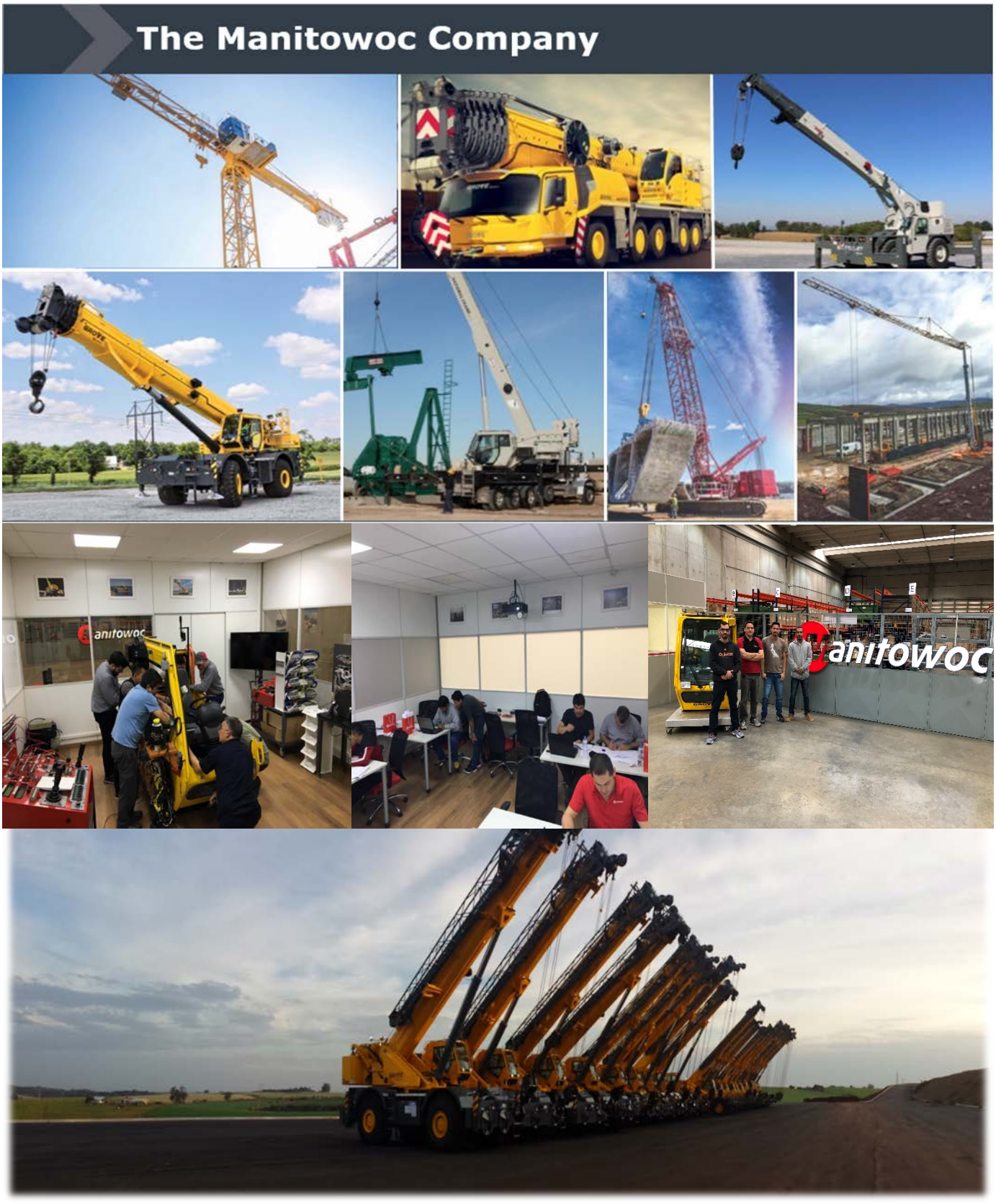
Manitowoc Customer Support Training
Course Catalog 2025
LATAM



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Phone: +52 81 1555 5282

Can reach us on Whatsapp too

Training Center Objectives

Dear Customers and Dealers,

At Manitowoc we understand the need for technical training. Providing your service technicians with training increases your productivity, reduces costs and increases your bottom line.

The 2025 training schedule offers a comprehensive line up of technical courses for Grove, Manitowoc and National Crane machines. These courses will provide your technicians with the skills and knowledge necessary for the execution of preventive maintenance; failure analysis and an overview of security systems and equipment operation.

Our trainers are certified trainers from MTW USA and Germany trainings centers, so you will have available at your region the same level of knowledge

We offer modules all levels, from 3 to 1 week in:
- Crane Operating;
- Crane safety;
- Crane erection and rigging;
- Crane technology
- Or in any specific courses according to your needs.

We strive to provide a personalized training session for each customer, customized to your needs; and we are always available to discuss our training program and any questions you may have.

If you can not find the training courses or program you need, please do not hesitate to contact us, we are always looking to meet any special requirements that you may have.

If you want the training at your facility, we'll send one of our "flying trainers"!

Training Arrangements

Registrations:

1 – If you have access to Manitowoc Direct / Factory trainings

You can apply online for all the trainings that are listed for the several product lines.

