Liebherr Training Catalogue

Mining Equipment

LAS.Training@liebherr.com

LIEBHERR

Liebherr-Australia

Introduction

Liebherr understands the importance of keeping our customer's equipment running smoothly and efficiently. That's why we offer comprehensive training for all Liebherr machines, specifically tailored for technical teams handling Liebherr machines. Our training ensures that the team will be equipped with the knowledge and skills necessary to perform repairs and maintenance tasks according to Liebherr's high standards.

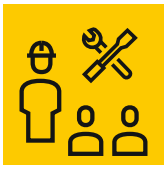
With our technical training, the participants will gain hands-on experience and in-depth understanding of Liebherr equipment, allowing them to effectively diagnose issues, perform repairs, and carry out preventive maintenance procedures. Our expert trainers will guide the participants through the intricacies of Liebherr machines, covering everything from basic maintenance to advanced troubleshooting techniques.

In addition to technical training, we also provide operator training aimed at developing essential operational skills for effectively and safely using Liebherr machinery. This training focusses on ensuring operators are proficient in equipment handling, safety procedures and optimising machine performance. Operators will be trained to work efficiently, minimise downtime and adhere to safey standards while maximising productivity.

Technical training highlights

Structured, multi-level training courses that evolve with participants' skill levels. Capped class numbers.

Professional training conducted at our branches, utilising state-of-the-art training media and simulators.



Instructor led in person training available directly at the customer's site, for convenience and relevance.

Virtual instructor led courses for Product Familiarisation available.

Training journey of the participant

Product familiarisation

↓

Machinery fundamentals

↓

Principles of operation and maintenance

↓

Advanced technical training

Training materials are provided to participants during the course. Materials are not for distribution outside of the course. Printed materials can be requested for an additional fee.

Email: LAS.Training@liebherr.com

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Mining Excavators

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Training Programs

Other information:

Instructor led onsite training at Liebherr branch or customer site:

- Duration 1 x 8-hour day
- Maximum of 12 participants per class
- Time on machinery is ideal, but not mandatory

Instructor led online training:

- Duration 1 x 4-hour half day
- A minimum of 4 participants
- Customer must have a stable internet connection

Product Familiarisation

Course overview:

This course is designed to provide the participants with knowledge of machine safety and familiarisation of the Liebherr hydraulic excavators.

Learning outcomes:

On completion of this training course, participants will be able to understand, identify and carry out:

- Safe machine isolation when working on hydraulic and electrical systems
- Safe release of stored hydraulic energy
- Emergency stop locations and system activation
- Emergency exit locations and use
- Hydraulic and electrical system components and their locations
- Routine maintenance, servicing and inspections. (Instructor-led onsite course)

Course content:

- Safety information and procedures, emergency stops, emergency exit
- Specification and functional description of major machine components and systems
- General information: symbols, bolt torques, basic welding, technical specifications, maintenance schedule, maintenance items, sample points, fluid types and quantities

Course options:

- Instructor led onsite at Liebherr branch
- Instructor led onsite at customer site
- Instructor led online training

Course prerequisite: Nil

Machines covered:

R 9100, R 9150, R 9200, R 9250, R 9300, R 9350, R 9400, R 996 B, R 9600, R 9800

Principles of Operation and Maintenance

Course overview:

This course is designed to provide the participants with knowledge of machine safety, maintenance and systems of the Liebherr hydraulic excavators. Training includes instruction on machine safety, maintenance schedules, component location, principles of operation, hydraulic and electrical schematic use and basic troubleshooting.

Learning outcomes:

On completion of this training course, participants will be able to understand, identify and carry out:

- Safe machine isolation when working on hydraulic and electrical systems
- Safe release of stored hydraulic energy
- Emergency stop locations and system activation
- Emergency exit locations and use
- Hydraulic and electrical system components and their location
- Function and operation of major hydraulic and electrical components and integrated systems
- Access and interpret Liebherr fault code systems
- Controller area network (CAN) system component locations, function, and operation
- Schematic symbols found on electrical and hydraulic drawings
- Cylinder dampening system function and operation
- Grease system components, function, operation and error code interpretation

Course content:

- Safety information and procedures, emergency stops, emergency exit
- Specification and functional description of major machine components and systems
- Electrical and hydraulic schematics and engine overview

Course options:

- Instructor led onsite at Liebherr branch
- Instructor led onsite at customer site

Course prerequisite:

Completion of the Product Familiarisation and an advanced understanding of electrical and hydraulic systems.

