

Crane Care Training - Course catalog 2017

Wilhelmshaven – Germany



Manitowoc & Dealer Training

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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) and special ly designed cranes (GCK, GTK,GSK) in Wilhelmshaven, Germany.*

Our Equipment — An Investment in High-Quality Training

- *Training on various GMK Cranes from the factory available. GMK 3060 with CCS*
- *3 Training rooms*
- *1 room for 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 ISO9001:2008 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 and must be paid for by the trainee.*

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 should therefore bring suitable shoes and warm clothing. We will lend safety glasses and helmets to the trainees.

For the practical parts of the training: working clothes, gloves and safety shoes are needed.

Laptop PC:

For training courses, where a laptop is required, this must have the following specifications:

- Windows 7 Professional Service Pack 1 or higher, Windows 8 or Windows 10 in a 32bit or 64bit version*
- minimum 1366 x 768 display resolution*
- x86 compatible processor*
- minimum 4 GB RAM*
- minimum 120 GB free HDD space*
- Serial (RS232) interface or USB to serial converter with FTDI chipset*
- Local administration rights*
- MS Access or MS Access viewer in 32bit version*
- Adobe Reader and Adobe Flash Player*
- 1 free USB - Port*

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**

Section 2 Technician Development Program 2017 **Page 12 - 24**

Section 3 Certified Technician Development 2017 **Page 25 - 32**

Section 5 Historic Legacy **Page 33 - 37**

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. Week fee in WHV. 5.850€
- All Training can be delivered as an „on site“ course in your facilities. Special offer onsite fee consists of: week fee, flight, hotel and expenses. 6.900€

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

CRANE INTRODUCTION

COURSE	/ PAGE	COURSE NAME
<i>GMK 0.1</i>	<i>09</i>	<i>GMK Product Introduction / Manager Training</i>
<i>GMK 0.2</i>	<i>10</i>	<i>GMK Product Introduction and Parts</i>
<i>GMK ECC</i>	<i>11</i>	<i>GMK ECOS & CCS Customer</i>



Aim of Training Course

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

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

Program

Company Introduction

Product introduction

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

Presentation of certificate

Prerequisites

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

Training Duration

- 16 hours
- From Monday 12:30 pm to Wednesday 11:30 am (training notification)

Training Capacity

- 6 People

Dates

- 13.02.2017 – 15.02.2017
- 19.06.2017 – 21.06.2017
- 18.09.2017 – 20.09.2017

Cost

- Training fee 745€

Aim of Training Course

This course is designed as an introduction to the technology of GMK cranes specially for parts and service managers. The student will gain an appreciation of applied technologies covering component identity and functions of carrier and superstructure. The student will further be introduced to the parts system GPX3, CAPX and GMK CAPX

Program

Overview of function groups, components, steering, engines and transmissions, appreciation of incorporated hydraulics, electrical and pneumatic systems.

Use and navigation through operator manuals and spare parts books. Practical use of GPX3 and CAPX.

Training Methods

First steps in electrics, hydraulics and pneumatics schematics

Lectures and practical exercises on the laptop.

Materials and Classrooms Used

Training room

Technical documents

Validation of Knowledge

Presentation of certificate

Prerequisites

- The trainees must be over 18 years old
- The trainees have to bring their PPE
- Laptop required

Training Duration

- 28 hours
- From Monday 12:30 pm to Thursday 11:30 am (training notification)

Training Capacity

- 6 people

Dates

- 13.02.2017 – 15.02.2017
- 19.06.2017 – 21.06.2017
- 18.09.2017 – 20.09.2017

Cost

- Training fee 950€

CRANE INTRODUCTION

ECOS & CCS Customer

Aim of Training Course

Introduction to the ECOS (Electronic Crane Operation System) and the CCS (Crane Control System) of the GMK crane. Special course for Customer Technicians

Program

ECOS:

*History of crane control 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 and SCM modules, IOS and IOL modules, displays, JogDial, joysticks, level sensor, precision length sensor, RCL sensors

*CAN-Bus systems
sensors and actuators
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
Presentation of certificate*