- Go to your Manitowoc Direct page;
- Select "**My Applications**"
- Select "**e-Academy**↑"
- Select "**Catalogue**"
- Then you choose the Product Line and trainings that you want to attend

2 – If you don't have yet access to Manitowoc Direct/ Factory Training option, please contact us via e-mail to:

latam.training@manitowoc.com

For more information about the Manitowoc Direct and training center access.

Registrations can be made up to one week prior to the scheduled training. Bookings will only be confirmed upon advance payment.

Participants should be those who work directly or indirectly with the equipment or those who have a basic knowledge of equipment operation. All participants must be 18-years-old.

Training Arrangements

Training Shedules:

All training classes will begin at 8:30 a.m. and end at 5:30 p.m. with a one-hour lunch break. Training duration depends on the training selected.

Training Locations:

Trainings will be held at the Manitowoc Training Center for Latin America in:

São Paulo - Brazil.
Nuevo Leon – Mexico

Manitowoc Cranes Brazil
Av Embaixador Macedo Soares, 10735
05095-035
Sao Paulo, Brazil

Manitowoc Cranes - Mexico
Ave. Lazaro Cardenas Suite 1230 435
Zona Loma Larga Poniente, 66266.
San Pedro Garza Garcia, Nuevo León.

The classrooms for theoretical training are organized by Manitowoc as well the teaching materials and meals. Each training class requires a minimum of four participants.

Accommodations, transport, travel and meals (outside of class) are the responsibility of the participant.

Training Costs:

Final training costs will be communicated to the registrants when the class has met the minimum number of participants.

Students Must Provide:

- Transportation, meals, room and board
- Laptop (per attached requirements)
- Voltmeter
- Proper classroom and shop attire, No SHORTS or SANDALS
- Arrive to class on time each day (Class start time is 8:30am)

Training Arrangements

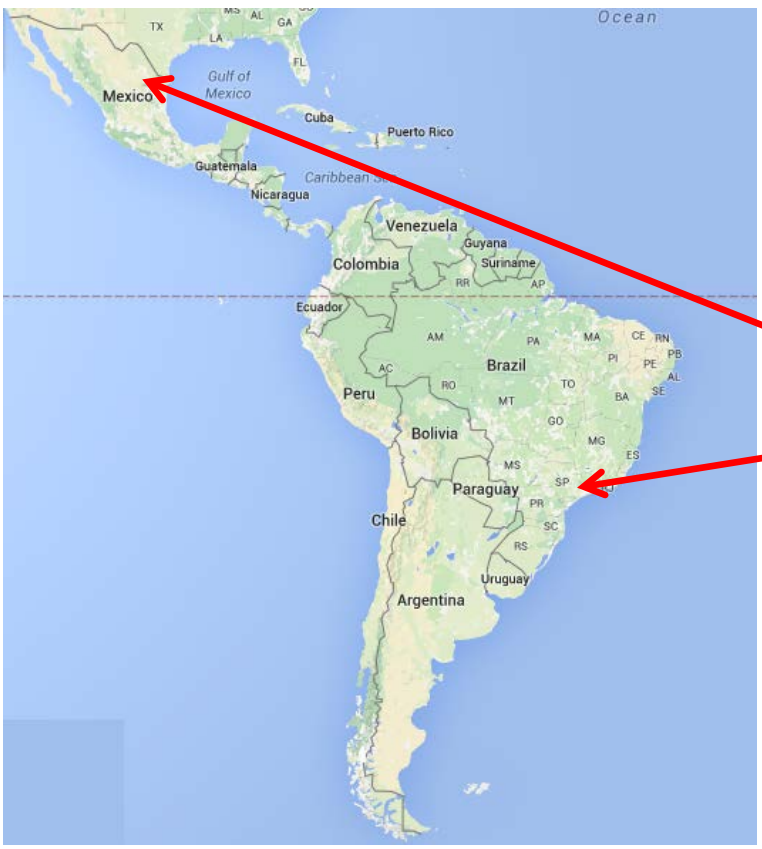
TRAINING LOCATIONS:

Trainings will be held at the Manitowoc Training Center for Latin America in Brazil and Mexico. The classrooms for theoretical only training are organized by Manitowoc as well the teaching materials and meals and can be done on the MTW Training Center.

Each training class requires a minimum of four participants.

Our MTW Training Centers are prepared for upon request trainings, or the client's facilities

Accommodations, transport, travel and meals (outside of class) are the responsibility of the participant.



Training Equipment

Equipment, tools of differentiation:

3 training rooms,

2 crane simulators rooms,

18 different types of crane simulators for practical teaching.

