

Crane Care Training - Course catalog 2020

Wilhelmshaven – Germany



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GMK TRAINING WILHELMSHAVEN



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CERTIFICATES



Operator training
With license from BSK and
German Employers Liability
Insurance Association



MTU Trainer Certificate



Cummins Training Certificate

TRAINING CENTER OBJECTIVES

Location

- *A strategic location at the “Center of Excellence” for All Terrain (GMK) cranes in Wilhelmshaven, Germany.*

Our Equipment — An Investment in High-Quality Training

- *Training on various GMK Cranes from the factory available.*
- *3 Training rooms*
- *Practical lessons with more than 30 operating mechanisms exhibited*

Our International Profile

- *More than 1.000 trainees and visitors from around the globe annually*
- *Bilingual instructors (English & German)*

Our Certifications

- *Training courses in cooperation with BG Verkehr (German Employers Liability Insurance Association)*
- *MTU & TÜV certified trainers*
- *An “in Factory” Training Center*
- *Development of the operating training courses to conform with ISO9001 requirements*

Our Global Offer

- *20 modules from 2 days to 1 week covering: crane operation, crane technology, crane diagnostics, crane erection, crane maintenance, crane safety, or any other specific course according to your needs.*

Training Equipment

- *various cranes*
- *15 simulators*

Find Us on Our Website

www.manitowoccranes.com

Contact Us

TrainingGMK@manitowoc.com

PRACTICAL INFORMATION

Cost:

Refer to schedule

*Please inform all trainees that hotel rooms , meals, telephone, bar, weekend trips, taxi etc., are **not included** in the course fee.*

Travel arrangements:

Please inform the Training Center of the trainees travel arrangements. If they are flying to Bremen or travelling by train, we can arrange to have them collected by taxi (extra cost), if this is requested before arrival.

Registration:

You will find enclosed "registration purchase order" forms which must be filled in and returned to the Training Center for confirmation.

Trainees must be over 18 years old and must be declared fit to work at heights.

MANITOWOC denies responsibility for accidents and/or illnesses that might occur during the training courses. We therefore request, that you cover your trainees against any kind of risks and provide them with the necessary insurance certificates and forms.

Clothing:

*Most of our training programs involve numerous practical exercises outside. Please inform the trainees that they must bring their **PPE** and weatherproof clothing. We can support safety glasses and helmets to the trainees.*

Laptop PC:

Please see page 28

Cancellation:

In case of cancellation, please inform the training Center immediately in order to avoid extra charges.

COURSE SUMMARY

Section 1	Crane Introduction	Page 08 – 11
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Section 2	Technician Development Program 2020	Page 12 – 21
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Section 3	Certified Technician Development 2020	Page 22 – 26
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Section 4	Legacy Course	Page 27
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Section 5	Laptop requirements Registration, Address & Map	Page 28 – 31
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GENERAL TERMS

- Any training course requires a minimum of 4 registrations.
- All training can be performed on a weekly fee basis.

Example: If you have more than 4 participants per training, we will offer a week or group fee in Wilhelmshaven.

Weekly fee in WHV	-	6.050€
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- All training can be performed as an „on-site“ course in your facilities. Special offer on-site fee consists: Weekly fee, without flight, hotel and expenses 6.725€

If you have any questions or special wishes, please do not hesitate to contact us or your closest Manitowoc Crane Care Office.

CRANE INTRODUCTION

<i>COURSE</i>	<i>/ PAGE</i>	<i>COURSE NAME</i>
<i>GMK 0.1</i>	<i>09</i>	<i>GMK Product Presentation / Manager Training incl. Technology</i>
<i>GMK 0.2</i>	<i>10</i>	<i>GMK Operational Aspects CTO & Maintenance</i>
<i>GMK 1.1</i>	<i>11</i>	<i>GMK ECOS & CCS Customer ECC</i>



CRANE INTRODUCTION

GMK Prod. Presentation & Mgr. Training incl. Technology GMK 0.1

Aim of Training Course

This course is designed as an overview to the technology of GMK cranes for managers, sales representatives and newcomers to the crane business.

The student will gain an introduction of applied technologies, covering component identity and functions of carrier and superstructure.