GMK ECC

Prerequisites

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

Training Duration

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

Training Capacity

- 6 people

Dates

- 20.03.2017 – 24.03.2017
- 29.05.2017 – 02.06.2017
- 25.09.2017 – 29.09.2017

Cost

- Training fee 1.190€

COURSE /	PAGE	COURSE NAME
<i>GMK 1.1</i>	13	<i>GMK Operational Aspects (entire) CTO</i>
<i>GMK 1.2</i>	14	<i>GMK Operational Aspects & Maintenance</i>
<i>GMK 2.1</i>	15	<i>GMK Electrics & Hydraulics</i>
<i>GMK 3.1</i>	16	<i>GMK ECOS ESX & CCS Technology</i>
<i>GMK 4.1</i>	17	<i>GMK ECOS ESX & CCS Diagnostics</i>
<i>GMK 5.1</i>	18	<i>GMK EKS 4 & 5 Technology & Diagnostics</i>
<i>GMK 6.1</i>	19	<i>GMK Xentry Diagnostics for DB Components (entire)</i>
<i>GMK 6.3</i>	20	<i>GMK Cummins, Allison & ZF Technology and Diagnostics</i>
<i>GMK 7.1</i>	21	<i>GMK ECOS and Mobil Elektronik Steer by Wire</i>
<i>GMK 8.1</i>	22	<i>GMK Update „6“ 6300L & 6400</i>
<i>GMK TCE</i>	23	<i>GMK Technician Certification</i>



GMK Operational Aspects (entire) CTO

GMK 1.1

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

Safety devices, load capacity charts, outrigger loads, wind loading, operators manuals, crane terminology & symbols, EKS/RCI, lattice swing-away, power tilt jib. emergency boom recovery EN 13000:2010

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

*Final test at the end of the training course
Presentation 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

- 06.02.2017 – 10.02.2017
- 24.04.2017 – 28.04.2017
- 21.08.2017 – 25.08.2017
- 16.10.2017 – 20.10.2017

Cost

- Training fee 1.220€

Aim of Training Course

This course is mainly for technicians. After passing this course the student will have a basic knowledge of how to handle a crane in a safe way daily, weekly, 250 hrs, 500 hrs an 1000 hrs regular maintenance will be discussed in the Manual to grease all telescope boom sections as described in the maintenance manual will be explained.

Program

Overview of function groups, components, steering, engines and transmissions, appreciation of incorporated hydraulics, electrical and pneumatic systems. Use and navigation of the service manuals. safety devices, load capacity charts, outrigger loads, Wind loading, Operator Manuals, Crane terminology & symbols, EKS/RCI appreciation.

Practical tasks on the GMK crane. introduction of the hydraulics, electrical and pneumatic systems.

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

*Final test at the end of the training course
Presentation 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

- 13.03.2017 – 17.03.2017
- 07.08.2017 – 11.08.2017
- 04.09.2017 – 08.09.2017

Cost

- Training fee 1.220€

GMK Electrics and Hydraulics

GMK 2.1

Aim of Training Course

Designed as an introduction to the technology of GMK cranes. The student will gain a deeper knowledge of the electrical system of the crane and a guide line for trouble shooting the electrical and hydraulic system.

Program

Overview of the electrical function groups, navigating through the electrical schematics (ELAN and SEE), connection between electrical, hydraulic and pneumatic schematics tasks on trouble shooting electrical systems.

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

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
Presentation of certificate*

Prerequisites

- Trainees must be over 18 years old
 - Trainees have to bring their PPE
- ✓ GMK 1.1 or GMK 1.2

Training Duration

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

Training Capacity

- 6 people

Dates

- 09.01.2017 – 13.01.2017
- 16.01.2017 – 20.01.2017
- 23.01.2017 – 27.01.2017
- 08.05.2017 – 12.05.2017
- 04.09.2017 – 08.09.2017
- 06.11.2017 – 10.11.2017

Cost

- Training fee 1.235€

GMK ECOS ESX & CCS Technology

GMK 3.1

Aim of Training Course

Introduction to the ECOS “Electronic Control Operating System” and CCS Crane Operating System. This course provides a detailed theory of the operating system and its control application for particular functions.

Program

ESX modules, I/O boards, GVIOM, display, MMI, AMG/AMM, joysticks, level sensor, MWCCM, MWIOL, MWIOS, MWSCM.

