

THE WENCO LEARNING COURSE CATALOGUE 2022



Introducing Wenco Learning

Online Education for Better Mine Operations

Wenco has always worked to help mines extract unrealized value from their operations. For over 30 years, our solutions have helped customers around the world increase production, boost efficiency, improve their safety record, and lower operating costs. With that mission in mind, we are proud to offer the latest in e-learning and online education specifically for Wenco customers. Welcome to Wenco Learning.

Training Tailored to Your Site

Wenco Learning is our suite of interactive training programs designed to help you master your Wenco solutions. Our e-learning modules provide a self-directed approach to let Wenco users expand their knowledge at their own pace. Meanwhile, our face-to-face workshops provide additional support for better insight into Wenco applications.

e-Learning

Wenco Learning features a variety of interactive, practical, and fun learning modules to teach you about Wenco solutions. These e-Learning courses draw on proven methodologies and the latest innovations in adult education. Courses incorporate text, audio, video, and interactive activities to convey knowledge about our solutions in the most effective way possible. Learners become familiar with new techniques, build skills, and gain confidence through interactive practice sessions.

Our certification pathways target specific roles at each mine, presenting essential information for operators, dispatchers, IT staff, and other personnel. Our e-learning courses can also be arranged into custom pathways that address



specific requirements of your mine. Following each pathway, learners receive certificates that demonstrate their aptitude with the Wenco systems.

In-person Training

Wenco also offers 3-to-5 day in-person workshops. These sessions take training beyond the self-paced courses. Workshops offer expanded access to Wenco experts and show how Wenco applications work together. Our course facilitators tailor each session to the goals of the operation, focusing on the most applicable and valuable information for each site's Wenco users.

Multi-Language Content

View our courses in multiple languages. Wenco offers courses in English, French and Russian to give learners the opportunity to learn in their mother tongue. It helps to increase comprehension and reduces time spent on completing courses.

Courses Designed for Your Mine

This catalogue lists the current course offerings from Wenco Learning. Please review our options to see which course can best help your operation.

For more information on our learning programs and other consulting services, please contact us at 604.270.8277, info@wencomine.com, or speak to your technical services representative.

Available Courses and Certifications

100 • Wencomine FMS Foundations

- 101 Wencomine FMS Overview
- 102 Dig Blocks in Wencomine FMS
- 103 WencoDB Home
- 104 Introduction to Fleet Control
- 105 Maximizing Fleet Control
- 106 Introduction to Fleet Control Maps
- 107 Maximizing Fleet Control Maps
- 108 Event Monitor
- 109 Mobile Data Terminal (MDT)
- 110 Wenco Reporting

200 • Wencomine FMS Administrator

- 201 User Manager
- 202 Control Center
- 203 Onboard Insight
- 204 Radio Traffic Monitor
- 205 Mobile Software Distributor
- 206 Mobile Diagnostics Utility
- 207 Wenco Licenses

300 • Dynamic Dispatch

- 301 Introduction to Dynamic Dispatch
- 302 Understanding Dynamic Dispatch
- 303 Configuring Dynamic Dispatch
- 304 Maximizing Dynamic Dispatch
- 305 Full Dispatch
- 306 Fuel Dispatch
- 307 Parkup Dispatch

400 • Machine Guidance

- 401 BenchManager
- 402 BenchView
- 403 Drill Manager: Managing Drill Patterns
- 404 Drill Manager: Visualization and Reporting

500 • Additional Wencomine FMS Courses

- 501 PitNav Map Manager
- 502 Maintenance Monitor
- 503 Mobile Supervisor Terminal
- 504 TireMax
- 505 Wencomine FMS for Dispatchers
- 506 Stockpile Management
- 507 Electronic Logbook Checklists

600 • ReadyLine

- 601 ReadyLine Overview
- 602 Realtime Data
- 603 Configuring Data
- 604 Data Analysis
- 605 Settings and Support

