UNITED FOR YOUR SUCCESS

MAN AND MACHINE

TRAINING PROGRAM
REACTION PROCESS MACHINERY 2024

KraussMaffei

Pioneering Plastics

MAN AND MACHINE
WE BRING YOU SUCCESS

Individual challenges in mechanical engineering call for intelligent solutions.
The training program from KraussMaffei is perfectly adapted to your requirements. We teach you our special topics: operation of the RimStar and Comet machine series and give you sound basic knowledge in the "Basics of PUR" training.

Your benefits
We will prepare you and your employees to make optimal cost-effective use of the reaction processing machines from KraussMaffei.

Our priority
Our training courses offer a high degree of practical content that perfectly complements the theory behind it. We teach you the function, operation and maintenance of our machines in a simple and straightforward way. The result: noticeably improved quality of work, higher productivity and effective troubleshooting.

Note:
Each participant receives relevant documents at the start of the training and a certificate upon completion.

Special courses on request
The training courses specified in our training program are held in German. It goes without saying that, by special agreement, all training courses and training combinations can also be held in English or with an interpreter.

We also offer training courses specifically tailored to your requirements in the fields of operation and maintenance – no matter whether we come to you, or you to us. We also organize training courses at other locations, such as the KraussMaffei Sales and Service Center (North) in Verl and facilities of partnering research institutes. We write to our customers in the respective catchment area separately to invite them.

Subject selection for special courses:
- REACH diisocyanates
- ColorForm
- CCM Clear Coat Molding
- LFI Long Fiber Injection
- Spraying technologies
- Nucleation units
- Color metering
- Multicolor technology
- Multicomponent technology
- Pultrusion
- Older control systems and older series upon request

Other special topics are available upon request.
Just ask us!

For detailed information and online training, visit:
krauss maffei.com/trainingRPM

YOUR BENEFITS
BENEFIT FROM THE HANDS-ON APPROACH, PERSONAL INTERACTION AND FLEXIBILITY

KraussMaffei training is hands-on:
Our trainers have many years of experience and make use of the latest technology to offer you the highest quality of instruction. They use practical exercises, for example on machines and simulators, to impart their specialized knowledge to participants. This gives them the best possible preparation for their tasks in the workplace.

KraussMaffei offers training on a personal level:
We limit the number of participants in our training courses to a maximum of eight. Our trainers are able to respond individually to the personal needs of participants and identify concrete problem solutions.

KraussMaffei offers flexibility:
Whether you are a beginner or advanced – our program contains training courses for all knowledge levels. We also offer individual training courses on special subjects and tasks, even for older series. You can attend KraussMaffei training courses at our training center in Munich or at our KraussMaffei Sales and Service Center (North) in Verl. We will also gladly come directly to you.

YOUR BENEFITS:

- Comprehensive practical training
- Experienced training leaders
- Small learning groups
- Time for individual questions and problem-solving strategies
- Comprehensive service for your arrival, hotel reservation and visit

Telephone: +49 89 88 99 31 55
kraussmaffei.com/trainingRPM

YOUR GUIDELINE TO SUCCESS
BASICS, FUNCTION, OPERATION AND MAINTENANCE

Basics

PUR
Basic training on polyurethane technology
1 day
→ Page 5

Basics with a significant practical component

Wet side equipment
Basics of the PUR metering machine and process
1-2 days
→ Page 15

Pultrusion
Basics of the pultrusion system and process
3 days
→ Page 16

Specialization

REACH diisocyanates
Working safely with diisocyanates
→ Page 6/7

RS 08 or RS TP
Operation of RimStar pump metering machine with PUC08 or TP1200 visualization
2 days
→ Page 8

CO 08 or CO TP
Operation of the Comet and Hybrid piston metering machines with PUC08 or TP1200 visualization
2 days
→ Page 9

EcoStar
Operation of EcoStar pump metering machine
2 days
→ Page 10

RS Smart
Operation of the RimStar Smart pump metering machine
2 days
→ Page 11

MKP
Mixing head and pump training
2 days
→ Page 12

MKE-3B
Repair seminar for MKE-3B mixing head
1 day
→ Page 13

RTM
Operation of the RTM metering system
1 day
→ Page 14

Individual

Special training
(examples on page 2)

Krauss Maffei CERTIFICATE

Each participant receives a certificate upon completion.