Machines covered:

R 9100, R 9150, R 9200, R 9250, R 9300, R 9350, R 9400, R 996 B, R 9600, R 9800

Other information:

- Duration: 2 x 8-10 hour days (consecutive)
- Time on machine ideal but not mandatory
- Maximum of 12 participants per class

Other information:

Instructor led onsite training at customer site:

- 2 x 8-10 hour days (consecutive)
- Machine access required for 6 hours
- Maximum of 8 participants

Test and Adjust

Course overview:

This course is designed to provide the participants with knowledge of machine safety and ability to test, diagnose and adjust Liebherr hydraulic excavators.

Learning outcomes:

On completion of this training course, participants will be able to understand, identify and carry out:

- Safe machine isolation when working on hydraulic and electrical systems
- Safe release of stored hydraulic energy
- Emergency stop locations and system activation
- Emergency exit locations and use
- Electrical:
  - Checking solenoid circuit continuity and currents
  - Cylinder dampening system
- Hydraulic:
  - Servo pump and control circuit
  - Work pump and control circuit
  - Swing pump and control circuit
- Engine and hydraulic cooling and control circuits
- Track tensioning circuit
- Primary and secondary valves

Course content:

- Classroom instruction
- How Liebherr hydraulic systems function
- Test and diagnose Liebherr hydraulic, electrical, and electronic systems
- Check and adjust Liebherr hydraulic systems

Course options:

- Instructor led onsite at customer site

Course prerequisite: Completion of Product Familiarisation and Principles of Operation and Maintenance training and have an advanced understanding of electrical and hydraulic systems.

Machines covered:

R 9100, R 9150, R 9200, R 9250, R 9300, R 9350, R 9400, R 996 B, R 9600, R 9800

Principles of High Voltage AC Electrical Operation and Maintenance – R 9400 E

Course overview:

This course is designed to provide the participants with knowledge of machine safety and ability to identify, test and diagnose electrical components on the R 9400 E High Voltage AC Electrical Liebherr hydraulic excavator.

Learning outcomes:

On completion of this training course, participants will be able to understand, identify and carry out:

- R 9400 E electrical specifications
- General safety
- Electrical component identification
- S1 and S2 electrical enclosures (HV/LV systems and 24V systems)
- Electrical schematics and electrical system operating principles
- Electrical maintenance and inspection

Course content:

- Classroom instruction
- How Liebherr high voltage and low voltage AC systems function
- Diagnose Liebherr onboard high voltage and low voltage AC electrical and electronic systems

Course options:

- Instructor led onsite at Liebherr branch
- Instructor led onsite at customer site

Course prerequisite:

Completion of Product Familiarisation and Principles of Operation and Maintenance training and have an advanced understanding of high voltage and low voltage electrical systems.

Machines covered:

R 9400 E

Other information:

- Duration: 2 x 8-10 hour days (consecutive)
- Machine access required - R 9400 E excavator HV electrical components
- Maximum of 12 participants per class

Mining Trucks

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Training Programs

Other information:

Instructor led onsite training at Liebherr branch or customer site:
- Duration 1 x 8-hour day
- Minimum of 4, maximum of 12 participants per class
- Time on machinery is ideal, but not mandatory

Instructor led online training:
- Duration 1 x 4-hour half day
- A minimum of 4 participants
- Customer must have a stable internet connection

Product Familiarisation

Course overview:

This course is designed to provide the participants with knowledge of machine safety and familiarisation of the Liebherr electric drive mining truck.

Learning outcomes:

On completion of this training course, participants will be able to understand, identify and carry out:

- Safe machine isolation when working on hydraulic and electrical systems
- Safe release of stored hydraulic energy
- Emergency stop locations and system activation
- Emergency exit locations and use
- Routine maintenance, servicing, and inspections
- Hydraulic and electrical system components and their location

Course content:

- Safety information and procedures, emergency stops, emergency exit
- General information: symbols, bolt torques, basic welding, technical specifications, maintenance schedule maintenance items, sample points, fluid types and quantities
- Specification and functional description of major machine components and systems

Course options:

- Instructor led onsite at Liebherr branch
- Instructor led onsite at customer site
- Instructor led online training

Course prerequisite: Nil

Machines covered:

T 264, T 282 C, T 284

Litronic Plus AC Drive

Course overview:

This course is an intensive 2-day training session that focuses on the haul truck electrical system. The training includes instruction on component location, principles and theory of operation and basic troubleshooting accompanied by instructor facilitated lectures and training guide.