710 • Wencolite FMS for Operators

- 711 Dozer Operators
- 712 Loading Unit Operators
- 713 Truck Operators

720 • Wencolite FMS Production Manager

- 721 Administration
- 722 Managing Projects and Block Models
- 723 Fleet Information Reporting

800 • Open Autonomy

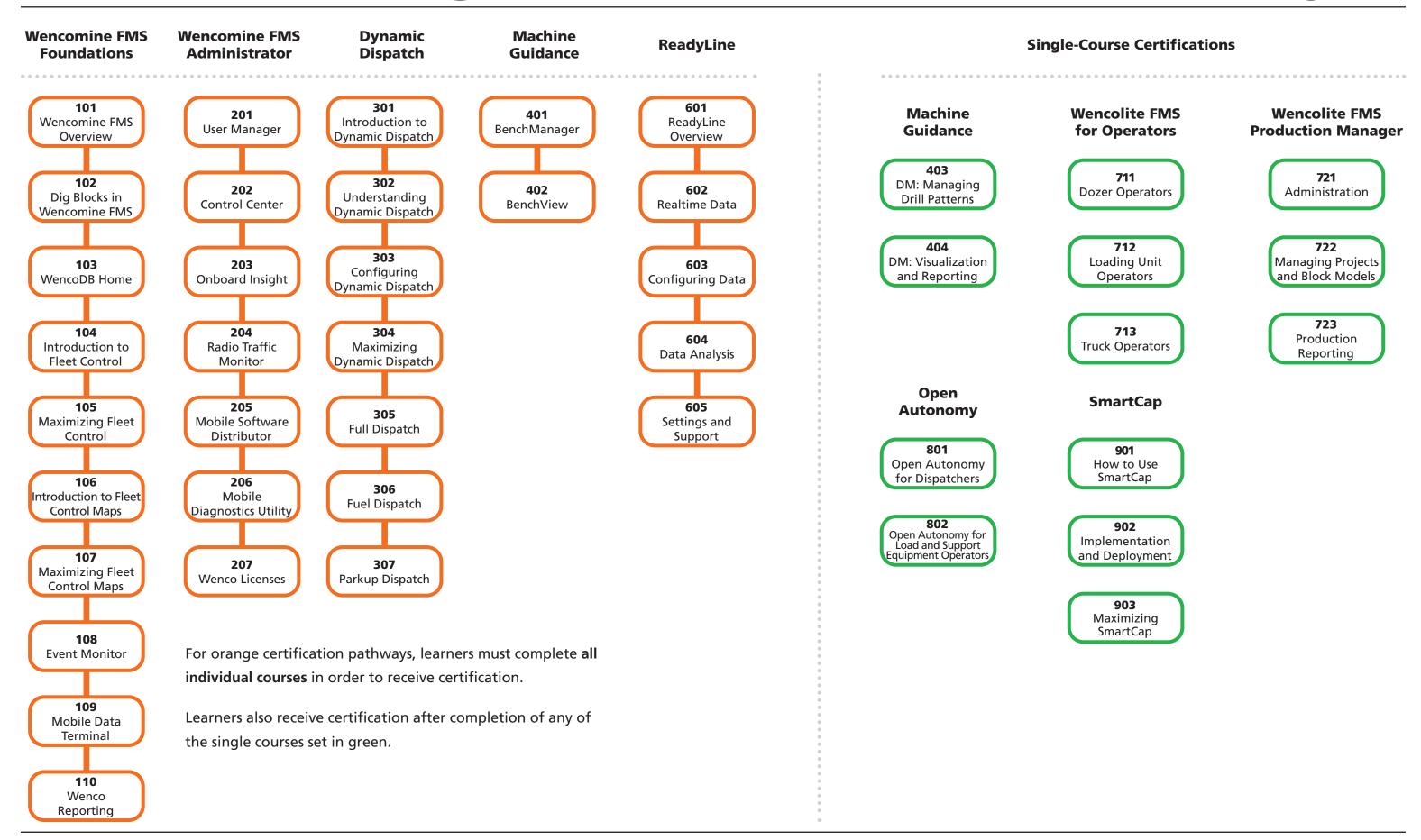
- 801 Open Autonomy for Dispatchers
- 802 Open Autonomy for Load and Support Equipment Operators