PUR PRACTICAL TRAINING
BASIC TRAINING ON POLYURETHANE TECHNOLOGY

Learning objective
The participant learns about the design, composition and supply of polyurethane raw materials, behavior and influences during the chemical reaction and safe handling of components.

Subjects
- Basics of plastics
- Types and products made of polyurethane
- Polyols and their additives
- Isocyanate
- Behavior and influences during the chemical reaction
- Definitions
- Use of blowing agents
- Safety precautions and hazards when handling polyurethane raw materials
- Correct conduct in case of accidents
- Determination of physical values on finished part
- Check of reactivity (cup test)

Duration
1 day, 9:00 am to 4:30 pm

Dates and costs
Dates, cost and other information
(e.g. for online training) available on request and at:
kraussmaffei.com/trainingRPM

Prerequisite
No special previous knowledge required

REACH DIISOCYANATES TRAINING
WORKING SAFELY WITH DIISOCYANATES

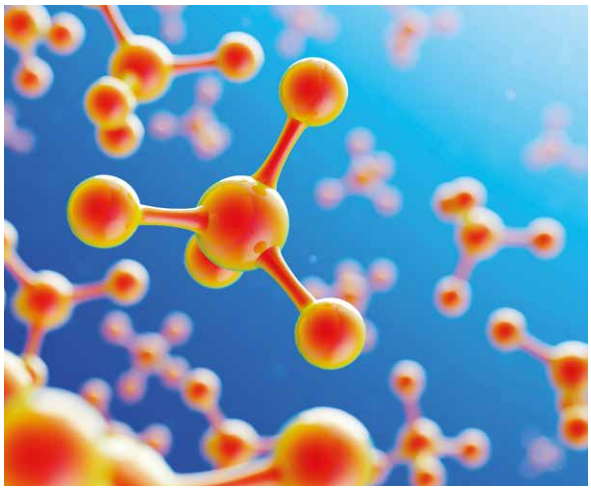
Learning objective
The participant learns about working safely with diisocyanates to counter the potential risk of respiratory sensitization. After successfully completing the certification, the participant is authorized to continue working with diisocyanates.

Subjects
Basic training – Prerequisite for all commercial or industrial applications
– Product labels
– Safety data sheets
– Operating instruction
– Dangers and chemistry of diisocyanates
– Exposure
- Personal protective equipment
– Hygiene
– Emergency measures

Intermediate training – for applications with a medium hazard level
– All content of the basic training
– Additional behavior-related aspects
– Maintenance
– Change management
– Assessment of existing safety instructions
– Risk in terms of the application process used

Advanced training – for applications with an elevated hazard level
– All content of the basic and intermediate training
– Any other certification required for the specific use
– Spraying outside a spray cabinet
– Open handling of hot or warm formulations (> 45 °C)

Duration, dates and costs
Dates, cost and other information (e.g. for online training) available on request and at:
kraussmaffei.com/trainingRPM



Prerequisite
No special previous knowledge required

Qualified training program

To ensure that employees throughout the EU can continue working safely with diisocyanates, new and binding training requirements are now prescribed as part of the European REACH regulation. Companies have to train their employees by August 24, 2023.

As a cooperation partner of the German Foamed Plastics and Polyurethanes Association (Fachverband Schaumkunststoffe und Polyurethane e.V., known as FSK), KraussMaffei helps companies implement the mandatory training.

We carry out the training courses according to your individual requirement: as face-to-face, web-based or hybrid event. The training content has already been developed together with the manufacturers and importers of diisocyanates in collaboration with the downstream users and distributors.

What are diisocyanates?

Diisocyanates are a family of chemical components used to manufacture a wide range of polyurethane products. Polyurethanes result from the chemical reaction between diisocyanates and polyols that polymerize when blended together. Polyurethanes would not exist without these two components.

Why are the training courses mandatory?

Behavior at the workplace is critical for working safely with diisocyanates. In case of improper behavior, diisocyanates can cause respiratory sensitization – an irreversible allergic reaction. To deal with this potential risk, the EU is introducing legally prescribed training courses intended to ensure workplace safety for employees when handling diisocyanates.