Learning outcomes:

On completion of this training course, participants will be able to understand, identify and carry out:

- Identify major components, and describe the functionality of each component within the AC drive system
- Interpret the AC drive system schematics
- Identify the systems and sub systems that interface with the AC drive system
- View the status of system faults of the AC drive system
- Troubleshooting the controller area network (CAN)

Course content:

- AC drive system component location and identification, schematic identification for AC drive system
- Maintenance of AC drive system, fault code identification
- Specification and functional description of major components and systems

Course options:

- Instructor led onsite at customer site

Course prerequisite:

Nil

Machines covered:

T 264, T 282 C, T 284

Other information:

- Duration: 2 x 8-10 hour days (consecutive)
- Machine access would be ideal, but not mandatory
- Minimum of 4 and maximum of 12 participants per class

Other information:

Instructor led onsite training at Liebherr branch or customer site:

- Duration 4x 8-10 hour days (consecutive)
- Minimum of 5, maximum of 12 participants per class
- Time on machinery or simulator required for 4 hours on day 4

Litronic Plus AC Drive Advanced

Course overview:

This course is an intensive 4-day training session that focuses on the haul truck electrical system. The training includes instruction on component location, principles and theory of operation and advanced troubleshooting accompanied by instructor facilitated lectures and training guide.

Learning outcomes:

On completion of this training course, participants will be able to understand, identify and carry out:

- Identify major components, and describe the functionality of each component within the AC drive system
- Interpret the AC drive system schematics
- Identify the systems and sub systems that interface with the AC drive system
- View the status of system faults of the AC drive system
- Basic troubleshooting the controller area network (CAN)
- Use MyLiebherr Troubleshoot Advisor (TSA), Content Delivery Portal (CDP), Liebherr Mining Truck Diagnostics (LMTD) for advanced fault finding of power part components

Course content:

- AC drive system component location and identification, schematic identification for AC drive system, how to use TSA, CDP, MyLiebherr, LMTD, LMD and WebVis
- Maintenance of AC drive system, fault code identification
- Specification, functional description, Fault finding and testing of major components and systems

Course options:

- Instructor led onsite at Liebherr branch
- Instructor led onsite at customer site

Course prerequisite: Litronic Plus AC Drive

Machines covered:

T 264, T 282 C, T 284

Electromechanical Fluid Power

Course overview:

The Mechanical, Hydraulic and 24 VDC low voltage electrical training course is an intensive 2-day training session focuses on the haul truck mechanical, hydraulic and electrical (24V) systems

Learning outcomes:

On completion of this training course, participants will be able to understand, identify and carry out:

- Define the location of the mechanical and low voltage electrical haul truck components,
- Describe the inner connectivity between the mechanical, hydraulic, and low voltage systems,
- Understand the function and operation of each hydraulic system, including brake and steering, hoist, and gear oil cooling,
- Troubleshooting the hydraulic and low voltage electrical systems on the truck using schematics and demonstrate an understanding of hydraulic pressure values and their significance in system operation.

Course content:

- Mechanical and 24-volt components location and identification, schematic identification for steering, braking and hoist circuits
- Maintenance servicing procedures mechanical systems
- Specification and functional description of major components and systems

Course options:

- Instructor led onsite at Liebherr branch
- Instructor led onsite at Customer site

Course prerequisite:

Nil

Machines covered:

T 264, T282 C, T 284

Other Information:

- Duration: 2 x 8-10 hour days (consecutive)
- Machine access would be ideal, but not mandatory
- Minimum of 4 and maximum of 12 participants per class