900 • SmartCap

- 901 How to Use SmartCap
- 902 Implementation and Deployment
- 903 Maximizing SmartCap



Wenco Learning Course Certification Pathways



100 • Wencomine FMS Foundations

This program contains key components of the Wencomine FMS:

- Wencomine FMS Overview
- Dig Blocks
- WencoDB Home
- Fleet Control
- Fleet Control Maps

- Event Monitor
- MDT
- Wenco Reporting

101 • Wencomine FMS Overview

This course introduces learners to essential concepts in fleet management. Learners gain knowledge about the uses and benefits of fleet management systems and the specific approach of Wencomine FMS.

102 • Dig Blocks in Wencomine FMS

This module allows participants to become familiar with importing and editing dig blocks. Upon completion of this course, learners will be able to perform the following tasks:

- Understand the importance of dig blocks
- Import dig blocks
- Edit the data import profile

103 • WencoDB Home

The WencoDB Home course introduces learners to the graphical interface for Wencomine's SQL Server database. Learners acquire the skills to perform the following tasks:

- Review raw mine data stored in the database
- Generate reports about mine operations

- Update the database
- Apply database inquiries to sort and filter mine information
- Manage resources/schedule using Roster Generator and Lineup Utility

104 • Introduction to Fleet Control

This module introduces learners to the components of the Fleet Control monitoring and control application. With this information, learners will be able to identify how this application can assist in monitoring and reacting to events that occur throughout a mining environment.

- By the end of this e-learning module, learners will be able to perform the following tasks:
- Evaluate the application in light of the organization's needs
- Identify the benefits of Fleet Control to the organization
- Apply the information in this module to accurately monitor and react accordingly to events that occur during a shift.

105 • Maximizing Fleet Control

This module will provide learners with a more in-depth look at the components of the system. With this information, learners will be able to identify how this application can assist in successfully managing and overseeing an entire mine, resulting in increased equipment productivity and material production.

106 • Introduction to Fleet Control Maps

This course instructs learners in using and manipulating the Fleet Control Maps, Wenco's GPS-powered mapping function. It introduces learners to the main components of this tool. Learners will be able to recall procedures for working with Fleet Control Maps, interpret data in real-time, set up users, and enter data (Wenco Administrators only).

107 • Maximizing Fleet Control Maps

Maximizing Fleet Control Maps is a more in-depth look at the application. Learners will be able to graphically manage spatial database objects and haul routes, stay informed and monitor their mine fleet using Fleet Control Maps.



108 • Event Monitor

This module gives learners an insight into Wenco's event and message generating system. Learners of the Event Monitor course acquire the skills to interact with components of Event Monitor, understand event severity, configure alerts based on event type, and review event history.

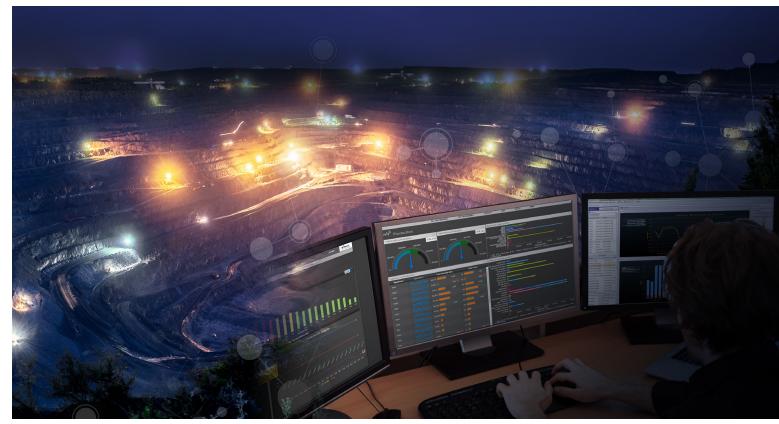
109 • Mobile Data Terminal (MDT)