Program

Company presentation

Product presentation

Systems, functions and components of the crane

Options, safety devices

Tour of Wilhelmshaven factory

Training Methods

Different crane models in factory

Use of technical documents

Lectures with audiovisual support

Materials and Classrooms Used

Training room

Technical documents

GMK Crane

Validation of Knowledge

Handover of certificate

Prerequisites

- Trainees must be over 18 years old
- Trainees have to bring their PPE

Training Duration

- 20 hours
- From Tuesday 08:30 am
to Thursday 16:00 pm
(training notification)

Training Capacity

- 6 People

Dates

- 03.03.2020 – 05.03.2020
- 01.09.2020 – 03.09.2020

Cost

- Training fee 680€

CRANE INTRODUCTION

GMK Operational Aspects (entire) CTO & Maintenance

GMK 0.2

Aim of Training Course

This course is mainly for crane operators, but also for mechanics / technicians.

After passing this course the student will have a basic knowledge of how to handle a crane in a safe way.

Program

RCL system incl. EN13000 overview, safety devices, load capacity charts, outrigger loads, wind loading, operators manuals, crane terminology & symbols, lattice swing-away, power tilt jib, emergency boom recovery

Training Methods

Detailed theory of operation,

Practical tasks on the crane

Use of specific documents

Materials and Classrooms Used

Training room

Technical documents

GMK crane for training

Validation of Knowledge

Handover of certificate

Prerequisites

- Trainees must be over 18 years old
- Trainees have to bring their PPE

Training Duration

- 32 hours
- From Monday 12:30 pm
to Friday 11:30 am
(training notification)

Training Capacity

- 6 people

Dates

- 16.03.2020 – 20.03.2020
- 06.07.2020 – 10.07.2020
- 21.09.2020 – 25.09.2020

Cost

- Training fee 1.095€

CRANE INTRODUCTION

GMK ECOS/EKS & CCS Customer & Service Manager ECC 1.1

Aim of Training Course

Introduction to the ECOS (Electronic Crane Operation System), EKS (RCL system) and the CCS (Crane Control System) of the GMK crane.

Special course for Customer Technicians and Service Manager.

Program

ECOS, EKS:

*History of crane control & RCL systems
Sensors and actuators in the hydraulic system*

*ESX modules, I/O boards / GVIOM, display, MMI & level sensor, AMG / AMM, joystick, precision length sensor
CAN-Bus systems*

CCS:

CCM, SCM, IOS, IOL modules, displays, JogDial, joysticks, level sensor, precision length sensor, RCL sensors

CAN-Bus systems

Introduction of logical troubleshooting and error code diagnostics

Training Methods

Pre test

Detailed theory

Simulator

Materials and Classrooms Used

Training room

Technical documents

Simulator

Validation of Knowledge

Final test at the end of the training course

Handover of certificate

Prerequisites

- Trainees must be over 18 years old
- Trainees have to bring their PPE
- Trainees must have a minimum of 6 months experience of crane operation

✓ GMK 0.1

Training Duration

- 32 hours
- From Monday 12:30 pm
to Friday 11:30 am
(training notification)

Training Capacity

- 6 people

Dates

- 09.03.2020 – 13.03.2020
- 11.05.2020 – 15.05.2020
- 24.08.2020 – 28.08.2020
- 14.09.2020 – 18.09.2020

Cost

- Training fee 1.320 €

TECHNICIAN DEVELOPMENT 2020

<i>COURSE</i> / <i>PAGE</i>	<i>COURSE NAME</i>
<i>GMK 0.2</i>	<i>10 GMK Operational Aspects CTO & Maintenance</i>
<i>GMK 2.1</i>	<i>13 GMK Electric & Hydraulics</i>
<i>GMK 3.1</i>	<i>14 GMK ECOS Technology & Diagnostics</i>
<i>GMK 4.1</i>	<i>15 GMK CCS Technology & Diagnostics</i>
<i>GMK 5.1</i>	<i>16 GMK EKS 4 & 5 Technology & Diagnostics</i>
<i>GMK 6.1</i>	<i>17 GMK Classic - Engines, Tansmissions & Cab Technology</i>
<i>GMK 7.1</i>	<i>18 GMK ECOS & Mobil Elektronik Steer by Wire</i>
<i>GMK 8.1</i>	<i>19 GMK 6300L & 6400 ECOS</i>
<i>GMK TCE</i>	<i>20 GMK Technician Certification</i>



GMK Electrics and Hydraulics

GMK 2.1

Aim of Training Course

Designed as a guideline through the technology of GMK cranes. The student will gain a deeper knowledge of the electric and hydraulic system of the crane and a guide line for troubleshooting in these systems.