How can I find out whether I have to conduct the training courses?

All industrial and commercial users are required to implement the training requirements by August 24, 2023 in order to continue using diisocyanates. If you use diisocyanates, you have to complete a training course.

Where can I find more information?

For additional information about the training requirements, visit:
fsk-vsv.de/reach/schulungsinhalte-reach-diisocyanate

RS 08 OR RS TP
PRACTICAL TRAINING
OPERATION OF RIMSTAR PUMP METERING MACHINE WITH PUC08 OR TP1200 VISUALIZATION

Learning objective
The participant learns about the design, functionality and operation of the machine and visualization system as well as the localization of faults and optimization of the machine settings. In addition, the functionality and proper handling of mixing heads and pumps are taught.

Subjects
- Mechanical design of the RimStar machine
- Safety devices
- Machine sequence based on flow charts
- Maintenance of complete machine
- Operation of the machine at the control cabinet
- Configuration of the PUC08 or TP1200 visualization and the decentralized peripherals
- Explanation of all screen pages and input parameters
- Operation of the visualization system with practical exercises
- Localization of faults with the help of the visualization system

Duration
2 days, each 9:00 am to 5:00 pm

Dates and costs
Dates, cost and other information
(e.g. for online training) available on request and at:
krauss maffei.com/trainingRPM

Prerequisite
No special previous knowledge required

CO 08 OR CO TP PRACTICAL TRAINING

OPERATION OF THE COMET AND HYBRID PISTON METERING MACHINES WITH PUC08 OR TP1200 VISUALIZATION

Learning objective
The participant learns about the design, functionality and operation of the machine and visualization system as well as the localization of faults and optimization of the machine settings. In addition, the functionality and proper handling of mixing heads are taught.

Subjects
- Mechanical design of the Comet and Hybrid machines
- Safety devices
- Machine sequence based on flow charts
- Maintenance of complete machine
- Operation of the machine at the control cabinet
- Configuration of the PUC08 or TP1200 visualization and the decentralized peripherals
- Explanation of all screen pages and input parameters
- Operation of the visualization system with practical exercises
- Localization of faults with the help of the visualization system

Duration
2 days, each 9:00 am to 5:00 pm

Dates and costs
Dates, cost and other information
(e.g. for online training) available on request and at:
kraussmaffei.com/trainingRPM

Prerequisite
No special previous knowledge required

ECOSTAR PRACTICAL TRAINING
OPERATION OF THE PUMP METERING MACHINE ECOSTAR

Learning objective
The participant learns about the design, functionality and handling of the machine and control panel as well as the localization of faults and optimization of the machine settings. In addition, the functionality and proper handling of mixing heads and pumps are taught.

Subjects
- Mechanical design of the EcoStar machine
- Machine sequence based on flow charts
- Handling of the visualization system
- Explanation of the screen pages and input parameters
- Design and operating principle of the mixing heads
- Changing nozzles and adjusting the mixing pressure
- Functional principles of the metering pumps
- Options for adjusting the output capacity
- Flow control by means of frequency converters
- Maintenance of complete machine
- Operation and practical exercises at a machine