Precision length sensor

PWM, digital outputs

Digital and analog inputs

CAN-Bus systems

Sensors and actuators

Appreciation of logical troubleshooting and error code diagnostics

Training Methods

Pre test

detailed theory of operation

Materials and Classrooms Used

Training room

Technical documents

Crane

Simulator

Validation of Knowledge

Final test at the end of the training course

Presentation of certificate

Prerequisites

- Trainees must be over 18 years old
- The trainees have to bring their PPE
- Successfully passed
 - ✓ GMK 1.1 or GMK 1.2
 - ✓ GMK 2.1

Training Duration

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

Training Capacity

- 6 people

Dates

- 13.02.2017 – 17.02.2017
- 13.03.2017 – 17.03.2017
- 24.04.2017 – 28.04.2017
- 07.08.2017 – 11.08.2017
- 11.09.2017 – 15.09.2017

Cost

- Training fee 1.463€

GMK ECOS ESX & CCS Diagnostics

GMK 4.1

Aim of Training Course

Advanced course of Level 2 ECOS Technology providing detailed knowledge on ECOS diagnostics and CCS “Crane Control System”. Detailed theory of the crane operating system together with its control application for particular functions and the interacting with the integrated RCL system.

The ECOS service software and CST CCS Service Software for the participant will be provided.

Program

History of crane control (analogue systems, EST-ECOS, ESX-ECOS, CCS), CCM and SCM modules, IOS and IOL modules, Displays, Jog Dial, Joysticks, Level sensor, Precision length sensor, RCL sensors, CAN-Bus systems, sensors & actuators, flashing of modules and displays, addressing of sensors, adjustment of crane control and RCL system, Introduction of logic troubleshooting and error code diagnostics, software, use of service software, logical troubleshooting, flashing of units and displays, Error codes diagnostics and diagnostic tools, Processing unit, improvement of trouble-shooting methods.

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

Presentation of certificate

Prerequisites

- Trainees must be over 18 years old
- Trainees have to bring their PPE
- Successfully passed
 - ✓ GMK 1.1 or GMK 1.2
 - ✓ GMK 2.1
 - ✓ GMK 3.1
- Laptop with RS232 serial port or USB to serial converter
- 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

- 27.02.2017 – 03.03.2017
- 15.05.2017 – 19.05.2017
- 19.06.2017 – 23.06.2017
- 25.09.2017 – 29.09.2017
- 06.11.2017 – 10.11.2017

Cost

- Training fee 1.540€

GMK EKS 4 & 5 Technology and Diagnostics

GMK 5.1

Aim of Training Course

Introduction to 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, EKS/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 code 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

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

Presentation of certificate

Prerequisites

- Trainees must be over 18
- Trainees have to bring their PPE
- Successfully passed
 - ✓ GMK 1.1 or GMK 1.2
 - ✓ GMK 2.1
 - ✓ GMK 3.1
- 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

- 20.02.2017 – 24.02.2017
- 20.03.2017 – 24.03.2017
- 08.05.2017 – 12.05.2017
- 14.08.2017 – 18.08.2017
- 16.10.2017 – 20.10.2017

Cost

- Training fee 1.595 €

Aim of Training Course

In this course you will attain the knowledge to diagnose: DB cabin options, the Tier 4 final MTU engine and DB 280-16 transmission, Voith VIAB and the water retarder in GMK cranes.

The use of the test tool Xentry for new DB/MTU will be explained including read out of values, errors and conditions of DB engines and the new DB G280-16 gearbox. Finally a diagnosis of the SCR system will be done.

Program

Further information about implemented engines & transmissions. Diagnosis of engine and transmission control units. Logical troubleshooting and diagnosis by using the tool "Xentry". Diagnostic of the SCR system Tier 4 final.

Training Methods

5 days of practical and theoretical task on the crane

Materials and Classrooms Used

Training room

Technical documents

Diagnostic tool Xentry

Crane

Validation of Knowledge

Final test at the end of the training course

Presentation of certificate

Prerequisites

- Trainees must be over 18
- Trainees have to bring their PPE
- Successfully passed
 - ✓ GMK 1.1 or GMK 1.2
 - ✓ GMK 2.1
 - ✓ GMK 3.1
 - ✓ GMK 4.1
 - ✓ GMK 5.1
- 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

- 06.03.2017 – 10.03.2017
- 03.04.2017 – 07.04.2017
- 12.06.2017 – 16.06.2017
- 21.08.2017 – 25.08.2017
- 23.10.2017 – 27.10.2017

Cost

- Training fee 1.540€

Aim of Training Course

In this course you will attain the knowledge to diagnose the QSB, QSL, and QSX Cummins Tier 4 final engine with “Cummins Inside”, the Allison Gen. 5 transmission with Allison DOC and 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

Further information about implemented engines & transmissions. Diagnosis of engine and transmission control units. Logical troubleshooting and diagnosis by using the specific diagnostics tool. Diagnostic of the SCR system Tier 4 final.