Program

Overview of the electrical function groups, navigating through the electrical schematics (ELAN and SEE), connections between electric, hydraulic and pneumatic schematics, tasks of troubleshooting in electrical systems.

Overview of hydraulic components and their schematic symbols. Navigation through the hydraulic schematics. Overview of the carrier hydraulic and pneumatic systems. Overview of the superstructure hydraulic system.

Training Methods

5 days theory and practice in electrical and hydraulic schematics and systems

Materials and Classrooms Used

Training room

Technical documents

Simulator

Validation of Knowledge

Final test at the end of the training course

Handover of certificate

Prerequisites

- Trainees must be over 18 years old
- Trainees have to bring their PPE

Training Duration

- 32 hours
- From Monday 12:30 pm
to Friday 11:30 am
(training notification)

Training Capacity

- 6 people

Dates

- 24.02.2020 – 28.02.2020
- 30.03.2020 – 03.04.2020
- 15.06.2020 – 19.06.2020
- 10.08.2020 – 14.08.2020
- 16.11.2020 – 20.11.2020

Cost

- Training fee 1.320€

GMK ECOS - Technology & Diagnostics

GMK 3.1

Aim of Training Course

This course will show the technology (design and function) and the diagnostic (troubleshooting, adjustment, flashing) of ECOS “Electronic Crane Operating System”. This training shows the detailed theory of the operating system and its control application for particular functions and in the practical part the logical troubleshooting with help of the service SW for adjustment, flashing and configuring.

Program

ESX modules, I/O boards, GVIOM, display, HMI, AMG/AMM, joysticks, level sensor, precision length sensor

Digital outputs, PWM outputs

Digital and analog inputs

CAN-Bus systems

Sensors and actuators

Introduction of logical troubleshooting and error code diagnostics

Adjustment of inputs and outputs with service SW

Flashing / updating of displays and ESX

Training Methods

Theoretical training

Practical tasks on simulator and crane

Materials and Classrooms Used

Training room

Technical documents

Crane

Simulator

Validation of Knowledge

Final test at the end of the training course

Handover of certificate

Prerequisites

- Trainees must be over 18 years old
- Trainees have to bring their PPE
- Successfully passed
 - ✓ GMK 2.1
- Laptop with RS232 serial port or USB to serial converter

Training Duration

- 32 hours
- From Monday 12:30 pm
to Friday 11:30 am
(training notification)

Training Capacity

- 6 people

Dates

- 02.03.2020 – 06.03.2020
- 25.05.2020 – 29.05.2020
- 22.06.2020 – 26.06.2020
- 24.08.2020 – 28.08.2020
- 23.11.2020 – 27.11.2020

Cost

- Training fee 1.495 €

GMK CCS Technology & Diagnostics

GMK 4.1

Aim of Training Course

This course will show the technology (design and function) and the diagnostic (troubleshooting, adjustment, flashing) of CCS “Crane Control System”. This training shows the detailed theory of the operating system and its control application for particular functions and in the practical part the logical trouble shooting with the help of the service SW for calibrations, flashing and configuring.

Program

CCS modules, display, joysticks, jog dial, HMI, level sensor, precision length sensor

Digital outputs, PWM outputs

Digital and analog inputs

CAN-Bus systems

Sensors and actuators

Introduction of logical troubleshooting and error code diagnostics

Adjustment of inputs and outputs with service SW

Flashing / updating of CCS modules and displays

Training Methods

Pre test

Detailed theory of operation

Practical tasks on the crane

Materials and Classrooms Used

Training room

Technical documents

Service / Diagnose Software Tools

Simulator

Crane

Validation of Knowledge

Final test at the end of the training course

Handover of certificate

Prerequisites

- Trainees must be over 18 years old
- Trainees have to bring their PPE
- Successfully passed

✓ **GMK 2.1**

- Laptop with USB port
- Diagnostics Tools must be ordered

Training Duration

- 32 hours
- From Monday 12:30 pm
to Friday 11:30 am
(training notification)

Training Capacity

- 6 people

Dates

- 09.03.2020 – 13.03.2020
- 20.04.2020 – 24.04.2020
- 08.06.2020 – 12.06.2020
- 29.06.2020 – 03.07.2020
- 12.10.2020 – 16.10.2020

Cost

- Training fee 1.495€

GMK EKS 4 & 5 Technology and Diagnostics

GMK 5.1

Aim of Training Course

This training will show the RCL systems EKS4 and EKS5, the principles and technology.