Duration
2 days, each 9:00 am to 5:00 pm

Dates and costs
Dates, cost and other information
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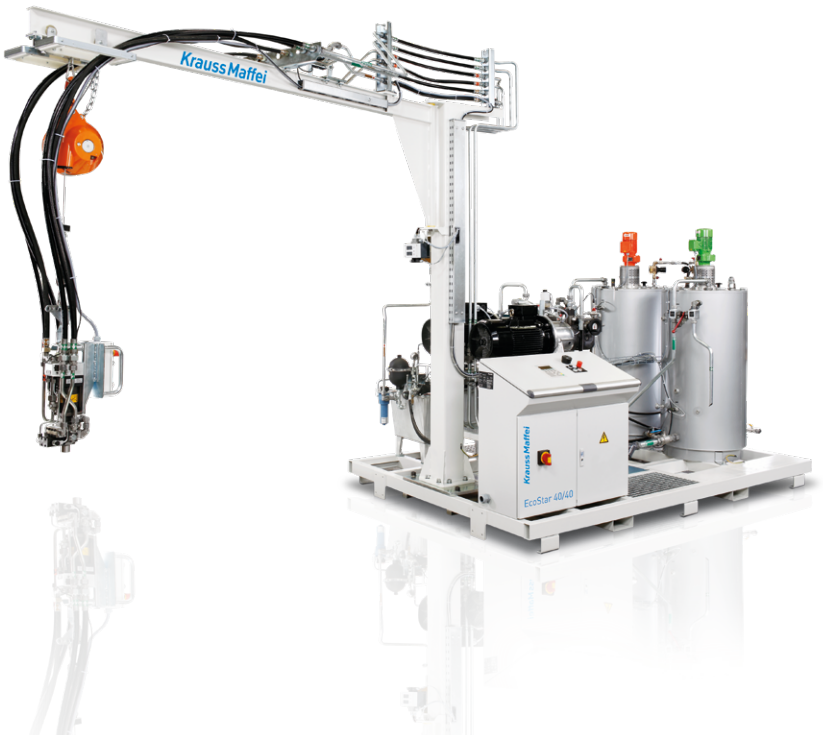
Prerequisite
No special previous knowledge required



RS SMART PRACTICAL TRAINING
OPERATION OF THE RIMSTAR SMART PUMP METERING MACHINE

Learning objective
The participant learns about the design, functionality and handling of the machine and control panel as well as the localization of faults and optimization of the machine settings. In addition, the functionality and proper handling of mixing heads and pumps are taught.

Subjects
- Mechanical design of the RimStar Smart machine
- Machine sequence based on flow charts
- Handling the TP1200 Comfort Pro visualization system
- Explanation of the screen pages and input parameters
- Design and operating principle of the mixing heads
- Changing nozzles and adjusting the mixing pressure
- Functional principles of the metering pumps
- Options for adjusting the output capacity
- Flow control by means of frequency converters
- Maintenance of complete machine
- Operation and practical exercises at a machine

Duration
2 days, each 9:00 am to 5:00 pm

Dates and costs
Dates, cost and other information
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kraussmaffei.com/trainingRPM

Prerequisite
No special previous knowledge required

MKP PRACTICAL TRAINING
MIXING HEAD AND PUMP TRAINING

Learning objective
The participant learns about the operating principle and correct handling of the mixing heads and pumps as well as their independent maintenance.

Subjects

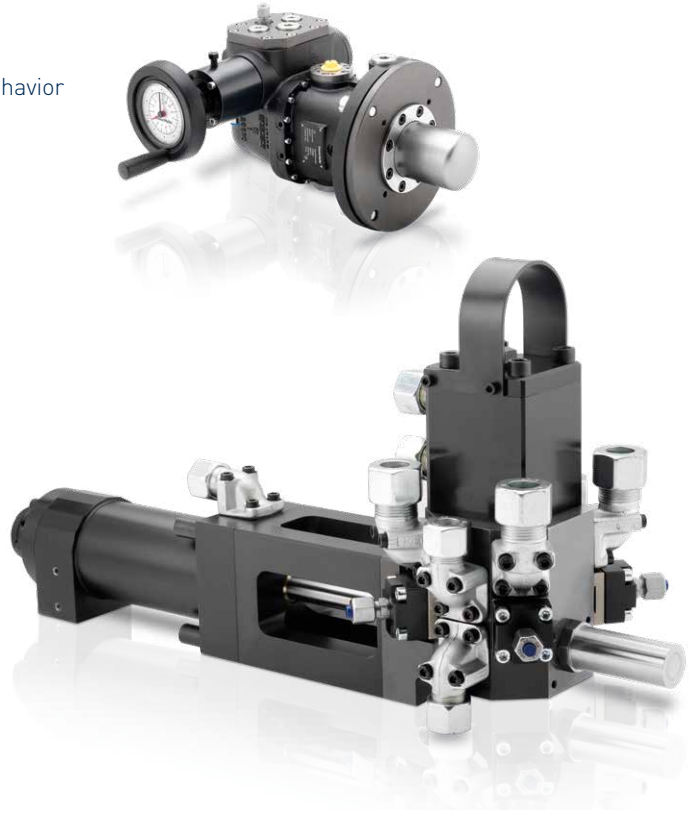
Mixing head
- General presentation of the mixing head types
- Design and functional explanation
- Selecting and changing nozzles as well as adjusting the mixing pressure
- Hydraulic and electric activation
- Fault detection at the mixing head
- Maintenance
- Practical exercises at the mixing head