Training Methods

5 days of practical and theoretical task on the crane

Materials and Classrooms Used

*Training room
Technical documents
Diagnostic tool:
Cummins Inside
Allison DOC
ZF Testman Pro
Crane*

Validation of Knowledge

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

Prerequisites

- Trainees must be over 18
- Trainees have to bring their PPE
- Successfully passed
 - ✓ GMK 1.1 or GMK 1.2
 - ✓ GMK 2.1
 - ✓ GMK 3.1
 - ✓ GMK 4.1
 - ✓ GMK 5.1
- Trainee has to bring or order test tool for components Cummins Inside, Allison DOC & ZF Testman Pro

Training Duration

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

Training Capacity

- 6 people

Dates

- 06.03.2017 – 10.03.2017
- 03.04.2017 – 07.04.2017
- 12.06.2017 – 16.06.2017
- 21.08.2017 – 25.08.2017
- 23.10.2017 – 27.10.2017

Cost

- Training fee 1,540€

GMK ECOS and Mobil Elektronik Steer by Wire GMK 7.1

Aim of Training Course

Advanced training course complementing Diagnostic Phase “ECOS Diagnostics”

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 Mobil Elektronik,
Laptop computer as a service tool with applied
Steer by Wire – software Flashing of units*

*Calibration and adjustment of the ECOS and
Mobil SBW system*

Logical troubleshooting

Error codes diagnostics and diagnostics tools

Training Methods

Pre test

Detailed theory

Practical tasks on the 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

Presentation of certificate

Prerequisites

- Trainees must be over 18
- Trainees have to bring their own PPE
- Successfully passed
 - ✓ GMK 1.1
 - ✓ GMK 2.1
 - ✓ GMK 3.1
 - ✓ GMK 4.1
 - ✓ GMK 5.1
- 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

- 20.02.2017 – 24.02.2017
- 27.03.2017 – 31.03.2017
- 29.05.2017 – 02.06.2017
- 14.08.2017 – 18.08.2017
- 13.11.2017 – 17.11.2017

Cost

- Training fee 1.595€

GMK Update "6" 6300L & 6400

Aim of Training Course

Update for the ECOS system.

Update for the EKS/RCL system.

Introduction of new features and new Equipment.

Program

Update of ECOS and EKS/RCL systems.

New functions and equipment.

Introduction of MegaDrive.

Introduction 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

Materials and Classrooms Used

Training room

Technical documents

Crane

Validation of Knowledge

Final test at the end of the training course

Presentation of certificate

GMK 8.1

Prerequisites

- Trainees must be over 18
- Trainees have to bring their own PPE
- Successfully passed
 - ✓ GMK 1.1 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

- 25.09.2017 – 29.09.2017
- 16.10.2017 – 20.10.2017

Cost

Training fee 1.540€

GMK Technician Certification

GMK TCE

Aim of Training Course

Test of qualifications.

Program

Entry test.

Handling of documents and service programs.

Discussion about procedures and faults.

Practical exercises.

Training Methods

Theoretical and practical exercises

Troubleshooting on machine and / or simulator!

Materials and Classrooms Used

Training documents

GMK Crane

Validation of Knowledge

Certification Card

Prerequisites

- Trainees must be over 18
- Trainees have to bring their own PPE
- Successfully passed
 - ✓ **Technician development program 2017 as shown on page 24**
- 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

Training Capacity

- 4 people

Dates



- 30.01.2017 – 03.02.2017
- 13.02.2017 – 17.02.2017
- 31.07.2017 – 04.08.2017
- 04.10.2017 – 06.10.2017
- 01.11.2017 – 03.11.2017
- 04.12.2017 – 08.12.2017

Cost

- Training fee 850€

TECHNICIAN DEVELOPMENT 2017

Minimum requirements to certification:

TDP 2017		Durat ion	Laptop	Type of crane	Rates/n et EURO
GMK 1.1 or GMK 1.2	GMK Operational Aspects (entire) GMK Oper. Aspects & Maintenance	32 h 32h	no no	all GMK cranes	1.220 1.220
GMK 2.1	GMK Electrics & Hydraulics	32 h	no	all GMK cranes	1.235
GMK 3.1	GMK ECOS & CCS ESX Technology	32 h	required	all GMK cranes	1.463
GMK 4.1	GMK ECOS & CCS ESX Diagnostics	32 h	required	all GMK cranes	1.540
GMK 5.1	GMK EKS 4 & 5 Technology & Diagnostics	32 h	required	all GCK	1.595
GMK 6.1 or GMK 6.3	GMK Xentry Diagnostics GMK Cummins, Allison, ZF Diagnostics	32 h 32 h	required required	all GMK cranes	1.540 1.540
GMK 7.1	GMK ECOS and Mobil Elektronik Steer by Wire	32 h	required	all GMK cranes	1.595
GMK 8.1	GMK Update "6" 6300L and 6400	32 h	required	all GMK 6 axle cranes	1.540
 	GMK Technician Certification	16 h	required	all GMK cranes	850
SET Offer	If you order all single courses the training fee will be 12.578 € . If you order the SET offer:	276 h	required	GMK	10.500€

CERTIFIED TECHNICIAN DEVELOPMENT 2017

COURSE	PAGE	COURSE NAME
<i>GMK 3.2</i>	<i>26</i>	<i>GMK CCS Technology</i>
<i>GMK 4.2</i>	<i>27</i>	<i>GMK CCS Diagnostics</i>
<i>GMK 6.2</i>	<i>28</i>	<i>GMK Xentry MTU Engine Tier 4 Final & DB Transmission (partial)</i>
<i>GMK 7.2</i>	<i>29</i>	<i>GMK Mobil Elektronik „Steer by Wire“</i>
<i>GMK New Technology</i>		<i>New technology in our products</i>
<i>GMK New Product familiarization</i>		<i>Familiarization with new crane models</i>



GMK CCS Technology

Aim of Training Course

*Introduction to the CCS “Crane Control System”.
The course provides a detailed theory of the
operating system and the RCL system and its
control application for particular functions.*

Program

*History of crane control (analogue systems, EPIC,
CAN-Bus, HED-Control)*

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

CAN-Bus systems

sensors and actuators

*Introduction of logical troubleshooting and error
code diagnostics*

Training Methods

Pre test

detailed theory of operation

training bench

Materials and Classrooms Used

Training room

Technical documents

Crane

Simulator

Set offer:
Book this course together with
“CCS Diagnostics,, if your
Technician is already certified.
For only 1.595€ HT

GMK 3.2

Prerequisites

- Trainees must be over 18
- Trainees have to bring their own PPE
- Successfully passed
 - ✓ **GMK Certified Technician**
- Laptop required

Training Duration

- 16 hours
- From Monday 12:30 pm
to Wednesday 11:30 am
(training notification)

Training Capacity

- 6 people

Dates

- 09.01.2017 – 11.01.2017
- 16.01.2017 – 18.01.2017
- 30.01.2017 – 01.02.2017
- 03.04.2017 – 05.04.2017
- 24.04.2017 – 26.04.2017
- 26.06.2017 – 28.06.2017
- 07.08.2017 – 09.08.2017
- 21.08.2017 – 23.08.2017
- 23.10.2017 – 25.10.2017
- 13.11.2017 – 15.11.2017
- 20.11.2017 – 22.11.2017

Cost

- Training fee 845 €

GMK CCS Diagnostics

GMK 4.2

Aim of Training Course

*Introduction to the CCS “Crane Control System”.
The course provides a detailed theory of the crane operating system together with its control application for particular functions and the interacting with the integrated RCL system.*

Program

History of crane control (analogue systems, EST-ECOS, ESX-ECOS)

CCM and SCM modules, IOS and IOL modules, Displays, Jog Dial, Joysticks, Level sensor, Precision length sensor, RCL sensors

CAN-Bus systems

sensors and actuators

Flashing of modules and displays

Addressing of sensors

Adjustment of crane control and RCL system

Introduction of logic troubleshooting and error code diagnostics

Training Methods

Pre-test

detailed theory of operation

Materials and Classrooms Used

Training room

Technical documents

Crane

Simulator

Validation of Knowledge

Final test at the end of the training course

Presentation of certificate

Prerequisites

- Trainees must be over 18
- Trainees have to bring their own PPE
- Successfully passed
 - ✓ GMK Certified Technician
 - ✓ or CCS “C/R” Technology
- Laptop with local administration rights

Training Duration

- 16 hours
- From Wednesday 12:30 pm to Friday 11:30 am (training notification)