The Mobile Data Terminal is the chief source of communication between dispatchers and machine operators. This on-board screen allows operators to view their assignments, status, and KPIs while maintaining situational awareness. Learners of this course acquire skills to perform the following tasks:

- Monitor and command mining equipment through the terminal
- Communicate with machine operators
- Run database queries
- Access data on machine performance

110 • Wenco Reporting

Wenco Reporting is the data monitoring and visualization component of the Wenco fleet management system. This application allows mine personnel to view and understand a mine's KPIs as measured by the Wenco system. In this course, learners gain an understanding of Wenco Dashboards, Reports, and System Health and how to use these applications for insight and continuous improvement of mine operations.



200 • Wenco Administrator

After completing Wencomine FMS Foundations, learners must complete the following courses to receive Wenco Administrator certificate.

201 • User Manager

Wenco User Manager lets the Wenco Administrator control security and privileges for users of the Wenco system. Through this application, Wenco Administrator can create user profiles, define roles, and set permissions for each user. This course shows learners how to create these profiles and define privileges.

202 • Control Center

Wenco Control Center allows a site's Wenco Administrator to monitor and control all Wenco services and database jobs. At the end of this course, learners will be able to perform the following tasks:

- Control and monitor Wenco services
- Run, enable, and disable Wenco-specific database jobs
- Activate the Standby Server as the Operational Server
- Complete a system upgrade

203 • Onboard Insight

Onboard Insight lets users collect machine health data from equipment OEM systems. In this course, learners will gain knowledge on using Onboard Insight to perform the following tasks:

- Poll OEM systems for vital sign information
- View all available machine parameters
- Track specific parameters for equipment type or equipment unit
- Use Wenco reports to review historical OEM parameter information

204 • Radio Traffic Monitor

Wenco Radio Traffic Monitor assists communication by showing all messages that pass through Radio Channel Service in real time. Learners of this course acquire skills to perform the following tasks:

- Understand the functions of Wenco Radio Traffic Monitor and Radio Channel Service
- Monitor real-time radio traffic
- Review historical radio traffic information

205 • Mobile Software Distributor

Wenco Mobile Software Distributor (MSD) lets Wenco Administrators perform remote installs and updates to Wenco mobile software. This course introduces learners to critical application components, including MSD Admin, MSD Agent, and MSD Service.

206 • Mobile Diagnostic Utility

Wenco Mobile Diagnostic Utility allows technical staff to review diagnostic messages from the onboard screens of their equipment. Learners of this course gain knowledge of how their units' displays connect to the Wencomine FMS and how to work with their diagnostics messages.

207 • Wenco Licenses

The Wenco Licenses web application lets you view up-to-date information about all of the licenses that your mine site currently has. Learn how to monitor available licenses and order new ones if needed.

300 • Dynamic Dispatch

After completing the Wencomine FMS Foundations, learners must complete the following courses to receive the Dynamic Dispatch certification.

301 • Introduction to Dynamic Dispatch

Wenco Dynamic Dispatch considers equipment capacity, availability, production and grade targets, route travel times. The Dynamic Dispatch algorithm calculates the best production schedule and sends dispatch assignments to hauling unit operators to complete haul cycles. Dispatchers can configure the service to consider the mine plan, productivity goals, ore quality, crusher rates, waste delivery, and other parameters when making dispatch decisions. By the end of this course, learners will be able to perform the following tasks:

- Understand the objectives of Dynamic Dispatch for everyday use
- Understand the requirements to run Dynamic Dispatch
- Know what Input targets are being considered into the algorithm, such as production rates and blending requirements
- Understand the different stages and output of the algorithm
- Apply Dynamic Dispatch for dispatching confidence and consistency