Metering pump
- Functional principles of the pumps
- Effect of various operating statuses on pump behavior
- Options for adjusting the output capacity
- Flow control
- Maintenance
- Practical exercises at the pumps
- Magnetic coupling

Duration
2 days, each 9:00 am to 5:00 pm

Dates and costs
Dates, cost and other information
(e.g. for online training) available on request and at:
kraussmaffei.com/trainingRPM

Prerequisite
No special previous knowledge required



MKE-3B PRACTICAL TRAINING
REPAIR SEMINAR FOR MKE-3B MIXING HEAD

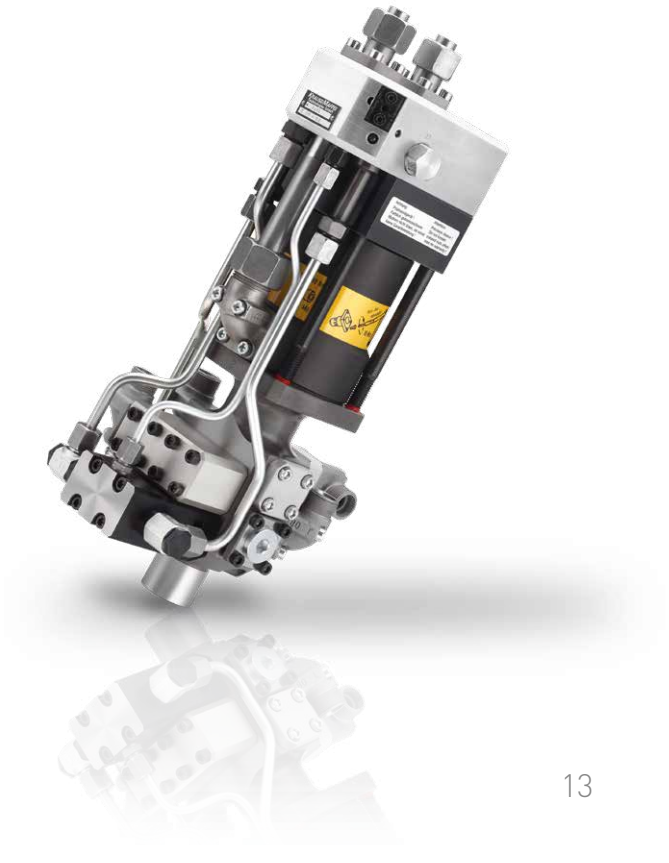
Learning objective
Participants learn about the design, operating principle and correct handling of this mixing head type. By means of practical exercises, they also acquire knowledge of how to repair the mixing head.

Subjects
- General presentation of mixing head types
- Design and functional explanation
- Hydraulic and electric activation
- Selection criteria and nozzle changing
- Fault detection at the mixing head
- Practical exercises on disassembling, repairing, sealing and assembly with subsequent function test

Duration
1 day, 9:00 am to 4:30 pm

Dates and costs
Dates, cost and other information (e.g. for online training) available on request and at:
kraussmaffei.com/trainingRPM

Prerequisite
No special previous knowledge required



RTM PRACTICAL TRAINING
OPERATION OF THE RTM METERING SYSTEM (RTM – RESIN TRANSFER MOLDING)

Learning objective
Participants learn about the design, operating principle and operation of the RTM metering system as well as the specific parameters for the RTM process and the screen pages in the PUC08 visualization system.