Training Capacity

- 6 people

Dates

- 11.01.2017 – 13.01.2017
- 18.01.2017 – 20.01.2017
- 01.02.2017 – 03.02.2017
- 05.04.2017 – 07.04.2017
- 26.04.2017 – 28.04.2017
- 28.06.2017 – 30.06.2017
- 09.08.2017 – 11.08.2017
- 23.08.2017 – 25.08.2017
- 25.10.2017 – 27.10.2017
- 15.11.2017 – 17.11.2017
- 22.11.2017 – 24.11.2017

Cost

- Training fee 852€

**Set offer:
Book this course together with
“CCS Technology „ if your
technician is already certified.
For only 1.595€ HT**

Aim of Training Course

In this course you will attain the knowledge to diagnose the installed engine and transmission in GMK cranes with Tier 4 final. During this training the use of the test tool Xentry for new DB/MTU engines series (Tier 4 final). It will be explained including read out of values, errors and conditions of DB engines and the new DB G280-16 gearbox. Finally a diagnosis of the SCR system will be done.

Please be aware that the cab is not included!

Program

Further information about implemented engines & transmissions. Diagnosis of engine and transmission control units. Logical troubleshooting and diagnosis by using the tool "Xentry". Diagnostic of the SCR system

Training Methods

2 days of practical and theoretical task on the crane

Materials and Classrooms Used

*Training room
Technical documents
Diagnostic tools
Crane*

Set offer:

**Book this course together with
"SBW Mobil,, page 29 if your
Technician is already certified.
For only 1.610€ HT**

Prerequisites

- Trainees must be over 18
- Trainees have to bring own PPE
- Successfully passed
 - ✓ **GMK Certified Technician**
- Trainee has to bring or order Xentry test tool for MTU Engine & DB Transmission

Training Duration

- 16 hours
- From Monday 12:30 pm
to Wednesday 11:30 am
(training notification)

Training Capacity

- 6 people

Dates

- 06.02.2017 – 08.02.2017
- 20.03.2017 – 22.03.2017
- 12.06.2017 – 14.06.2017
- 18.09.2017 – 20.09.2017
- 23.10.2017 – 25.10.2017

Cost

- Training fee 865€

GMK Mobil Elektronik Steer by Wire

GMK 7.2

Aim of Training Course

Advanced training course complementing diagnostic phase for “Mobil Elektronik”.

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

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

Program

Laptop computer as a service tool with applied Steer by Wire – software

Flashing of units

Calibration and adjustment of the SBW system

Logical troubleshooting

Error codes diagnostics and diagnostics tools

Training Methods

Pre test

Detailed theory

Practical tasks on the crane

Materials and Classrooms Used

Training room

Technical documents

GMK crane with SBW

Simulator

Validation of Knowledge

Final test at the end of the training course

Presentation of certificate

Prerequisites

- Trainees must be over 18
- Trainees have to bring own PPE
- Successfully passed
 - ✓ GMK Certified Technician
- Laptop with RS232 serial port or USB to serial converter

Training Duration

- 16 hours
- From Wednesday 12:30 pm to Friday 11:30 am
(training notification)

Training Capacity

- 6 people

Dates

- 08.02.2017 – 10.02.2017
- 22.03.2017 – 24.03.2017
- 14.06.2017 – 16.06.2017
- 20.09.2017 – 22.09.2017
- 25.10.2017 – 27.10.2017

Cost

- Training fee 864 €

Set offer:

Book this course together with “E & T Xentry,, page 28 if your technician is already certified.

For only 1.610€ HT

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

*Pre test
Detailed theory
Practical tasks on the crane*

Materials and Classrooms Used

*Training room
Technical documents
Crane*

Validation of Knowledge

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

Prerequisites

- Trainees must be over 18
- Trainees have to bring own 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

On demand

GMK familiarization with new Products

GMK F.N.P

Aim of Training Course

Introduction of new features and new Equipment.

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 principal.

Introduction of new features of crane control systems.

Training Methods

Pre test

Detailed theory

Practical tasks on the crane

Materials and Classrooms Used

Training room

Technical documents

Crane

Validation of Knowledge

Final test at the end of the training course

Presentation of certificate

Prerequisites

- Trainees must be over 18
- Trainees have to bring own 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

On demand

CERTIFIED TECHNICIAN DEVELOPMENT 2017

Minimum requirement to renew certification:

CTDP 2017		Length	Laptop	Type of crane	Rates/net EURO
GMK 3.2	GMK CCS Technology	16 h	required	all GMK cranes	845
GMK 4.2	GMK CCS Diagnostics	16 h	required	all GMK cranes	852
SET offer:	GMK 3.2 & 4.2	32 h	required	all GMK cranes	1.595
GMK 6.2	GMK Engine and Transmission	16 h	required	all GMK cranes	865
GMK 7.2	XENTRY GMK Mobil Electronic Steer by Wire	16 h		all GMK cranes	864
SET offer:	GMK 6.2 & 7.2	32 h	required	all GMK cranes	1.610
NOTE:	<i>GMK Technician Certification will be extended automatically after completing all "CTDP" trainings with a positive final test.</i>				
GMK N.T.P.	GMK New technology	32 h	required	all GMK cranes	on demand
GMK F.N.P.	GMK Familiarization with new Products	32 h	required	all GMK cranes	on demand

LEGACY MACHINES

COURSE	PAGE	COURSE NAME
<i>GMK GRE</i>	34	<i>GMK Rigging and Erection</i>
<i>GMK EST</i>	35	<i>ECOS Technology EST (Legacy)</i>
<i>GMK 6.4</i>	36	<i>GMK Engine and Transmission Tier 3 or none</i>
<i>GMK RC3</i>	37	<i>EKS 3/83 (Legacy)</i>



GMK Rigging and Erection

Aim of Training Course

This course is designed for crane operators but also for mechanics/technicians. After passing this course the student will have knowledge of the rigging procedure of GMK Cranes and will be able to handle this crane in a safe way.

Program

Appreciation of the systems and components of your GMK

Training Methods

5 days detailed theory of rigging

Materials and Classrooms Used

*Training room, GMK crane
Technical documents*

Validation of Knowledge

Presentation of certificate

GMK GRE

Prerequisites

- Trainees must be over 18
- Trainees have to bring own PPE
- Basic knowledge in crane technology
- The trainees must be declared fit to work at height

Training Duration

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

Training Capacity

- 6 people

Dates

- On demand, please contact us for further information

Cost

- On demand

Engine & Transmission Legacy

GMK 6.4

Aim of Training Course

This course will provide an overview of implemented Mercedes engines OM 500, OM 900 series and installed transmissions from Mercedes, ZF and Allison on GMK cranes. The student will gain an appreciation of applied technologies covering component identity and function of carrier & superstructure engine including the connection to ECOS system. Furthermore this training will give an explanation of the SCR Tier 3b system.

Program

Information about installed engines & transmissions

Electronic engine and transmission control units

Connection to the ECOS system

Functional overview of the SCR system

Training Methods

5 days of theoretical & practical training

Materials and Classrooms Used

Training room

Simulator room

Technical documents

Validation of Knowledge

Presentation of certificate

Prerequisites

- The trainees must be over 18 years old
- The trainees have to bring their PPE
- Successfully passed
 - ✓ GMK 2.1
- Fundamental knowledge about engines and transmissions
- Xentry or Minidiag

Training Duration

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

Training Capacity

- 6 people

Dates

- On demand

Cost

- Training fee 1.405€

ECOS Technology EST (Legacy)

Aim of Training Course

Introduction to the ECOS “Electronic Control Operating System – version 1/EST”. The course provides a detailed theory of the operating system and its control application for particular functions.

Program

*EST-electronics, display, sensors, actuators, resistor boards, CAN-Bus system
Appreciation of logical troubleshooting and error code diagnostics*

Training Methods

*Pre test
Detailed theory of operation
Training bench
Training CD*

Materials and Classrooms Used

*Training room
Technical documents
Simulator*

Validation of Knowledge

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

**Set offer:
Book this course together with
EKS 3/83 on page 37.
For only 1.350€ HT**

GMK EST

Prerequisites

- Trainees must be over 18
- Trainees have to bring own PPE
- Successfully passed
 - ✓ GMK 1.1 or GMK 1.2
 - ✓ GMK 2.1

Training Duration

- 16 hours
- From Monday 12:30 pm
to Wednesday 11:30 am
(training notification)

Training Capacity

- 6 people

Dates

- 06.03.2017 – 08.03.2017
- 04.09.2017 – 06.09.2017

Cost

- Training fee 775 €

EKS 3/83 (Legacy)

Aim of Training Course

Introduction to the EKS83 and EKS3 principles and technology.