302 • Understanding Dynamic Dispatch

This course instructs learners in understanding how the Dynamic Dispatch algorithm works. This module informs learners about the core components of Dynamic Dispatch calculation. With this information, learners will be able to input production planning criteria and let the algorithm automatically assign trucks to loading assets and dump locations to meet production and grade targets. After completing this module, learners will be able to perform the following tasks:

- Understand and explain the stages of Dynamic Dispatch
- Identify the key components being considered in Wenco Dynamic Dispatch
- Adjust the values of these components (e.g., travel times, loading times, spotting times) used in the algorithm based on the current mine operation
- Monitor Dynamic Dispatch performance such as expected waiting time, projected production rates
- Apply the information to Wenco Dynamic Dispatch to meet operational and grade targets

303 • Configuring Dynamic Dispatch

These courses build on the information presented in Understanding Dynamic Dispatch, focusing on configuring Dynamic Dispatch for a range of production goals. By the end of this course, students will be able to perform the following tasks:

- Manage dispatch constraints for use with Dynamic Dispatch
- Configure Dynamic Dispatch groups for optimal production
- Configure loading equipment targets
- Set dump targets
- Perform advanced dump, grades, and blend configurations

304 • Maximizing Dynamic Dispatch

These courses build on the information presented in Configuring Dynamic Dispatch, focusing on configuring targets for a range of production goals. By the end of this course, students will be able to perform the following tasks:

- Analyze Dynamic Dispatch performance
- Editing key factors such as average loading, spotting and dumping
- Analyzing the route travel times and adjust average segment travel times
- Optimize the usage of available equipment to produce maximum output

305 • Full Dispatch

This course instructs learners in understanding how the Full Dispatch algorithm works. This module informs learners about the core components of Full Dispatch calculation. With this information, learners will be able to input production planning criteria and let the algorithm automatically assign trucks to dump locations to meet production and grade targets. After completing this module, learners will be able to perform the following tasks:

- Understand the Full Dispatch algorithm
- Identify the key options and priorities used in Full Dispatch and configure the option best suiting production targets
- Defining the blend requirements
- · Configuring default dump by dig location, block and material
- Input expected delays for the Crushers

306 • Fuel Dispatch

This course shows dispatchers how to optimize their mine's fueling process using Wenco Fuel Dispatch, a service that routes equipment to fueling locations. Learners of this course acquire the skills to perform the following tasks:

- Understand the components of Fuel Dispatch
- Apply Fuel Dispatch to maximize fueling efficiency
- Apply user-configurable presets
- Increase fueling efficiency through time optimization and reduced congestion at fueling locations

307 • Parkup Dispatch

This module introduces learners to Parkup Dispatch. This service assigns trucks to parkup locations when shift change, meal breaks, or other pauses in production occur. This course will provide dispatchers with the knowledge required to configure plan arrival times, parkup locations, status transitions, and equipment to be automatically assigned. Lineup and van assignments will also be covered.



400 • Machine Guidance

The Machine Guidance set of courses cover the following topics:

401 • BenchManager

This course introduces operators to BenchManager, a machine guidance system that adds precision to shovels, backhoes, dozers, loaders, graders, and light vehicles. Learners of this course gain an understanding of elevation, cut/fill information, shovel movement, ore boundaries, toe and crest zones, mined-out progression, and bucket positioning to help them use BenchManager for improved ore quality control.

402 • BenchView

The BenchView application connects office personnel to the mobile units equipped with BenchManager that operate in the pit. At the end of this course, learners will be able to perform the following tasks:

- Maintain constant communication between BenchView and mobile units
- View and understand real-time map displays
- Monitor multiple BenchManager units simultaneously
- Create and update job files sent to mobile units
- Import files from third-party design software
- Integrate BenchManager into other Wenco application workflows

403 • Drill Manager: Managing Drill Patterns (Coming in 2022)

Upon completing this course, technical staff such as Drill and Blast Engineers, Surveyors, and Mining Engineers will have a comprehensive understanding of defining and maintaining drill patterns to allow drill operators to accurately drill to design and improve blasting results.