In this training course the participants will attain the diagnostic level of EKS4 and EKS5.

Program

History of EKS systems, crane physics, RCL technology, EKS4 & EKS5, bus node cards, Tilt I/O boards, pressure transducers, slewing sensors, standard display / graphic display, CAN-Bus system for sensors, communication to ECOS, error codes, diagnostics & diagnostic tools, addressing of sensors, addressing and flashing of Tilt I/O boards, flashing of graphic display, flashing of EKS5, adjustment of RCL system with service software.

Training Methods

Pre test

Detailed theory

EKS simulator

Materials and Classrooms Used

Training room

Technical documents

Service / Diagnose Software Tools

Simulator

Crane

Validation of Knowledge

Final test at the end of the training course

Handover of certificate

Prerequisites

- Trainees must be over 18 years old
- Trainees have to bring their PPE
- Successfully passed

✓ GMK 2.1

✓ GMK 3.1 or GMK 4.1

- Laptop with RS232 serial port or USB to serial converter
- Diagnostic cable must be ordered

Training Duration

- 32 hours
- From Monday 12:30 pm
to Friday 11:30 am
(training notification)

Training Capacity

- 6 people

Dates

- 16.03.2020 – 20.03.2020
- 15.06.2020 – 19.06.2020
- 07.09.2020 – 11.09.2020
- 19.10.2020 – 23.10.2020
- 30.11.2020 – 04.12.2020

Cost

- Training fee 1.495 €

GMK Engines & Transmissions Classic

GMK 6.1

Aim of Training Course

In this course you will attain the technology of MB/MTU engines, MB gearboxes and the ECUs and network of them.

Engines: injection systems, sensors, ECU of the MTU/MB engine families BR500, BR900, OM460 including exhaust after treatment systems.

Transmissions: technology of the gearboxes G240-16 (2nd generation)

ZF-AStronic

Allison automatic transmission

ECU and network: types of ECU, tasks and functions and the data bus connection

Program

Information about installed engines, transmissions and exhaust after treatment system

Electronic engine and transmission control units and network

Handling of Mini Diag 2

Training Methods

Detailed theory of engines and transmissions

Materials and Classrooms Used

Training room

Technical documents

Training on engine and transmission

Validation of Knowledge

Final test at the end of the training course

Handover of certificate

Prerequisites

- Trainees must be over 18 years old
- Trainees have to bring their PPE
- Successfully passed

✓ GMK 2.1

✓ GMK 3.1 or GMK 4.1

Training Duration

- 32 hours
- From Monday 12:30 pm
to Friday 11:30 am
(training notification)

Training Capacity

- 6 people

Dates

- 09.03.2020 – 13.03.2020
- 04.05.2020 – 08.05.2020
- 27.07.2020 – 31.07.2020
- 10.08.2020 – 14.08.2020
- 21.09.2020 – 25.09.2020

Cost

- Training fee 1.320€

GMK Mobil Elektronik ME and ECOS Steer by Wire

GMK 7.1

Aim of Training Course

The “Steer by Wire” course will provide detailed knowledge of this specific system.

Due to legal regulations: Work and/or repair on SBW systems is only authorized to those who have successfully completed this course.

Program

*Steer by Wire control units ESX 4 and ESX 5
Introduction of tempsonic sensors*

*Steer by Wire control units from ME, Mobil Elektronik, Laptop computer as a service tool with applied Steer by Wire – software Flashing of units
Calibration and adjustment of the ECOS and ME SBW system*

Logical troubleshooting

Error codes diagnostics and diagnostics tools

Training Methods

Pre test

Detailed theory

Practical tasks on simulator and crane

Materials and Classrooms Used

Training room

Technical documents

GMK crane with SBW

Validation of Knowledge

Final test at the end of the training course

Handover of certificate

Prerequisites

Manitowoc or Dealer Tech. ONLY

- Trainees must be over 18 years old
- Trainees have to bring their PPE
- Successfully passed
 - ✓ GMK 2.1
 - ✓ GMK 3.1
 - ✓ GMK 4.1
- Laptop with RS232 serial port or USB to serial converter

Training Duration

- 32 hours
- From Monday 12:30 pm
to Friday 11:30 am
(training notification)

Training Capacity

- 6 people

Dates

- 16.03.2020 – 20.03.2020
- 25.05.2020 – 29.05.2020
- 06.07.2020 – 10.07.2020
- 31.08.2020 – 04.09.2020
- 09.11.2020 – 13.11.2020

Cost

- Training fee 1.495€

GMK 6300L & 6400 ECOS

Aim of Training Course

Update for the ECOS system.