Program

History of EKS systems

Crane physics

EKS/RCL Technology:

Central units EKS83 and EKS3

Data bus system

Transmitter board

Adjustment of sensors

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

Presentation of certificate

**Set offer:
Book this course together with
“ECOS EST”, page 36.
For only 1.350€ HT**

GMK RC3

Prerequisites

- Trainees must be over 18
- Trainees have to bring own PPE
- Successfully passed
 - ✓ GMK 1.1 or GMK 1.2
 - ✓ GMK 2.1

Training Duration

- 16 hours
- From Wednesday 12:30 pm
to Friday 11:30 am
(training notification)

Training Capacity

- 6 people

Dates

- 08.03.2017 – 10.03.2017
- 06.09.2017 – 08.09.2017

Cost

- Training fee 795 €

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

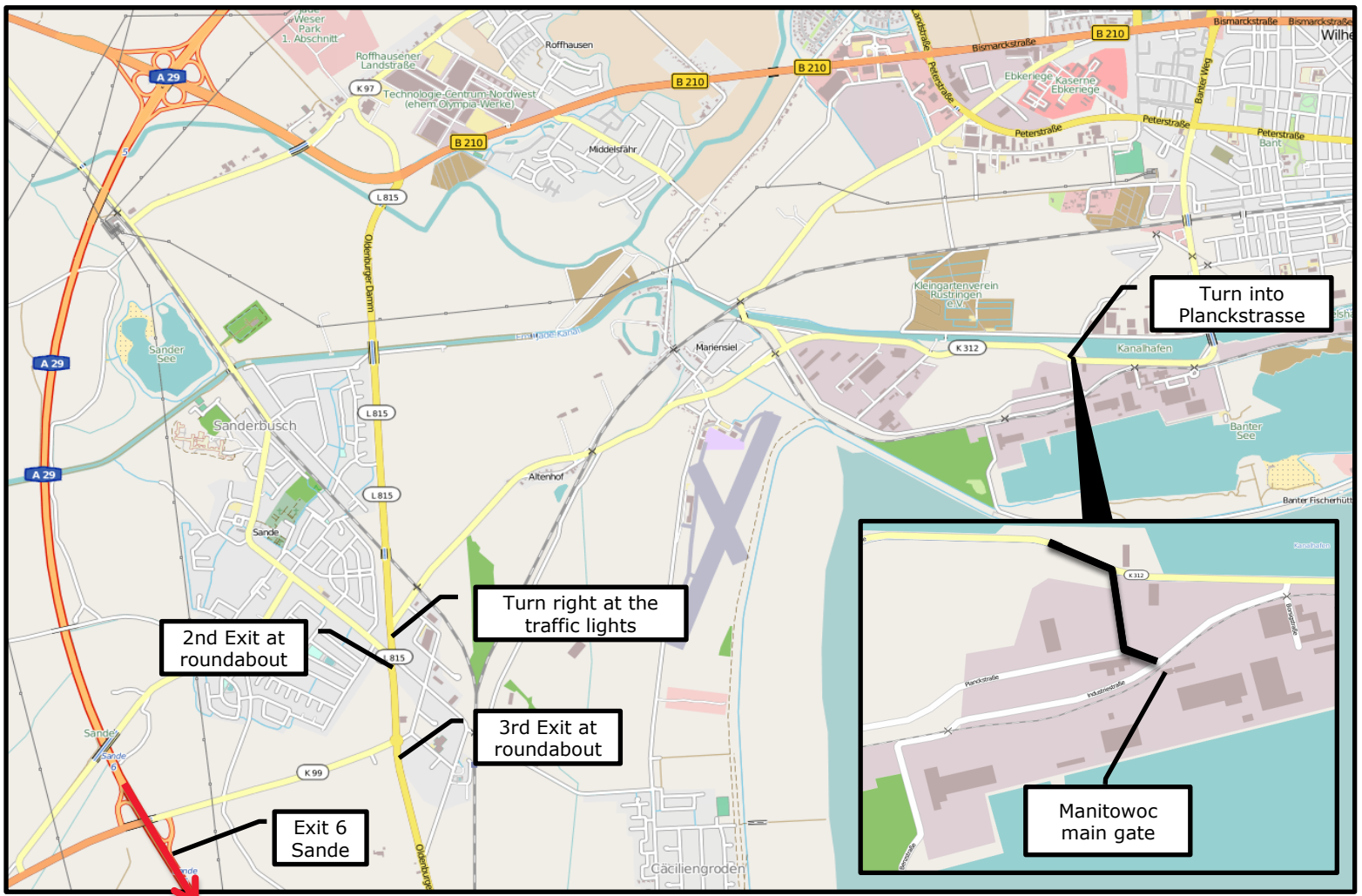
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