Find us on our web site:

www.manitowoc.com

http://training.manitowoccranes.com/MCG_CARE/Services/EN/Training.asp

GMK, RT, Boom Trucks and Industrial Cranes Line

Course Summary

Course Number	Course Name	Location	Page
Prerequisite course			
CTO	Crane Technology & Operation	Brazil - Mexico	10
CST	Crane System Theory	Brazil - Mexico	11
GMK			
GMK 1.3	Technology & Operation CCS & ECOS	Brazil – Mexico	13
GMK 2.3	ECOS GEN 1 Intro ELAN	Brazil – Mexico	14
GMK 3.3	ECOS Generation 2	Brazil – Mexico	15
GMK 4.2	CCS Intro & Diagnostics	Brazil – Mexico	16
GMK 5.1	Flashing & Calibration	Brazil – Mexico	17
GMK 6.2	Engine and Transmission	Brazil	18
GMK 7.2	Steer By Wire	Brazil	19
GMK 8.1	Troubleshooting	Brazil - Mexico	20
RT			
Grove 1.1	Intro to CANBUS	Brazil – Mexico	22
Grove 2.1	CANLink / Service Tool	Brazil – Mexico	23
Grove 3.1	Orchestra	Brazil – Mexico	24
Grove 4.1	Hybrids ECOS and EKS	Brazil – Mexico	25
Grove 5.1	CCS Intro & Diagnostics	Brazil - Mexico	26
Grove 6.1	Flashing & Calibration	Brazil - Mexico	27
Grove 7.1	Troubleshooting	Brazil - Mexico	28
National Crane			
National 1	Intro National Systems	Brazil	30
National 2	Advanced National Systems	Brazil	31

CTO

Grove Crane Technology & Operation

Contents:

This 4 ½ day course assumes no basic service and operational knowledge of Grove Rough Terrain, Truck Mounted and Hydraulic Crawler crane systems.

The course begins with an in-depth overview of domestic RT & TMS crane terminology and technologies in relationship to crane systems. Grove domestic load charts are explained along with exercises to expose the students to how load charts are constructed and how to properly read and interpret them.

The GHC product line is next with an in-depth overview of GHC terminology and technologies. Students will then be taught GHC style load charts to include exercises to assure a full grasp of both the Grove domestic and GHC product types.

Rated Capacity Limiting systems programming and operation is covered to include exercises using RCL simulators. This allows the student to apply load chart theory learned earlier in class to how the RCL works.

Simulators hands-on session will allow the students to experience how to properly set up and operate a Grove domestic crane. This will give students a working knowledge of a Grove crane and the foundation to continue their studies in Grove Hydraulics and Electrical systems.

Course Benefits:

At the end of the course, technicians will be able to:

- Have basic understanding of how to read and interpret load charts and explain them to operators during machine deliveries.
- Conduct start-up and programming of RCL systems
- Have basic understanding of how to setup and function a Grove crane functions and operates.

Prerequisites
Work with Manitowoc Cranes Line

Capacity
10 students

Duration
5 days

CST

Grove Crane System Theory

Contents:

This 4 ½ day course requires no service knowledge of Grove, GMK or National crane systems and will be used as a prerequisite for all introductory level courses.
The course is designed to provide a basic understanding of hydraulics, electrical and pneumatic principles and how they are applied on the different mobile crane product lines. The course will consist of classroom time utilizing programs covering the basics of hydraulics, electrical and pneumatics along with their components and how these components operate and interact with each other. Schematics are used to help the students gain a basic understanding of schematic layouts and component symbols used on the different mobile product lines.
Hydraulic and Electrical test benches are incorporated into the course to help give the student a better understanding of the hydraulic and electrical theories learned in the classroom portion of the training. Manitowoc Customer Support online systems for parts, service and maintenance will be covered to help the students understand basic navigation and content of the different systems.

Course Benefits:

At the end of the course, technicians will be able to:

- Have the basic understanding of hydraulic, electrical and pneumatic principles.
- Have a basic understanding of how hydraulic, electrical and pneumatic principles relate to the different mobile crane systems.
- Have a basic understanding of schematic design and layout for the different mobile crane product lines.
- Have a basic understanding of hydraulic, electrical and pneumatic symbols used on mobile crane schematics.
- Have a basic understanding of Manitowoc Customer Support online systems navigation and content.

Prerequisites
Work with Manitowoc Cranes Line

Capacity
10 students

Duration
5 days

GMK Courses

Course Number	Course Name	Location	Page
GMK 1.3	Setup & Operation CCS & ECOS	Brazil – Mexico	13
GMK 2.3	GMK Schematics	Brazil – Mexico	14
GMK 3.3	ECOS (Generation 1 & 2)	Brazil – Mexico	15
GMK 4.2	CCS Intro & Diagnostics	Brazil – Mexico	16
GMK 5.1	Flashing & Calibration	Brazil – Mexico	17
GMK 6.2	Engine and Transmission	Brazil	18
GMK 7.2	Steer By Wire	Brazil	19
GMK 8.1	Troubleshooting	Brazil	20

GMK 1.3 – Technology & Operation CCS & ECOS

GMK

Contents:

This 4 ½ day course is designed for individuals who are new to GMK cranes but would also be an excellent refresher course for more experienced technicians. The course covers the setup, operation and technologies focused toward current production GMK cranes equipped with CCS and previous version cranes with ECOS/EKS.
The course features a GMK CCS technology and will begin with an overview of the carrier controls and continue through the proper use of transmission and driving controls, outriggers, suspension and rear steering systems.
During day two, fundamental safety for crane operators' overview will be covered followed by load chart and outrigger pad load table explanations.
Superstructure cab controls will be covered including the proper setup of the Operation & RCL systems.
Day three will began with an overview of the Operation display and the Twin-lock boom control system. This will be reinforced with actual operation of the boom by each student.
Day four will primarily be used for simulator or crane (if available) hands-on operation of the boom in semi-automatic and automatic modes. Each student will be expected to demonstrate proficiency in all aspects of crane setup and operation. Each student will also be given tasks to complete during the week to include load charts and outrigger pad loads.