Mining Dozers

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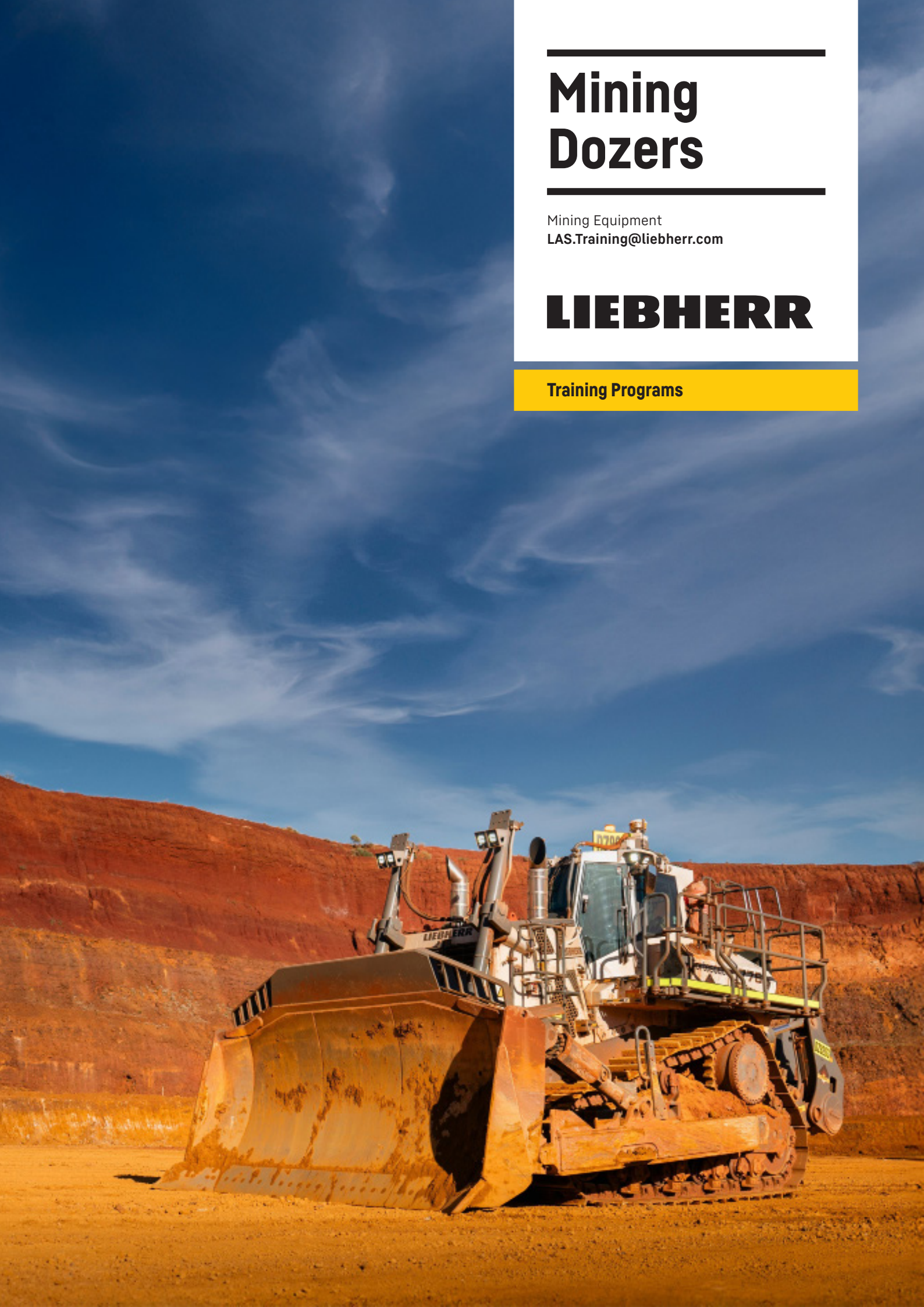
Training Programs



Other information:

Instructor led onsite training at Liebherr branch or customer site:

- Duration 3x 8-10 hour days (consecutive)
- Minimum of 4, maximum of 10 participants per class
- Time on machinery is ideal but not mandatory.

PR 776 Principles of Operation and Maintenance

Course overview:

This course is designed to provide the participants with knowledge of machine safety, maintenance, and systems of the Liebherr PR 776 hydrostatic dozer.