404 • Drill Manager: Visualization and Reporting (Coming in 2022)

This course is aimed at staff in the office responsible for monitoring, managing, and reporting the production and utilization of the fleet. Participants will learn how to visualize and monitor key equipment information, to ensure that drilling targets are met, and equipment utilization is maximized.

500 • Additional Wencomine FMS Courses

These additional Wenco Learning courses are recommended for further education about the Wencomine FMS applications.

501 • PitNav Map Manager

This course introduces office personnel to PitNav, a turn-by-turn navigation system. Learners of this course gain an understanding of how to fulfill the following objectives:

- Features and functions of PitNav
- Modifying map appearance and parameters
- Navigating using GPS-enabled route guidance
- Calculating alternate routes
- Configuring audio and visual warnings

502 • Maintenance Monitor

Wenco Maintenance Monitor allows crew members to track the progress of repairs and upkeep on equipment, facilitating improved planning and scheduling. In this course, learners gain knowledge of how to do the following:

- Improve maintenance planning practices
- Understand how to reduce maintenance costs
- Understand how to reduce unplanned maintenance and rework
- Apply Maintenance Monitor to track equipment from initial down status until it returns to active duty

503 • Mobile Supervisor Terminal

This module introduces learners to the Wenco Mobile Supervisor Terminal, a tool for adding dispatcher functionality to an in-pit light vehicle. Learners of this course gain knowledge of how to perform the following tasks:

- Understand the features of the Mobile Supervisor Terminal (MST) application
- View and modify loading, hauling, and auxiliary equipment information
- View current events in real time
- View system-wide KPI data



504 • TireMax

Tires are a major operating cost for a mine. TireMax helps mines extend the life of their tires by monitoring their ongoing condition. This course presents learners with information to let them fulfill the following objectives:

- Explore the features of TireMax, including real-time data, calculations, and customization functions
- Understand the TKPH/TMPH formula used to track tire condition
- Apply the information from TireMax to reduce tire issues and prevent unscheduled maintenance

505 • Wencomine FMS for Dispatchers

This role-based training guides dispatchers through their daily tasks, from start to finish, helping them to understand how each Wencomine FMS application will help them in their role. This course provides dispatchers with practical tools that can be applied immediately after the training. This makes the system implementation or onboarding new dispatchers more efficient and effective.

506 • Stockpile Management (Coming in 2022)

This module introduces learners to the components of the Wenco Stockpile Management that has a unique ability to control all levels of stockpile management, from high precision systems for shovels to target material, to dispatching algorithms that dispatch trucks based on blending requirements.

This module introduces learners to the components of the Wenco Stockpile which has the ability to control stockpile lifts, builds, and inventory levels, leveraging data available from both shovel and truck high precision positioning systems to track material life cycles and aid in the creation of detailed block models for more precise blending.

507 • Electronic Logbook Checklists

This new course instructs learners in using MDT5 checklists, including the Logbook feature.

Upon completion of this module, learners will be able to:

- Understand how checklists work
- Configure Logbook checklists in WencoDB Home
- Review checklist records in EquipCheck



600 • ReadyLine

This course is designed to help learners understand key components of ReadyLine, an asset health management system, and effectively use this system in their work.

601 • ReadyLine Overview

This module introduces learners to the components of the ReadyLine Client application. With this information, learners will be able to identify how this application can assist in monitoring equipment's condition in real time and spot trends in asset health, using historical data.

602 • Realtime Data

This module contains an overview of three different methods of viewing and capturing real-time data in the system: Alarm Dashboard, Routine Polling, and Realtime Health.