Subjects
- Presentation of the RTM process and comparison of different resin injection methods
- Design of the RTM metering system
- Machine sequence based on flow charts
- Functional principle of the RTM-specific metering units
- Design and operating principle of the RTM mixing head
- Changing nozzles and adjusting the mixing pressure
- Metering of release agent into resin component at mixing head
- Maintenance of complete machine
- Use of mold cavity pressure for control of the resin injection
- Explanation of the input parameters relevant to the RTM process and screen pages in the PUC08 visualization system

Duration
1 day, 9:00 am to 4:30 pm

Dates and costs
Dates, cost and other information (e.g. for online training) available on request and at:
krauss maffei.com/trainingRPM

Prerequisite
Basic knowledge of the function and operation of a reaction machine, for example, through participation in a "RS 08" training course (page 6)

WET SIDE PRACTICAL TRAINING
BASICS OF THE PUR METERING MACHINE AND PROCESS

Learning objective
The participants learn about the configuration and operation of the individual function elements of a 2-component high-pressure metering machine with associated mixing head. This instruction is partly theoretical but mostly hands-on. In addition, participants learn the meaning of the most important process-guiding parameters, safety instructions and maintenance measures.

At the machine, the participants learn the actions needed to prepare the machine for operation, calibrate it and optimize the reaction mix discharge, and they become familiar with the most frequently occurring potential process errors and component defects.

Subjects
- Design of the metering machine
- Function elements such as material supply, metering line, flow control, mixing head
- Safety and maintenance instructions
- Preparing the machine for operation and calibrating it
- First steps in the reaction injection molding process, optimization and troubleshooting

Remarks
1-day training as a supplement to the metering machine training (only in combination with the metering machine training)
2-day training as a standalone concept

Duration
1 day or 2 days, each 9:00 am to 5:00 pm

Dates and costs
Dates, cost and other information
(e.g. for online training) available on request and at:
kraussmaffei.com/trainingRPM

Prerequisite
No special previous knowledge required

PULTRUSION PRACTICAL TRAINING
BASICS OF THE PULTRUSION SYSTEM AND PROCESS

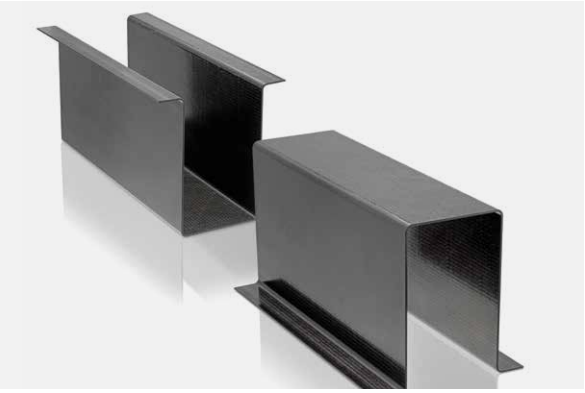
Learning objective
The participants learn about the configuration and individual function elements of a pultrusion system that is ready to operate. This instruction is partly theoretical but primarily hands-on. In particular, the differences and properties of the two impregnation variants are explained. In addition, participants learn the meaning of the most important process-guiding parameters, as well as instructions for safety, operation and maintenance.

At the machine, the participants learn the actions needed to prepare the system, impregnation unit and mold and to optimize the start-up manufacturing process. The participants become familiar with the most frequently occurring potential component defects and learn how to recognize when a certain product can be manufactured using pultrusion.

Subjects
- Design of the pultrusion system
- Function elements such as fiber feed, injection box/ impregnation bath, metering machine, mixing head, mold, haul-off, saw, fabrication
- Safety and maintenance instructions
- Preparing the machine for operation and calibrating it
- Starting up a pultrusion process, optimization and troubleshooting
- Pultrudability of a profile

Duration
3 days, each 9:00 am to 4:30 pm

Dates and costs
Dates, cost and other information
(e.g. for online training) available on request and at:
krauss maffei.com/trainingRPM



Prerequisite
No special previous knowledge required

CONTACT INFORMATION FOR REACTION PROCESS MACHINERY
TRAINING REGISTRATION

Call: +49 89 88 99 31 55

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Post: KraussMaffei Technologies GmbH
Training Reaction Process Machinery
Jörg Elstner