Learning outcomes:

On completion of this training course, participants will be able to understand, identify and carry out:

- Safe machine isolation when working on hydraulic and electrical systems
- Safe release of stored hydraulic energy
- Emergency stop locations and system activation
- Emergency exit locations and use
- Routine maintenance, servicing, and inspections
- Hydraulic and electrical system components and their location
- Function and operation of major hydraulic and electrical components and integrated systems
- Access and interpret Liebherr fault code systems
- Schematic symbols found on electrical and hydraulic drawings
- Controller area network (CAN) system (PME Master) component locations, function, and operation
- Air conditioning system function and operation
- Grease system components, function, and operation

Course Content:

- Safety information and procedures, emergency stops, emergency exit
- General information: symbols, bolt torques, basic welding, technical specifications, maintenance schedule, maintenance items, sample points, fluid types and quantities
- Specification and functional description of major machine components and systems
- Electrical and hydraulic schematics.

Course options:

- Instructor led onsite at Liebherr branch
- Instructor led onsite at customer site

Course prerequisite: Nil

Operator Training

Mining Equipment

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Training Programs

Other information:

Instructor led onsite training at customer site:

- Training duration to be aligned with crew and machine availability as determined by site.
- Number of operators trained per day to be specified by site. ideally a minimum of 4 and maximum of 8
- Machine access is required for all operator training

Operator Machine Safety and Familiarisation

Course overview:

This course is designed to provide the participants with operational knowledge of machine safety and familiarisation for Liebherr mining machines.

Learning outcomes:

On completion of this training course, participants will be able to understand, identify and carry out:

- Machine technical specifications and dimensions
- Safe machine isolation of hydraulic and electrical systems
- Safe release of stored hydraulic energy
- Emergency stop locations and system activation
- Emergency exit locations and use
- Function, location and operation of major machine components and systems
- Routine daily maintenance, servicing and walk around inspections
- Machine start up and shutdown procedures
- Machine operational functions and controls
- Correct machine travelling procedures
- Safe machine park up procedure

Course content:

- Safety information and procedures, emergency stops, emergency exit
- General information: technical specifications, maintenance schedule, maintenance items, fluid types and quantities
- Specification and functional description of major components and systems
- Safe operation of mining machine

Course options:

- Instructor led onsite at customer site

Course prerequisite: Operators assessed as competent on similar equipment

Machines covered:
Excavators, mining trucks and dozers

Operator Techniques and Efficiency Excavators

Course overview:

This course is designed to provide the participants with one-on-one, site-specific training focussed on developing advanced operating skills. These skills aim to improve safety, maximise productivity, reduce avoidable downtime and optimise machine performance in real-world conditions with Liebherr hydraulic mining excavators.

Learning outcomes:

On completion of this training course, participants will be able to understand, identify and carry out:

- Recommended machine setup
- Best practice machine travelling procedures
- Liebherr aligned bench repositioning egress and access procedure
- Recommended bench height and machine positioning for the work area
- Optimal swing angles for the position of the haul truck
- Recommended undercarriage positioning relative to the working area
- Optimal bucket loading sequence for maximum production

Course content:

- Safe operation of mining excavator
- Effective operation of mining excavator

Course options:

- Instructor led onsite at customer site
- Verbal or written report to relevant stakeholders upon completion

Course prerequisite:

Operator Machine Safety and Familiarisation Training for Excavators

Machines covered:

R 9100, R 9150, R 9200, R 9250, R 9300, R 9350, R 9400, R 996 B, R 9600, R 9800

Other information:

- Training duration to be aligned with crew and machine availability, as determined by the site
- Machine access is required for all operational training
- Number of operators trained per day to be specified by the site

Other information:

Instructor led onsite training at customer site:

- Training duration to be aligned with crew and machine availability as determined by site
- Number of operators trained per day to be specified by site
- Machine access is required for all operator training

Operator Techniques and Efficiency Mining Trucks

Course overview:

This course is designed to provide the participants with one-on-one, site specific training focussed on developing advanced operating skills to improve safety, maximise productivity and optimise machine performance in real-world conditions with Liebherr off-highway trucks.

Learning outcomes:

On completion of this training course, participants will be able to understand, identify and carry out:

- Correct operation of truck safety and operational features
- Correct cornering techniques in all-weather conditions
- Correct ramp speed and braking techniques
- Accurate reversing and self-spotting under excavators
- Precise and controlled reversing to tip head
- Controlled hill starts as per Liebherr recommendation
- Mining truck operation with awareness and use of the anti-roll back feature
- Safe mining truck operation using the information provided by the HMI display

Course content:

- Safe operation of mining trucks
- Effective operation of mining trucks

Course options:

- Instructor led onsite at customer site
- Verbal or written report to relevant stakeholders

Course prerequisite: Operator Machine Safety and Familiarisation Training for mining trucks.

