing personnel

Duration

5 days, each day from 8:30 a.m. to 4:30 p.m.

DATES

For current dates, ONLINE variants and more information, visit:

www.kraussmaffei.com/training/IMM

YOUR ADVANTAGE

Compact, in-depth practical seminar with KraussMaffei certification

Prerequisite

- Electrically skilled person
- Basic knowledge of hydraulic/mechanical systems
- Participation in practical seminar G H
- Basic knowledge of how to operate KraussMaffei injection molding machines recommended



MAINTENANCE / SERVICING
ELECTRICAL/HYDRAULIC/MECHANICAL
SYSTEMS

YOUR ROUTE TO KRAUSSMAFFEI MUNICH-ALLACH AND SURROUNDING AREA



Travel to city center by train or plane

From Munich Airport, you can reach the main train station by local train (S-Bahn line S1) or with the S8 in the direction of the city center.

You can reach KraussMaffei from the main train station in Munich within 15 minutes by taking the local train (S-Bahn) route S2 toward Dachau/Petershausen and exiting at "Allach" station. Allach is directly in front of our company premises.

Arrival by car

Visitor parking is available if you are traveling by car. The optimal route uses the KraussMaffei private road that branches off from Ludwigsfelder Strasse. Navigation system 48° 11' 38" N / 11° 28' 31" E.

CONTACT INFO – INJECTION MOLDING TECHNOLOGY SEMINAR REGISTRATION

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Schulung SGM / Training IMM
KraussMaffei Technologies GmbH
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Internet: www.kraussmaffei.com/trainingIMM

You will find our conditions for participation here:

<https://km.kraussmaffei.com/de/teilnahmebedingungen.html>

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SUCCESS.**
INJECTION MOLDING
MACHINERY SEMINARS
2021.



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