Update for the EKS/RCL system.

Presentation of new features and new Equipment.

Program

Update of ECOS and EKS/RCL systems.

New functions and equipment.

Explanation of MegaDrive.

Explanation of extended suspension control.

Swing away lattice of GMK6300L.

MegaWingLift technology of GMK6400.

SteerByWire update of six-axle-carriers.

Training Methods

Pre test

Detailed theory

Mega – Drive

Practical tasks on crane

Materials and Classrooms Used

Training room

Technical documents

Crane

Validation of Knowledge

Final test at the end of the training course

Handover of certificate

GMK 8.1

Prerequisites

Manitowoc or Dealer Tech. ONLY

- Trainees must be over 18 years old
- Trainees have to bring their PPE
- Successfully passed

✓ **GMK 2.1 to 7.1**

- Laptop with RS232 serial port or USB to serial converter

Training Duration

- 32 hours
- From Monday 12:30 pm
to Friday 11:30 am
(training notification)

Training Capacity

- 6 people

Dates

- 23.03.2020 – 27.03.2020
- 29.06.2020 – 03.07.2020
- 21.09.2020 – 25.09.2020
- 23.11.2020 – 27.11.2020

Cost

Training fee 1.495€

GMK Technician Certification

Aim of Training Course

Test of qualifications.

Program

Entry test.

Handling of documents and service programs.

Examination about procedures and faults.

Practical exercises.

Training Methods

Theoretical and practical exercises

Troubleshooting on machine and / or simulator!

Materials and Classrooms Used

Training documents

Simulator

GMK Crane

Validation of Knowledge

Certification Card

GMK TCE

Prerequisites

Manitowoc or Dealer Tech. ONLY

- Trainees must be over 18 years old
- Trainees have to bring their PPE
- Successfully passed

**✓Technician development program
2020 as shown on page 21**

- Laptop with RS232 serial port or USB to serial converter and valid GMK diagnostic software.
- Trainees must bring their diagnostic equipment (dongle, switchbox, etc.)

Training Duration

- 20 hours
- From Monday 09:00 am to Wednesday 16:00 pm

Training Capacity

- 4 people

Dates


- 30.03.2020 – 01.04.2020
- 06.07.2020 – 08.07.2020
- 28.09.2020 – 30.09.2020
- 30.11.2020 – 02.12.2020

Cost

- Training fee 850€

TECHNICIAN DEVELOPMENT 2020

Minimum requirements to certification:

TDP 2020	Manitowoc or Dealer Tech. ONLY	Duration	Laptop	Type of crane	Rates/ net EURO
GMK 0.2	GMK Operational Aspects (entire) CTO & Maintenance	32 h	no	all GMK cranes	1.095
GMK 2.1	GMK Electric & Hydraulics	32 h	no	all GMK cranes	1.320
GMK 3.1	GMK ECOS Technology & Diagnostics	32 h	required	all GMK cranes	1.495
GMK 4.1	GMK CCS Technology & Diagnostics	32 h	required	all GMK cranes	1.495
GMK 5.1	GMK EKS 4 + 5 Technology & Diagnostics	32 h	required	all GMK cranes	1.495
GMK 6.1	GMK Engines & Transmissions Classic	32 h	required	all GMK cranes	1.320
GMK 7.1	GMK Mobil Elektronik and ECOS Steer by Wire	32 h	required	all GMK cranes	1.495
GMK 8.1	GMK ECOS 6300L and 6400	32 h	required	all GMK 6 axle cranes	1.495
	GMK Technician Certification	20 h	required	all GMK cranes	850
Total		276 h	required	GMK	10.965€

CERTIFIED TECHNICIAN DEVELOPMENT 2020

Manitowoc or Dealer Technician ONLY

COURSE	PAGE	COURSE NAME
GMK 6.2	23	GMK Xentry MTU+MB Diagnostics, ABS+EBS
GMK 6.3	24	GMK 3060 What's new, Cummins, ZF Technology & Diagnostics
GMK 9.1	25	GMK „What's New“



CERTIFIED TECHNICIAN DEVELOPMENT 2020

GMK MTU and MB E+T+Cabin Technology Diagnostics, ABS + EBS GMK 6.2

Aim of Training Course

In this course you will attain the knowledge to diagnose the installed engine (incl. exhaust after treatment systems Tier4f and stage 5), transmission and the cabin systems in GMK cranes with Tier 4 final. During this training the use of the test tool Xentry for new MB/MTU engines series (Tier 4 final) will be explained including read out of values, errors and conditions of MB/MTU engines, the new DB G280-16 gearbox with Viab and the cabin. Furthermore the technology and diagnostic of the ABS/EBS in the new GMK will be explained.