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85599 Parsdorf

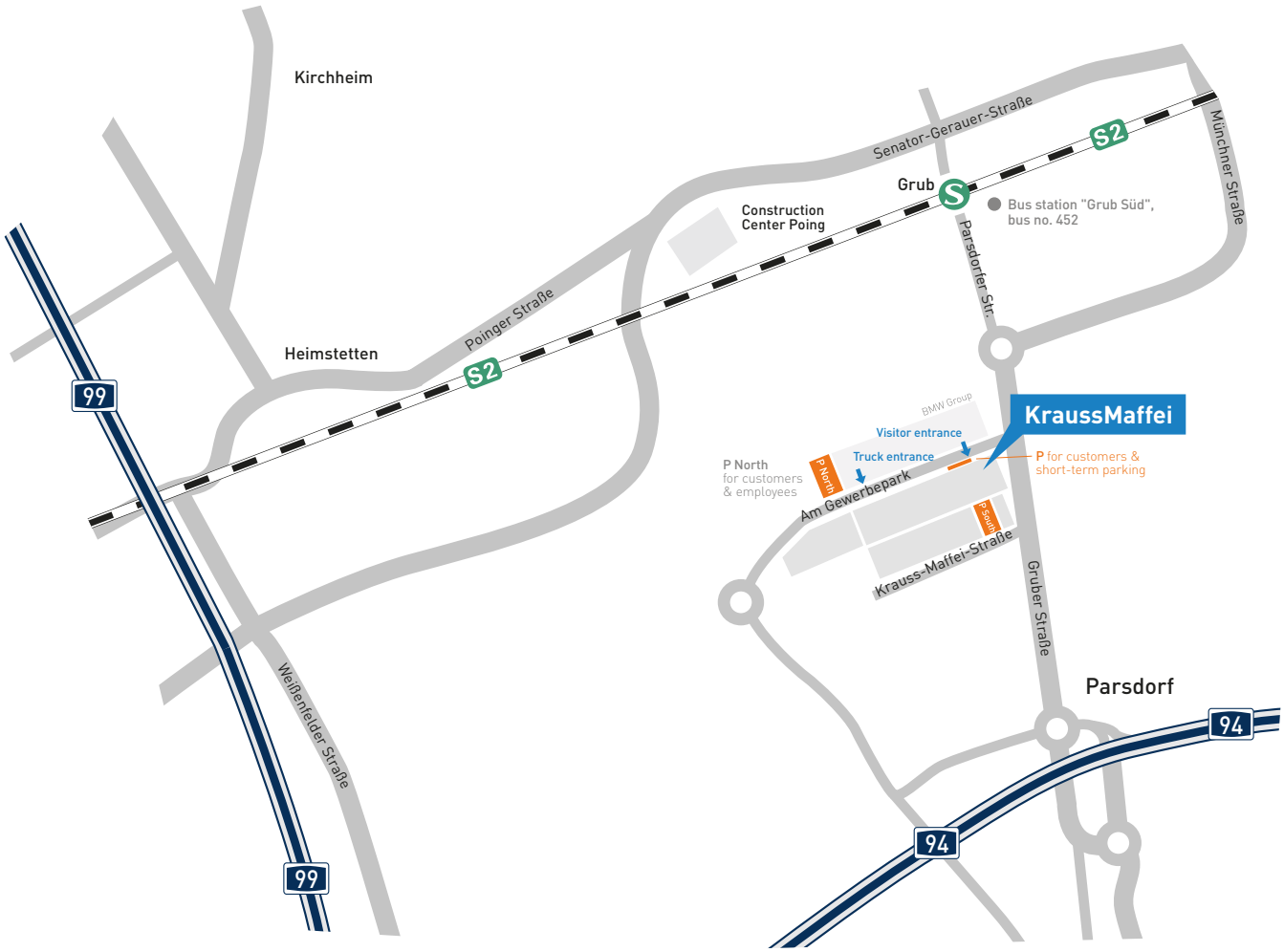
Am Gewerbepark 2
85599 Parsdorf (supplier check-in / truck gate)

Internet: ***kraussmaffei.com/trainingRPM***

You will find our conditions for participation here:
https://km.kraussmaffei.com/de/teilnahmebedingungen.html

YOUR ROUTE TO KRAUSSMAFFEI

MUNICH-PARSDORF
AND SURROUNDING AREA



KRAUSSMAFFEI –
PIONEERING PLASTICS

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