Course Benefits:

At the end of the course, technicians will be able to:

- Have a basic understanding of how to read and interpret load charts and outrigger pad load tables
- Conducted properly set up of GMK for highway travel or lifting operations.
- Be able to operate the boom telescope in semi automatic and automatic modes
- Have knowledge of basic error codes for Operation and RCL systems.

Prerequisites
CST training

Capacity
8 students

Duration
5 days

GMK 2.3 – ECOS Generation 1 Intro to ELAN

GMK

Contents:

This 4 ½ day course assumes the student has completed all prerequisites and has basic crane knowledge. This course introduces students to an explanation of GMK schematic symbols to include pneumatic, hydraulic and electrical. Also, students learn how to read and navigate GMK ELAN and SEE version electrical schematics.
Day #1 begins with an explanation of schematic symbols used on GMK schematics to include pneumatic, hydraulic and electrical. Next is an introduction into the ELAN electrical schematic format and navigation.
Day #2 will continue the study into ELAN electrical schematics used on Generation 1 GMK ECOS cranes with explanations of the different crane function circuits along with schematic task for the students.
Day #3 will be a tour of the typical Generation 1 superstructure and carrier ECOS system focusing on CANBus and module specifics. Detailed explanations of each function circuit are covered using hydraulic and ELAN schematics.
Day #4 begins with an explanation of the TwinLock boom pinning system to include troubleshooting, error code diagnosing. ECOS Service Software for Generation 1 cranes is next with task on simulators of how to navigate and perform different task such as calibration, parameter file reading and writing and troubleshooting.

Course Benefits:

At the end of the course, technicians will be able to:

- Interpret and navigate GMK hydraulic and pneumatic schematics
- Have a basic understanding of how to navigate ELAN and SEE version electrical schematics.
- Have a basic understanding of Generation 1 carrier and superstructure systems hydraulically pneumatically and electrically.
- Have an understanding of theory of operation of the GMK TwinLock boom and using Service Software for Generation 1 ECOS cranes.

Prerequisites
GMK 1.2, GMK 2.2 or GMK 1.3

Capacity
8 students

Duration
5 days

GMK 3.3 – ECOS Generation 2

GMK

Contents:

This 4 ½ day course assumes the student has completed all prerequisites and has basic crane knowledge. The program begins with a review of GMK ELAN & SEE electrical schematics used on Generation 2 ECOS models. A GMK ECOS GEN-2 simulator will be used for hands on portions of the class.
Day #1 will include a systems tour of the typical Generation 2 carrier ECOS system to include pneumatic and hydraulic specifics. Next will be a tour of the typical Generation 2 carrier ECOS system focusing on CANBus and module specifics.
Day #2 will include a systems tour of the carrier electrical system to include detailed explanations of each function circuit using ELAN/SEE schematics. Next is a systems tour of the typical Generation 2 superstructure ECOS system to include hydraulic specifics.
Day #3 will include a systems tour of the superstructure electrical system to include detailed explanations of each function circuit using ELAN/SEE schematics. Next will be an explanation of the TwinLock boom pinning system to include troubleshooting and error code diagnosing.
Day #4 will include an overview of the ECOS Service Software for Generation 2 cranes with task on simulators of how to navigate and perform different task such as calibration, parameter file reading and writing and troubleshooting.

Course Benefits:

At the end of the course, technicians will be able to:

- Interpret and navigate GMK hydraulic, pneumatic and electrical schematics for Generation 2 ECOS cranes
- Have an understanding of GMK Generation 2 ECOS systems
- Have an understanding of theory of operation of the GMK TwinLock boom telescoping system on Generation 2 ECOS cranes.
- Understand the use of Service Software for Generation 2 ECOS cranes.

Prerequisites
GMK 2.2 or GMK 2.3

Capacity
8 students

Duration
5 days

GMK 4.2 – CCS Intro & Diagnostics

GMK

Contents:

This 4 ½ day course covers technology and diagnostics pertaining to the new CCS control system used on the GMK 3060, GMK5180 and 5250L models. Mode of instruction is primarily classroom theory and practical hands on utilizing a GMK CCS simulator.
The course begins with component identification, operational aspects and system overview to include electrical and hydraulic schematics. The class concludes with the students using and understanding the CST service software to include troubleshooting, calibration and flashing of system components.

Course Benefits:

At the end of the course, technicians will be able to:

- Understand operation of the CCS control system
- Troubleshoot the electrical and hydraulic systems utilized in the CCS control system.
- Perform calibration and flashing procedures necessary for proper operation of the CCS control system.
- Receive, upon successful completion of the final test, the CST service software, switchbox and cabling.

Prerequisites
GMK 3.2 or GMK 3.3

Capacity
8 students

Duration
5 days

GMK 5.1 – Flashing and Calibration

GMK

Contents:

This 4 ½ day course assumes the student has an advance understanding of ECOS and EKS operation as related to crane functions.

The course begins with a review of the EKS 4 LMI system utilized in Generation 1 ECOS equipped cranes.

Primary focus will be centered on the “Flash Programming” of the EKS 5 LMI system and related peripherals and the ECOS ESX system and peripherals.

Mode of instruction is classroom theory/discussion, simulator programming exercises and hands-on. The course conclusion will entail a written final exam.