Program

*Further information about implemented engines (incl. exhaust after) treatment, transmissions and cabin systems. Diagnosis of engine, transmission and cabin control units. Logical troubleshooting and diagnosis by using the tool "Xentry".
Technology and diagnostic of the ABS/EBS.*

Training Methods

5 days of practical and theoretical task on the crane

Materials and Classrooms Used

*Training room
Technical documents
Diagnostic tools
Crane*

Validation of Knowledge

*Final test at the end of the training course
Handover of certificate*

Prerequisites

- Trainees must be over 18 years old
- Trainees have to bring their PPE
- **Trainee has to bring or order Xentry test tool for MTU Engine & DB Transmission**

Training Duration

- 32 hours
- From Monday 12:30 pm
to Friday 11:30 am
(training notification)

Training Capacity

- 6 people

Dates

- 23.03.2020 – 27.03.2020
- 11.05.2020 – 15.05.2020
- 24.08.2020 – 28.08.2020
- 05.10.2020 – 09.10.2020
- 07.12.2020 – 11.12.2020

Cost

- Training fee 1.495€

Aim of Training Course

New Technology on 3060-L and 3050-2

Technology and diagnostic of the QSL 9 Cummins engine in TIER3, TIER4final and EUROMOT5 emission standards by using "Cummins INSITE" software tool.

The ZF TraXon transmission. During this training the use of the test tools and error codes will be explained including read out of values, errors and conditions.

Program

New telescope system

Further information about the technology and diagnostic of implemented engines & transmissions. Diagnosis of engine and transmission control units. Logical troubleshooting and diagnosis by using the specific diagnostics tool.

Training Methods

Theoretical training

Practical tasks on machine

Materials and Classrooms Used

Training room

Technical documents

Diagnostic tools:

Cummins INSITE

ZF Testman

Crane

Validation of Knowledge

Final test at the end of the training course

Handover of certificate

Prerequisites

- Trainees must be over 18 years old
- Trainees have to bring their PPE
- Trainee has to bring or order test tool for :

Cummins: Cummins INSITE

ZF: ZF Testman

Training Duration

- 32 hours
- From Monday 12:30 pm
to Friday 11:30 am
(training notification)

Training Capacity

- 6 people

Dates

- 17.02.2020 – 21.02.2020
- 04.05.2020 – 08.05.2020
- 17.08.2020 – 21.08.2020
- 26.10.2020 – 30.10.2020
- 30.11.2020 – 04.12.2020

Cost

- Training fee 1.495€

Aim of Training Course

*Introduction of new features and new Equipment. Repowered Machines, New Products.
Introduction of new electrical systems.
Introduction of new powertrain system.*

Program

*Update of all Systems in the GMK when the machine is new in the market.
New functions and equipment.
Introduction of new features in the engine principle.
Introduction of new features of crane control systems.*

Training Methods

*Detailed theory
Practical tasks on the crane*

Materials and Classrooms Used

*Training room
Technical documents
Crane*

Validation of Knowledge

Presentation of certificate

Prerequisites

- Trainees must be over 18 years old
- Trainees have to bring their PPE
- Successfully passed

✓ **GMK Certified Technician**

- Laptop with local administration rights

Training Duration

- 32 hours
- From Monday 12:30 pm
to Friday 11:30 am
(training notification)

Training Capacity

- 8 people

Dates

- On demand, will be via our newsletter
„Stop Press“

Cost

F.O.C

CERTIFIED TECHNICIAN DEVELOPMENT 2020

Minimum requirement to renew certification:

CTDP 2020		Dura tion	Laptop	Type of crane	Rates/ net EURO
GMK 6.2	GMK MTU and MB E+T+Cabin Diag. ABS + EBS <i>Once after the certification</i>	32 h	required	all GMK cranes	1.435
GMK 9.1	GMK Whats's New <i>Repeat once a year</i>	32 h	required	all GMK cranes	F.O.C.
NOTE:	<i>GMK Technician Certification will be extended automatically after completing all "CTDP" trainings with a positive final test.</i>				
GMK 6.2	GMK MTU and MB E+T+Cabin Diag. ABS + EBS	32 h	required	all GMK cranes	1.435
GMK 6.3	GMK 3060 Cummins, ZF Traxon Technology and Diagnostics	32 h	required	all GMK cranes	1.435
GMK 9.1	GMK Whats's New	32 h	required	all GMK cranes	F.O.C.