Machines covered:
T 264, T 282 C, T 284

Operator Techniques and Efficiency Dozers

Course overview:

This course is designed to provide the participants with one-on-one, site-specific training focussed on developing advanced operating skills. These skill aim to improve safety, maximise productivity, reduce avoidable downtime and optimise machine performance in real-world conditions with the Liebherr PR 776 Hydrostatic Bulldozer. This course focusses on machine safety, operational proficiency, and system efficiency.

Learning outcomes:

On completion of this training course, participants will be able to understand, identify and carry out:

- Understand the technical specifications and dimensions of the PR 776
- Safely isolate hydraulic and electrical systems
- Identify and use emergency stops and exits correctly
- Locate, operate, and maintain key machine components
- Conduct routine inspections and maintenance tasks
- Perform safe start-up, shutdown, and park-up procedures
- Operate onboard systems for increased efficiency
- Apply best-practice ripping and material handling strategies

Course content:

- Safe operation of dozers
- Effective operation of hydrostatic drive dozers

Course options:

- Instructor led onsite at customer site
- Verbal or written report to relevant stakeholders

Course prerequisite:

Operator Machine Safety and Familiarisation Training for dozers. Suitable for new operators, experienced operators transitioning to the PR 776, and maintenance personnel.

Machines covered:

PR 776

Other information:

- Training duration to be aligned with crew and machine availability, as determined by the site
- Machine access is required for all operational training
- Number of operators trained per day to be specified by the site

Operational Efficiency Solutions

Application studies are available for all Liebherr equipment to investigate site-specific efficiency and production capabilities.

These include:

- Excavator efficiency studies
- Truck efficiency studies
- Work area assessment
- Fleet suitability assessment
- Simulation studies
- Dump site assessment
- Haul network assessment

The above can be tailored based on what is required at the site or to combat any areas of concern.

To enquire about the application studies please contact your local Liebherr representative or email: LAS.Training@liebherr.com

Customised Training

Mining Equipment

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Training Programs

Other information:

Instructor led online and onsite customer location

- Duration: Online 3 hours
- Duration: Onsite 4 hours
- Machine access required for onsite training

Grease Training

Course overview:

In this module, we will describe the major components and the functioning of the grease system on a Liebherr Hydraulic Excavator.

Learning outcomes:

On completion of this training course, participants will be able to understand, identify and carry out:

- Identify the location of each of the components in each of the central lubrication systems
- Describe the functions of each of the components in each central lubrication system
- Given electrical schematics successfully diagnose an electrical fault
- Given hydraulic schematics successfully diagnose a grease fault
- Diagnose a fault in the central lubrication system as per OEM procedures
- Identify potential safety issues or defects with the central lubrication system

Course options:

- Instructor led online training
- Instructor led onsite at customer site

Course prerequisite: Qualified servicing and maintenance technicians

Machines covered:
R 9100, R 9150, R 9200, R 9250, R 9300, R 9350, R 9400, R 996 B, R 9600, R 9800

Autonomous Ready (AR) and Autonomous Kit (AK)

Course overview:

This course is designed to familiarise technicians with Liebherr autonomous haul truck systems including AR (Autonomy Ready), Autonomy Kit (AK).

During this course location, description, and principle of operation of components along with maintenance and calibration procedures will be discussed.

Course options:

- Instructor led online training
- Instructor led onsite at customer site

To enquire about the AR and AK training, please contact your local Liebherr representative or email: LAS.Training@liebherr.com

Other information:

Instructor led course held at our Adelaide Branch.

- Duration: 3 consecutive days 8-10 hours
- Maximum of 8 participants per class

Engine Training SL1/SL2

Course overview:

This course is designed to provide the participants with knowledge of the Liebherr D9512 or D9812/16 series engine to safely carry out maintenance tasks.