Course Benefits:

At the end of the course, technicians will be able to:

- Interpret and navigate GMK hydraulic, pneumatic and electrical schematics
- Have intermediate understanding of GMK GEN-1 and GEN-2 ECOS systems
- Have an understanding of theory of operation of the GMK TwinLock boom telescoping systems.
- Have an understanding of using Service Software for both GEN-1 and GEN-2 ECOS cranes.

Prerequisites
GMK 4.2

Capacity
6 students

Duration
5 days

GMK 6.2 – Mercedes Transmission & SCR Systems

GMK

Contents:

This 3 ½ day course covers the operational control and troubleshooting of the fully automated Mercedes G-240 and the new G-280 transmission used on various GMK crane models. Also covered in this course is the Mercedes SCR DEF system, Minidiag and Xentry tools.
Mode of instruction is classroom theory/discussion and hands-on practical exercises utilizing a GMK crane (if available) and simulators as applicable.
Day 1 and 2 will focus on the Mercedes G-240 transmission components and operation along with using the Minidiag II service tool. Mercedes SCR Def systems will also be covered.
Day 3 will focus on the Mercedes G-280 transmission components and operation along with the Xentry service tool. The course is finished on day 4 with a written exam.

Course Benefits:

At the end of the course, technicians will be able to:

- Understand operational aspects of the Mercedes G-240 & G-280 transmission.
- Troubleshoot and calibrate the Mercedes G-240 & G-280 transmission using the Minidiag II and Xentry service tools.
- Provide driving/operation instruction to customers when delivering machines equipped with the Mercedes transmission.
- Understand operational aspects of the Mercedes SCR def system.

Prerequisites
GMK 5.1

Capacity
6 students

Duration
3 1/2 days

GMK 7.2 – Steer By Wire

GMK

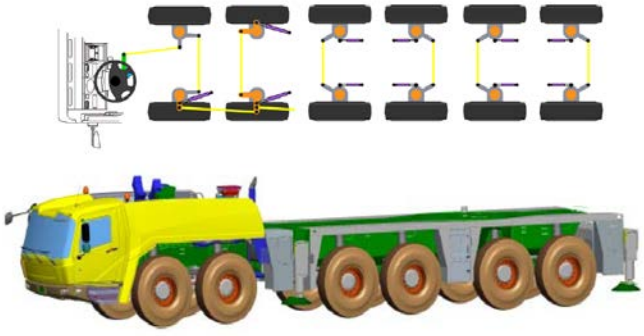
Contents:

This 3 ½ day course covers the ECOS “Steer by Wire” control system and the new CCS “Steer by Wire” control system used GMK crane models (if available.
Mode of instruction is classroom theory/discussion and practical exercises utilizing a GMK ECOS model Steer by Wire crane (if available) and a GMK CCS ME SBW system simulator.
Content will include electrical and hydraulic overview of system requirements, mechanical alignment, programming of control modules and calibration of systems controls.

Course Benefits:

At the end of the course, technicians will be able to:

- Troubleshoot the electrical and hydraulic systems utilized in the Steer-By-Wire control systems.
- Perform the mechanical alignment of the steering system necessary for proper operation.
- Program and calibrate the Steer-By-Wire controls.



Prerequisites
GMK 6.2

Capacity
6 students

Duration
3 1/2 days

GMK Troubleshooting

GMK

Contents:

This 3 day course will cover troubleshooting the Grove GMK control systems learned in previous classes.
Classroom and practical training methods will be used to include a review of GMK systems along with troubleshooting procedures and technics related to the GMK product line. Understanding error codes and how to interpret their meaning will be focused on to help the students apply what they have learned about the systems and how that relates to the different error codes they will be confronted with.
Students will be tested on their troubleshooting skills by means of written task and hands on task. The task will include system errors, software procedures and calibrations. Class size will be limited to eight (8) students. The course will be approximately 30% classroom and 70% practical.

Course Benefits:

At the end of the course, technicians will be able to:

- Have an understanding of recommended troubleshooting technics
- Enhance their troubleshooting skills.
- Understand using crane service software for diagnostics
- Understand how to properly diagnose error codes
- Understand diagnostic screens

STUDENT MUST PROVIDE:

- Transportation, meals, room and board
- Laptop
- Voltmeter
- Special tools (peak dongle, switch box)