GMK ECOS EST control system

GMK 3.3

Aim of Training Course

This course will show the technology (design and function) and the diagnostic (troubleshooting, adjustment) of ECOS “Electronic Crane Operating System”. This training shows the detailed theory of the operating system and its control application for particular functions and in the practical part the logical troubleshooting with the help of the service SW for adjustment and configuring.

Program

EST modules, display, joysticks, precision length sensor

Digital outputs, PWM outputs

Digital and analog inputs

CAN-Bus systems

Sensors and actuators

Introduction of logical troubleshooting and error code diagnostics

Adjustment of inputs and outputs with service SW

Training Methods

Theoretical training

Practical tasks on simulator

Materials and Classrooms Used

Training room

Technical documents

Simulator

Validation of Knowledge

Final test at the end of the training course

Handover of certificate

Prerequisites

- Trainees must be over 18 years old
- Trainees have to bring their PPE
- Successfully passed
✓ **GMK 2.1**
- Laptop with RS232 serial port or USB to serial converter

Training Duration

- 16 hours

Training Capacity

- 6 people

Dates

- 24.03.2020 – 25.03.2020
- 08.09.2020 – 09.09.2020

Cost

- Training fee 755 €

Laptop requirements

Laptops required for Grove & GMK training schools should be configured as follows:

Must be of a “PC” type. Apple/Macintosh/I-book, Linux and Android based computers are not currently compatible with any training material and/or service software.

Windows 7 Professional, Service Pack 1 or higher and Windows 10 are acceptable in a 32bit or 64bit version. For older Windows versions we don't give any support.

The PC and/or username must have only Latin letters and/or numbers (ASCII codes 48-57, 65-90, 97-172). **No special characters like ä, ö, ü, ß, é, è etc. are allowed.** For PC's outside Latin characters' countries there could be some problems occur with the software tools. Here it is recommended to install the Windows as an English version and add after your local version.

It is also recommended that the laptop has the following specifications:

- 1366 x 768 or higher display resolution
- x86 compatible processor
- minimum of 4GB RAM
- minimum of 150GB free HDD space
- 2 USB port type A or adapter to type A

In addition to Windows operating software the laptop should have the following software installed:

- current Adobe Reader,
- current Adobe Flash Player,
- current Microsoft Access or Microsoft AccessDatabaseEngine
- if MS Office is installed, it must be the **32bit** version
- 7-zip or other ZIP program,
- VLC media player or similar configured to play the following types of video files and audio files: wmv, .avi, .mpeg, .mp3, .flv, .swf, etc., and Quicktime

The user should also have full “**Administrative rights**” to add/install various software programs and software drivers used during and after training, especially the folders **c:\Temp** and **c:\Manitowoc** must be accessible without any restrictions.

It is highly recommended that most of Grove/GMK service programs utilize a DB-9 serial port connection to the crane configured as “**COM1**”. If the laptop does not have a DB-9 serial port the recommended alternative is a PCMCIA Adapter Serial card (DB-9), configured as **COM1**. This is preferred over a USB to serial adapter. Any serial adapters may work but are not 100% reliable to work with all Grove/GMK service programs. For a better satisfaction, we recommend serial adapter with FTDI chip set. If USB serial adapters are used, the laptop must have a minimum of two (2) standard USB A ports available or an adapter to USB type A.

Manitowoc Crane Care Training is not responsible for providing or configuring any non-Manitowoc software and/or serial adapters of any type necessary for use with any service programs.