Learning outcomes:

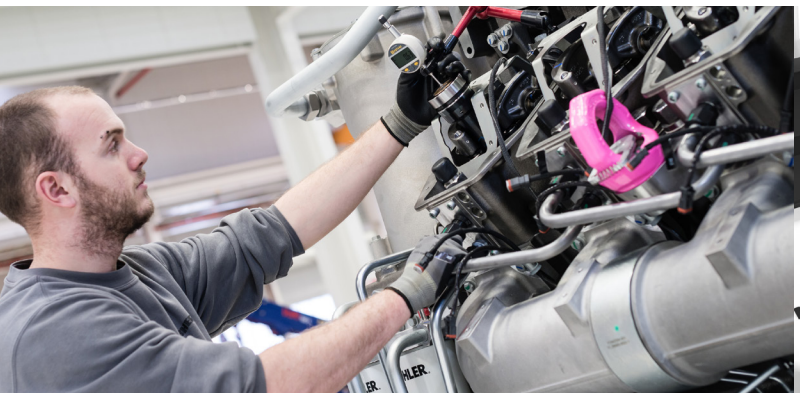
On completion of this training course, participants will be able to understand, identify and carry out:

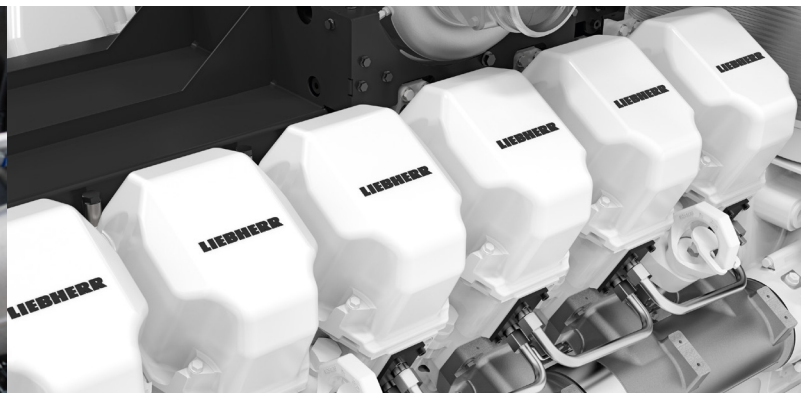
- Name the main technological features and evolutionary steps of D series engines
- Name and describe the diesel engine portfolio and main applications
- Explain the engine type designation concept
- Name the main features and technical characteristics of diesel V-engines
- Name and identify the main components of a D series engine
- Name and describe the function of the main systems and media circuits of the D series engine family (lubrication, cooling, admission-exhaust & turbocharging, CRS, engine control)
- Use the available aids (operator manual, repair manual, spare parts catalogue, special tools) to carry out SL1 and SL2 maintenance and repair activities on the D series engine
- Describe the main features and functions of the diagnostic tool LiDIA on a D series engine

Course prerequisite:

- Engine Familiarisation - Virtual or Classroom based (in HEX training package R 9400, R 9600, R 9800)
- LiDIA, SCULi and TELL Licences (engine specific) - WBT LiDIA/SCULi customer essentials, WBT TELL Engine training
- CDP Licence for Service and Repair manuals

Engines covered:
D9512, D9812, D9816





Liebherr-Australia Training

Terms and Conditions

Fees and terms of payment

Standard quotations are provided upon request. Contact the Liebherr-Australia training department for details at LAS.Training@liebherr.com. A purchase order for the full amount must be received and processed for payment 30 days prior to training commencement.

Our terms and conditions and cancellation policy applies.

Prerequisites

Some courses require students to complete prerequisite learning prior to attending the training course. Refer to the course description outlined below or contact the Liebherr-Australia training department for more information.

Course availability

Course availability is subject to trainer availability and machine access on site.
For more information regarding course availability contact the Liebherr-Australia training department.

Cancellation policy

The Liebherr Australia Training Terms and Conditions deems the following [excerpt]

Cancelling service / refunds

- Except as otherwise required by law, LIEBHERR Australia may decline your attendance to Technical or Operator training, change the enrolment process and other factors at any time in its sole discretion, without prior notice.
- Cancellation within 30+ Days prior to confirmed training dates will attract no fees
- Cancellation within 30-14 Days prior to confirmed training dates will attract 50% of the confirmed fees above
- Cancellation within 14 Days prior to confirmed training dates will attract 75% of the confirmed fees above
- Cancellation on the day of training will attract 100% of the confirmed fees above. This includes incidents where a machine is required for training and was not provided on the day, as well as no shows.

Full policy will be made available upon request Contact the Liebherr-Australia training department.

Contact Liebherr-Australia training for further information at: LAS.Training@liebherr.com

Subject to change

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