Prerequisites
GMK 7.2

Capacity
4 students

Duration
3 days

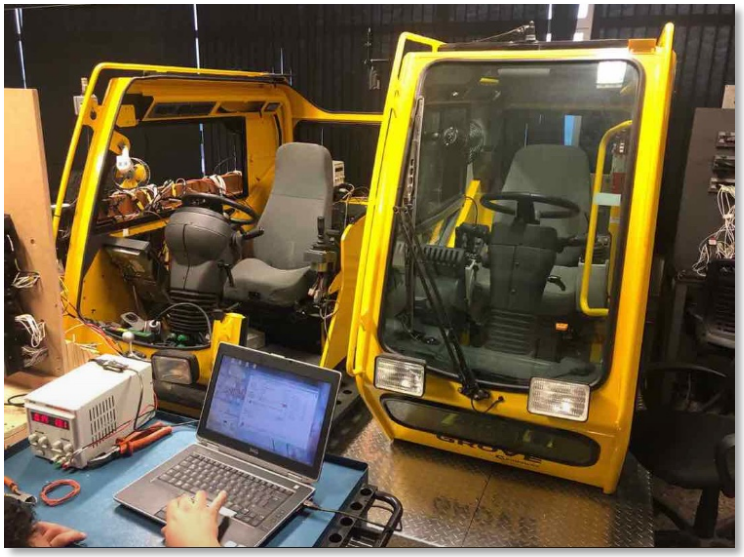
Grove RT Courses

Course Number	Course Name	Location	Page
Grove 1.1	PAT systems	Brazil – Mexico	22
Grove 2.1	RT Gen #2	Brazil – Mexico	23
Grove 3.1	RT Gen #3 Orchestra system	Brazil – Mexico	24
Grove 4.1	RT ECOS and EKS	Brazil – Mexico	25
Grove 5.1	CCS System	Brazil	26
Grove 6.1	Software RT	Brazil	27
Grove 7.1	Troubleshooting	Brazil	28

Grove 1.1

Aim / Course goals:

This course is for crane service technicians to gain knowledge that how CANBUS technology works and different types of LMI systems used in RT Cranes.



Program:

CANBUS technology and diagnostics; LMI PAT system circuits , sensors calibrations and troubleshooting; software procedures.

Training methods:

Training is conducted in lecture format supplemented with hands-on activities on the machine and simulators.

Materials and classrooms used:

Training theory, presentations, videos and manuals are provided to each participant on digital media.

Validation of knowledge:

Pretest, daily homework, daily tasks and final test.

Prerequisites
CTO training

Capacity
8 students

Duration
5 days

Grove 2.1

Aim / Course goals:

This course is for crane service technicians to gain basic operational knowledge of Grove cranes and hydraulic, electric structure and software diagnostics programs for RT gen#2.

Program:

Identification of carrier and superstructure components; Identification, understanding hydraulic and electrical symbols and schematics; basics tests, procedures and troubleshooting using software program.

Training methods:

Training is conducted in lecture format supplemented with hands-on activities on the machine and simulators.

Materials and classrooms used:

Training theory, presentations, videos and manuals are provided to each participant on digital media and printed schematics.

Validation of knowledge:

Pretest, daily homework, daily tasks and final test.

Prerequisites
Grove 1.1

Capacity
8 students

Duration
5 days

Grove 3.1

Aim / Course goals:
This course is for crane service technicians works with Grove gen#3 CANBUS, multi modules schematics and Orchestra service software.

Program:
Identify hydraulic and electrical components; Troubleshooting and calibrations using hydraulic and electrical schematics and service software.

Training methods:
Training is conducted in lecture format supplemented with hands-on activities on the machine and simulators.

Materials and classrooms used:
Training theory, presentations, videos and manuals are provided to each participant on digital media and printed schematics.

Validation of knowledge:
Pretest, daily homework, daily tasks and final test.

Prerequisites
Grove 2.1

Capacity
8 students

Duration
5 days

Grove 4.1 – ECOS and EKS

Aim / Course goals:

This course is for crane service technicians to gain knowledge of the RT9150 and TMS9000E ECOS and EKS system machines.

Program:

Identify hydraulic and electrical components; Troubleshooting and calibrations using hydraulic and electrical schematics; ELAN schematics and service software.

Training methods:

Training is conducted in lecture format supplemented with hands-on activities on the simulators.

Materials and classrooms used:

Training theory, presentations, videos and manuals are provided to each participant on digital media and printed schematics.

Validation of knowledge:

Pretest, daily homework, daily tasks and final test.

Prerequisites
Grove 3.1

Capacity
8 students

Duration
5 days

Grove 5.1 – CCS System

Aim / Course goals:
This course is for crane service technicians works with the new Grove system CCS.

Program:
Identification of CCS components; CANBUS system of the CCS; understanding and troubleshooting electrical and hydraulic schematics; service software CCS; error codes identification.

Training methods:
Training is conducted in lecture format supplemented with hands-on activities on the simulators.

Materials and classrooms used:
Training theory, presentations, videos and manuals are provided to each participant on digital media and printed schematics.

Validation of knowledge:
Pretest, daily homework, daily tasks and final test.

Prerequisites
Grove 4.1

Capacity
8 students

Duration
5 days

Grove 6.1 – Software RT

Aim / Course goals:
This course is for crane service technicians works with different types of software RT.

Program:
HED Gen 1, 2 & 3 software; Hirschman software; Raico Wylie software; ECOS software; CCS Software procedures.

Training methods:
Training is conducted in lecture format supplemented with hands-on activities on the simulators and cranes.

Materials and classrooms used:
Training theory, presentations, videos; software and manuals are provided to each participant on digital media.

Validation of knowledge:
Pretest, daily homework, daily tasks and final test practical and theoretical.

Prerequisites
Grove 5.1

Capacity
8 students

Duration
5 days

RT

Grove Troubleshooting

Contents:

This 3 day course will cover troubleshooting the Grove control systems learned in previous classes.
Classroom and practical training methods will be used to include a review of Grove Crane systems along with troubleshooting procedures and technics related to the Grove Crane product line. Understanding error codes and how to interpret their meaning will be focused on to help the students apply what they have learned about the systems and how that relates to the different error codes they will be confronted with.
Students will be tested on their troubleshooting skills by means of written task and hands on task. The task will include system errors, software procedures and calibrations. Class size will be limited to eight (8) students. The course will be approximately 30% classroom and 70% practical.