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REGISTRATION – PURCHASE ORDER

return to:

MANITOWOC CRANE GROUP Germany GmbH – GMK Training Center –

Industriegelände West – 26389 Wilhelmshaven

E-mail: TrainingGMK@manitowoc.com / FAX: +49 (0)4421 294 4307

Date of Registration: _____

Course Name: _____

Course Date: _____

Course Location: **Wilhelmshaven, Germany**

Costs: _____

Company: _____

Contact: _____

Address: _____

Contact Phone: _____

Contact E-mail: _____

Invoice Recipient: _____

Purchase Number: _____

Participant(s): 1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

Hotel Booking: _____

Flight Details: _____ Arrival : _____ Flight Number: _____

Transfer Needed? _____

Remark: **For the practical part additional working shoes and clothes are required.**

ADDRESS & MAP

MANITOWOC CRANE GROUP Germany GmbH

Training Center

Industriegelände West

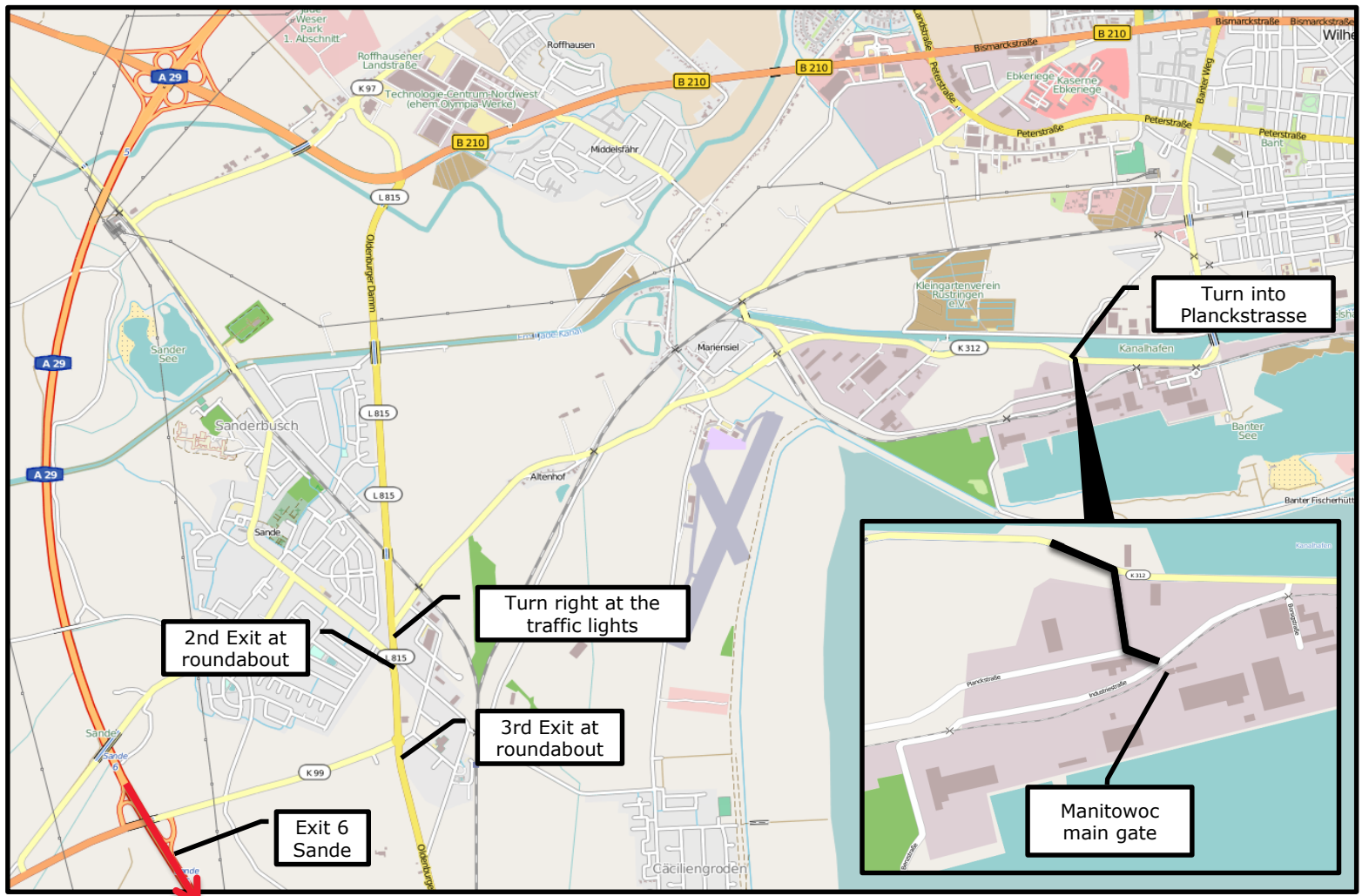
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Manitowoc Crane Care when you need it. The assurance of the world's most advanced crane service and support to get you back to work fast.



Manitowoc Finance helps you get right to work generating profits for your business. Financial tools that help you capitalize on opportunity with solutions that fit your needs.

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