603 • Configuring Data

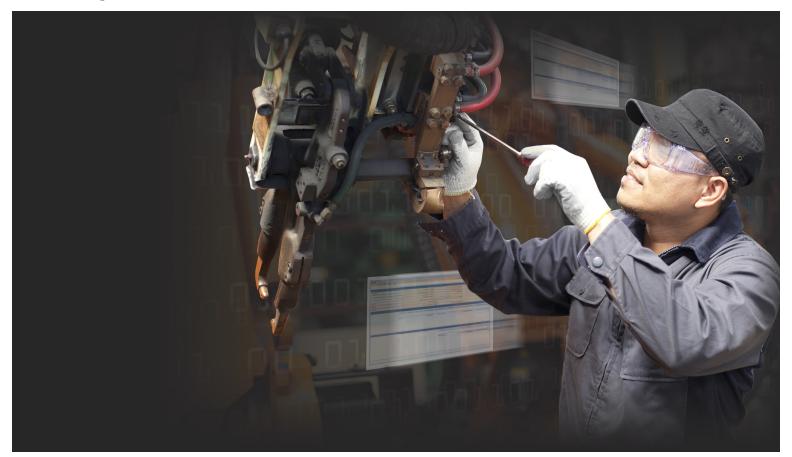
After completing this module learners will be able to configure data in the system using hierarchies, custom thresholds, causes and remedies, and alarm filters.

604 • Data Analysis

This module shows learners how to analyze data in ReadyLine using historical view and graphical reports.

605 • Settings and Support

By the completion of this module, learners will be able to customize system settings and access online help.



700 • Wencolite FMS Certification Programs

Wencolite Fleet Management is a powerful yet simple to use solution to monitor and report on the production and utilization of your mining fleet. This course contains two parts. The first provides equipment operators with the knowledge required to take advantage of the on-board system. The second part covers the office-based Production Manager software and how to make informed decisions based on the information automatically provided by the equipment.

701 • Wencolite FMS Overview

This course introduces learners to the key components of Wencolite FMS, a tailor-made solution for small mines, contractors, and quarries.

710 • Wencolite FMS for Operators

This module covers the basic understanding that a new operator would need in order to be able to use Wencolite as part of their standard operator role. A learner can choose a customized learning path for one of three roles:

711 • Dozer Operators

This course is designed for operators of Wencolite high precision dozers. Upon completion of the course, the operator will have all the knowledge required to badge into the machine at the start of shift and record important safety and utilization information such as pre-starts and delays. Most importantly, he/she will understand how to use the high precision guidance to cut accurately to a design surface.

712 • Loading Unit Operators

After completing this course, loading unit operators will be able to use the Wencolite onboard system on both low precision and high precision loading units.

For high precision, the focus is on loading projects with design surfaces, ramps, etc. and teaching the participant how to use the guidance features of the product to accurately dig to design.

Additionally, where the loading unit is being used in a full FMS environment (whether low or high precision), the operator will learn how the system will assist him/her with accurate selection of materials from the correct dig locations and allow accurate payloads to be loaded onto trucks.

713 • Truck Operators

This course teaches truck operators how to badge into their equipment at the start of a shift, record pre-start checks and log delays where appropriate.

A large part of the course focuses on interactions with loading units and how the truck operator can ensure that accurate haul cycle information (e.g. material, locations, loading unit) is recorded for production reporting.

720 • Wencolite FMS Production Manager

These objectives cover the basic understanding that a new user would need in order to be able to use Production Manager as part of their role.

721 • Administration

After completing this course, site administrators will be able to add new users to the system and, more importantly, ensure they have access only to appropriate information and features. Additionally, site administrators will understand how operators, delays and equipment are managed and allocated in Wencolite and how to make sure that different machine types display only the delays that are appropriate. An understanding of Production Key Performance Indicators (KPIs) will also be gained, allowing site metrics to be configured for dashboards and reporting.

722 • Managing Projects and Block Models

Upon completing this course, technical staff such as surveyors and mining engineers will have a comprehensive understanding of how to define and maintain key areas within the mine to guide their operation. This includes basic plans for low precision equipment and more detailed designs to guide high precision machines.

There is a significant focus on the block model, which is vital for accurate tracking of materials and their source locations. Additional zone types including warning zones and speed zones are also covered, to reduce the risk of incidents on sites.