Course Benefits:

At the end of the course, technicians will be able to:

- Have an understanding of recommended troubleshooting technics
- Enhance their troubleshooting skills.
- Understand using crane service software for diagnostics
- Understand how to properly diagnose error codes
- Understand diagnostic screens

STUDENT MUST PROVIDE:

- Transportation, meals, room and board
- Laptop
- Voltmeter
- Special tools (red dongle, diagnostic cable)

Prerequisites
Grove 6.1

Capacity
8 students

Duration
5 days

National Crane Courses

Course Number	Course Name	Location	Page
National 1	Intro National Systems	In Company	30
National 2	Advanced National Systems	In Company	31

National 1

National Crane

Aim / Course goals:

The goal of this course is to familiarize participants with the working and operating principles of National Crane boom truck machines and technology.

Program:

Component description and location; interpretation of equipment load charts; preventive maintenance plans, configuration and operation of LMI system; understanding operating and service manuals and the principles of each function operation.

Training methods:

Training is conducted in lecture format supplemented with hands-on activities on the cranes* (if available).

Materials and classrooms used:

Training theory, presentations, videos; software and manuals are provided to each participant on digital media.

Validation of knowledge:

Pre test, daily homework, daily tasks and final test.

Prerequisites
CST Training

Duration
4 days

Capacity
8 students

Dates available:

When required

National 2

Aim / Course goals:

The course will cover the use of hydraulic and electrical schematics for failure diagnosis, and how to test and adjust pressures.

Program:

Advanced hydraulic, electrical and pneumatic principles; procedures for pressure adjustment and troubleshooting; CANBUS technology; Software procedures.

Training methods:

Training is conducted in lecture format supplemented with hands-on activities on the cranes* (if available).

Materials and classrooms used:

Training theory, presentations, videos; software and manuals are provided to each participant on digital media.

Validation of knowledge:

Pre test, daily homework, daily tasks and final test.

Prerequisites
National 1

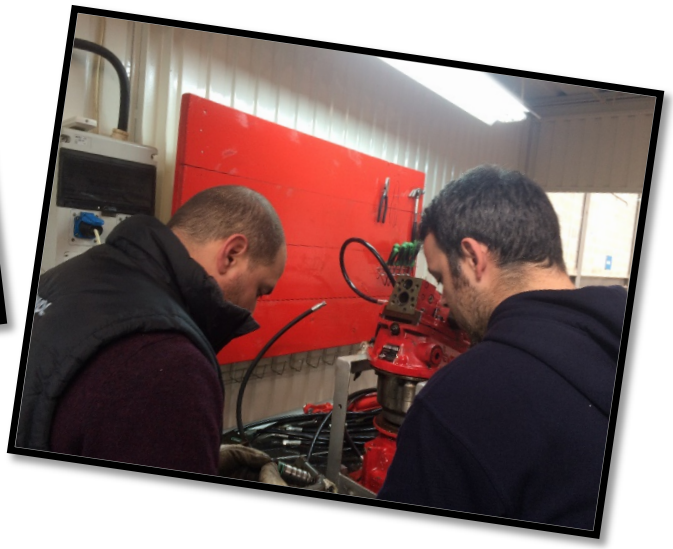
Duration
5 days

Capacity
8 students

Dates available:

When required

Lattice Cranes



Course Summary

Course Number	Course Name	Location	Page
Prerequisite course			
CST	Crane System Theory	Brazil	34
CTO – L	Crane Technology & Operation-Lattice	Brasil	35
EPIC and CANBUS Customer Classes			
	MTW Model Specific Operation Aspects	Brazil	36
1	MTW Model Specific Maintenance Aspects level 1	Brazil	37
2	MTW EPIC Model Specific Maintenance Aspects level 2	Brazil	38

Lattice Crane System Theory

Contents:

This 4 ½ day course requires no service knowledge of Grove, Manitowoc, GMK or National crane systems and will be used as a prerequisite for all introductory level courses.
The course is designed to provide a basic understanding of hydraulics, electrical and pneumatic principles and how they are applied on the different mobile crane product lines. The course will consist of classroom time utilizing programs covering the basics of hydraulics, electrical and pneumatics along with their components and how these components operate and interact with each other. Schematics are used to help the students gain a basic understanding of schematic layouts and component symbols used on the different mobile product lines.
Hydraulic and Electrical test benches are incorporated into the course to help give the student a better understanding of the hydraulic and electrical theories learned in the classroom portion of the training. Manitowoc Customer Support online systems for parts, service and maintenance will be covered to help the students understand basic navigation and content of the different systems.

Course Benefits:

At the end of the course, technicians will be able to:

- Have the basic understanding of hydraulic, electrical and pneumatic principles.
- Have a basic understanding of how hydraulic, electrical and pneumatic principles relate to the different mobile crane systems.
- Have a basic understanding of schematic design and layout for the different mobile crane product lines.
- Have a basic understanding of hydraulic, electrical and pneumatic symbols used on mobile crane schematics.
- Have a basic understanding of Manitowoc Customer Support online systems navigation and content.

