



Container Handling Equipment Maintenance

Course: STS, RTG/RMG, Straddle Carriers and Reach Stackers



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Introduction:

Container handling equipment maintenance for STS, RTG/RMG, straddle carriers and reach stackers is a 1-week course for terminal engineering, workshop and reliability units that ends with a CHE Fleet Maintenance and Reliability Plan for a case container terminal. Terminals lose berth productivity when quay cranes stop on spreader faults, yard machines wait for tyres or hydraulic hoses and boom or portal cracks go unnoticed until a repair outage. Nominees already maintain or plan work on quay and yard machines and learn through inspection walkthroughs of cranes, spreaders and mobile handlers. CoreConcept Training Center delivers this container handling equipment maintenance course.

Course Objectives:

- Map the quay and yard CHE fleet by machine family, drive arrangement, duty and moves handled to set maintenance priorities
- Inspect STS and RTG/RMG boom, portal, sill beam and trolley girder structures for fatigue cracking and corrosion at known hot spots
- Maintain hoist, trolley, gantry and boom hoist drives, wire rope reeving, anti-sway systems and spreader twistlock mechanisms to a planned schedule
- Diagnose recurring failures on straddle carriers and reach stackers covering hydraulics, telescopic booms, tyres and top-lift attachments
- Calculate MMBF, MTTR and technical availability from work order and move data and rank bad actors for corrective action
- Produce a CHE Fleet Maintenance and Reliability Plan with task intervals, spares levels and KPI targets for a case terminal

Target Audience:

- Terminal engineering units responsible for quay crane and yard crane condition and uptime
 - Electrical and mechanical maintenance crews that service hoists, drives, spreaders and power supply systems
 - Yard equipment workshops responsible for straddle carriers, reach stackers and empty container handlers
 - Maintenance planning units that schedule preventive tasks, shutdown windows and spare parts for terminal machines
 - Reliability and asset performance units that track equipment failures, availability and repair times
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Course Outline:

Day 1: Container Terminal Equipment Families and Fleet Condition Baseline

- STS Quay Crane Boom, Trolley and Gantry Arrangement Review
- RTG Versus RMG Yard Crane Power and Travel Comparison
- Straddle Carrier and Reach Stacker Duty Profile Mapping
- CHE Asset Register by Moves, Hours and Age
- Baseline Work Order History and Downtime Pareto Chart

Day 2: Crane Standards, Drive Architecture and Spreader Engineering

- FEM 1.001 Duty Groups Applied to Quay Cranes
- Variable Frequency Drive Layout for Hoist and Trolley
- Shore Power, Cable Reel and Busbar Supply Systems
- ISO 1161 Corner Castings and Spreader Twistlock Interface
- Telescopic Spreader Hydraulics, Flippers and Sensor Circuits

Day 3: Preventive Maintenance of Quay Cranes, Yard Cranes and Mobile Handlers

- ISO 4309 Wire Rope Care, Reeving and Replacement Checks
- Anti-Sway and Load Stabilisation System Calibration Routine
- Gantry Wheel, Rail Clamp and Storm Pin Service Tasks
- Reach Stacker Boom Pad, Cylinder and Hose Inspection Routine
- Straddle Carrier Hoist Chain, Tyre and Brake Service Plan

Day 4: Structural Fatigue, Automation Faults and Reliability Analysis

- ISO 9927 Periodic Crane Inspection of Boom and Portal Welds
- Fatigue Hot Spot Mapping With Magnetic Particle Testing
- ISO 12482 Condition Monitoring for Remaining Design Life
- Remote Operating Station and Automated Stacking Fault Logs
- MMBF, MTTR and Technical Availability Calculation Worksheet

Day 5: Inspection Walkthrough and CHE Fleet Maintenance and Reliability Plan

- Case Quay Crane Spreader and Rope Inspection Walkthrough
 - Case RTG Yard Block Structural Crack Survey Walkthrough
 - Case Reach Stacker Hydraulic Leak and Boom Wear Walkthrough
 - Bad Actor Ranking and Spare Parts Stocking Levels
 - CHE Fleet Maintenance and Reliability Plan Completion
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Skills You Will Gain:

- Quay Crane Structural Fatigue Inspection
- Spreader and Twistlock Fault Finding
- Crane Drive and Power Supply Servicing
- Wire Rope Reeving Assessment
- Anti-Sway System Calibration
- Mobile Container Handler Diagnostics
- Equipment Reliability Metrics Analysis
- Terminal Spare Parts Planning

Why Attend This Course:

- Deliver a CHE Fleet Maintenance and Reliability Plan for a case container terminal to the terminal engineering manager and the operations planning lead
- Decide which cranes, spreaders and yard handlers receive overhaul, retrofit or closer inspection first based on MMBF and crack findings
- Avoid quay crane stoppages during vessel calls, yard congestion from idle handlers and costly structural repairs found late
- Coach technicians and contractors with the crack survey method, spreader fault tree and reliability worksheet

Conclusion:

Once back at work, the participant hands the terminal engineering manager and the operations planning lead a CHE Fleet Maintenance and Reliability Plan that links each quay crane, yard crane, straddle carrier and reach stacker to its task intervals, inspection hot spots, spares levels and MMBF targets. Management uses it to schedule maintenance windows around vessel calls and approve retrofit spending. After the first quarter under the plan, the unit should review MMBF, technical availability, repeat spreader faults and structural findings against the baseline.

Frequently Asked Questions FAQ:

What should participants know before a container handling equipment maintenance course?

Participants should already maintain, plan or supervise work on quay cranes, yard cranes or mobile container handlers and be able to read work orders and drawings. Bringing anonymised failure records or a fleet list lets the reliability exercises reflect their own terminal.

How does container handling equipment maintenance differ from a general overhead crane or terminal operations course?

It concentrates on the machines specific to container terminals: quay and yard gantries, spreaders, straddle carriers and reach stackers, and their reliability. Overhead crane courses cover fixed plant cranes, while terminal operations courses cover berth, yard and gate planning rather than equipment upkeep.

Why do container terminals measure container handling equipment by MMBF rather than hours alone?

MMBF ties failures to the moves each machine actually makes, so a busy quay crane and a lightly used yard crane can be compared fairly. It shows whether maintenance keeps pace with throughput and highlights machines that fail more often per container handled.

What do participants take back from the container handling equipment maintenance course?

Participants take back a CHE Fleet Maintenance and Reliability Plan with an asset register, task intervals, structural hot spot maps, spreader fault tree, spares levels and an MMBF and availability worksheet they can adapt to their own terminal.