723 • Fleet Information Reporting

This course is aimed at staff in the office who is responsible for the monitoring, management, and reporting of the production and utilization of the fleet.

Participants will learn how to visualize and monitor key equipment information, to ensure that production targets are being met and equipment utilization is maximized.

Of particular importance in this course is the analysis and reporting of production information (truck cycles, payloads, source and destination locations, materials).

800 • Open Autonomy (Coming in 2022)

The open autonomy platform provides mine sites with the ability to integrate various third-party autonomous haulage systems with their new or existing Wencomine FMS deployment. Learners will be introduced to the various components of the open autonomy model, including the creation of spot locations, hazards, and transition between manned and autonomous operation. Note that the modules applicable for each mine site may vary with the selection of the third party AHS.

900 • SmartCap (Coming in 2022)

Life by SmartCap is the world's most effective fatigue monitoring solution. It provides real-time feedback, helping drivers proactively manage their own alertness. These courses will help you to implement the SmartCap solutions on three levels.



Dispatcher Training

Wenco's Dispatcher Training certification program is an in-person training regimen for improving the skills of mine dispatchers using Wenco systems. It contains three levels:

- Level 1 is an introductory level designed for dispatchers with no previous experience using the Wencomine FMS or with no present dispatcher certification. Experienced Wenco dispatchers are expected to be able to complete Level 1 easily.
- Level 2 covers most of the core and optional Wenco applications in greater detail. It also covers typical problems encountered while dispatching equipment at mines and how to use the Wenco system to address these issues.
- Level 3 is advanced training for experienced dispatchers that covers the internal dispatching algorithm, calculation of cycle times, required number of trucks, and projected rate of loading units and crushers. It also provides guidance on user targets configuration and dispatching performance evaluation.

Wencomine FMS Administration

This training outlines the mine site Wencomine FMS components (software and hardware) and mine site layout; explains the purpose of each Wencomine FMS application and service, and highlights areas to the System Administrator for running and maintaining the system. It also covers interfaces with OEM system to obtain vital information such as payload, fuel level, engine hours, and events.

ReadyLine Foundations

This course introduces learners to the components of the ReadyLine Client application. This course is designed to help learners understand key components of the system and effectively it in their work. With this information, learners will be able to identify how this application can assist in monitoring equipment's condition in real time and spot trends in asset health using historical data.

In addition, learners will be able to customize system settings and effectively use advanced features, such as virtual alarms and sensors, hierarchies, alarm filters, and custom thresholds.

Wencolite FMS Operator

The Wencolite FMS Operator training covers the basic understanding that a new dozer, truck, or loading unit operator would need in order to use Wencolite in their role. A large part of the course focuses on interactions between loading and hauling equipment, as well as using high-precision guidance to cut accurately to a design surface.



Wenco International Mining Systems

A Hitachi Construction Machinery Group Company

Advancing The Digital Future of Mining

Wenco extracts the unrealized value for the mining industry through open interoperability, autonomous technologies, and the Industrial Internet of Things (IIoT). By leveraging our suite of solutions, Wenco customers worldwide transform their end-to-end operational performance shift by shift, hour by hour — even second by second.

Fleet management. Machine guidance. Asset health. Business intelligence. Cloud computing. Autonomous haulage.

Grounded in our open-systems philosophy, this line of Wenco solutions empowers customers with the freedom and flexibility to interoperate with any preferred solution for their unique data requirements and business processes.

A Hitachi Construction Machinery Group Company since 2009, Wenco regularly works with Hitachi's global leadership on systems research, data sciences, and IIoT initiatives. The leading-edge solutions that come from this research help mines uncover even more value as they approach a future of increased digitization, data intelligence, and autonomous processes.

Explore Wenco solutions to learn how you can extract more unrealized value from your mine. For more information, please contact info@wencomine.com or visit www.wencomine.com.

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To arrange a meeting with a sales representative, please visit www.wencomine.com