Prerequisites

None

Capacity

8 students

Duration

5 days

CTO – Crane Crane Technology & Operation -Lattice

Contents:

This 4 ½ day course is designed for individuals who are new to Lattice Manitowoc cranes but would also be an excellent refresher course for more experienced technicians. The course covers the setup and operation focused toward current production EPIC, Canbus cranes, also covering cranes equipped with CCS

The course features a an overview of the cabin controls and continue through the proper use of several funcions and driving controls, and RCI RCL Systems.
During day two, fundamental safety for crane operators' overview will be covered followed by load charts; load charts explanations and calculations.

Day three will began with an overview of the several Operations display and

Day four will primarily be used for hands-on RCL navigation accross the product lines. . Each student will be expected to demonstrate proficiency in all aspects of crane setup and operation. Each student will also be given tasks to complete during the week to include load charts and working modes

Course Benefits:

At the end of the course, technicians will be able to:

- Have a basic understanding of how to read and interpret load charts and RCI RCL
- Be able to calculate the deductions necessary for a correct calibration
- Have knowledge of basic error codes for Operation and RCL systems.

Prerequisites

None

Capacity

8 students

Duration

5 days

MTW Model Specific Operation Aspects

Content:

This course assumes no basic service and operational knowledge of Manitowoc lattice model specific crane systems.

The course begins with a brief history of the product with an overview of lattice crane terminology and technologies in relationship to crane and electrical systems. A review of past and current crane models. Manitowoc load charts are explained along with exercises to expose the students to how load charts are constructed, how to properly read and interpret them, and how to determine load deductions using the load chart.

The class will review the crane systems for Manitowoc Lattice system offered on the specific crane model. Crane maintenance and lubrication will also be covered in the course material.

Rated Capacity Limiting systems programming and operation is covered to include exercises using RCL simulators for the Manitowoc Lattice operating systems. This allows the student to apply load chart theory learned earlier in class to how the RCL works and interprets the load chart data.

Course Benefits:

- Have a basic understanding of the terminology used to identify the different parts of the crane.
- Have basic understanding of how to read and interpret load charts and explain them to operators during machine deliveries.
- Conduct set-up and programming of Manitowoc Lattice RCL systems
- Have basic understanding of different cab layouts and the operating systems of the Manitowoc lattice model specific crane.
- Have a basic understanding of the Crane Wind Charts.
- Have a basic understanding of Travel Charts as they pertain to pick and carry.

Prerequisites

None

Capacity

8 students

Duration

5 days

MTW Model Specific Maintenance Aspects level 1

Content:

This course will showcase the operational systems of the Manitowoc Lattice model specific crane. The class size will be limited to eight (8) students. All classroom presentations will be reinforced with practical hands-on electrical systems.

The service technicians will be guided through the electrical systems by studying the systems' schematics, manuals; and by participating in actual hands-on sessions. The Load Indicator Systems will be covered to allow technicians to build the system knowledge and confidence to troubleshoot system problems. Specific Lab Units cover Central Processing Unit (CPU) to help the participant to understand the different circuits.

Quizzes and tasks will be assigned to give technicians another opportunity to gain and retain the daily information covered in these sessions.

Course Benefits:

- Understand the operating system as used on the Lattice specific crane model.
- Interpret ISO and ANSI electrical, hydraulic symbols.
- Use electrical schematics for troubleshooting.
- Use the Manitowoc Service Manual.
- Understand the operating system used on the Lattice cranes.
- Understand the electrical schematic from the battery to the boom top.
- Check CPU computer diagnostics.
- Set up the Manitowoc rated capacity indicator on the Manitowoc Lattice cranes.
- Understand the basic operation, troubleshooting, and maintenance on the Manitowoc Lattice crane.

Prerequisites

None

Capacity

8 students

Duration

5 days

MTW Model Specific Maintenance Aspects level 2

Content:

This course will showcase the operational systems of the Manitowoc Lattice model specific crane. The class size will be limited to eight (8) students. All classroom presentations will be reinforced with practical hands-on hydraulic and electrical systems.

The service technicians will be guided through the electrical and hydraulic systems by studying the systems' schematics, manuals; and by participating in actual hands-on sessions. The Load Indicator Systems will be covered to allow technicians to build the system knowledge and confidence to troubleshoot system problems. Additional units include understanding pressure vs. voltage, electrical and hydraulic systems for fixed and variable displacement pumps and motors.

Course Benefits:

- Use hydraulic and electrical schematics for troubleshooting.
- Use pressure gauges and flow meters for troubleshooting.
- Be guided through the Manitowoc Hydraulic system used on the Manitowoc Lattice crane.
- Set the hydraulic system pressure
- Check and test transducers, multi-function valves, and hydraulic pump controls.
- Perform pressure calibrations.
- Perform controls calibrations.
- Perform charge pressure tests.
- Perform pump pressure test on Manitowoc Lattice hydraulic system.

Prerequisites

MTW Maintenance aspects level 1

Capacity

8 students

Duration

5 days

Manitowoc Training Centers

Americas

Shady Grove, Pennsylvania, USA
Manitowoc, Wisconsin, USA
Monterrey, Mexico
Sao Paulo, Brazil

Europe, Middle East, Africa

Wilhelmshaven, Germany
Dubai, United Arab Emirates

Manitowoc Product Support 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.