



5DT

Fifth Dimension Technologies

**Training Solutions
for
Mining, Construction
and Transport**

Welcome to the 5DT Training Solutions Product Catalog!

This book is a short-form overview of our products, services and capabilities. It provides an introduction to our company and highlights the benefits of training simulators for your organization. The benefits of our integrated training plan are also explained.

We trust that this book will help you to design a training solution that will fulfill your organization's safety, productivity and maintenance objectives. Please contact us if you need assistance with this process.

The 5DT Vision is:

***We make operators Safer, more Productive
and less Destructive!™***

We invite you to join us on our quest.

For more info, go to:

Email: sales@5DT.com

Website: www.5DT.com

Youtube: www.youtube.com/5DTvideos

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ABOUT 5DT

5DT makes operators safer, more productive and less destructive using advanced training tools that have been optimized on mining and construction sites around the world over the past 15 years.

5DT by the numbers:

- More than **20** years in business
- More than **200** simulators deployed worldwide
- More than **100** different machines simulated
- Simulators for machines by more than **25** OEMs
- Operations in 6 countries (Australia, Chile, India, Indonesia, South Africa, USA)

5DT offers a Training **Solution**, not merely training simulators. The 5DT training solution consists of the following elements:

- **Visualizers**
- **E-Learning Systems**
- **Walk-Around Inspection Training Systems**
- **Pre-Simulators**
- **Training Simulators** (Full Mission Simulators)

5DT has a well established Mining, Construction and Transport Knowledge Base. We have spent a lot of time underground, in surface mines, on construction sites and on the road interacting with real operators and real machines. We also work closely with the world's best training departments and schools to refine our methodologies, products and learning material.

Product Families

5DT offers complete Training Simulator families for underground mining, surface mining, construction and transport:

- Underground Coal Mining Training Simulators
- Underground Hard Rock Mining Training Simulators
- Surface Mining Training Simulators
- Construction Training Simulators
- Transport Training Simulators
- Military Training Simulators

Worldwide Installation Base

5DT is proud to have the following prestigious organizations as customers.

- Airbus (EADS)
- Alpha Natural Resources
- Barrick Gold
- Ethiopian Roads Authority
- Glencore/Xstrata
- Kentucky Coal Academy
- Peabody Energy
- Sasol
- South 32
- TAFE
- Agnico-Eagle
- Anglo American
- BHP Billiton
- Foskor
- INADEH
- Newcrest
- Reliance
- SENA
- South African Air Force
- VALE

Original Equipment Manufacturers (OEMs)

5DT uses Real OEM Parts in its simulators and has developed training simulators for machines by the following 26 OEMs.

- AARD
- Bell
- Dosco
- Freightliner
- International
- Komatsu
- O&K
- Scania
- Toyota
- ARO
- Bucyrus
- FERMEL
- GHH
- John Deere
- Liebherr
- Phillips
- Taiyuan
- Wirtgen
- Atlas Copco
- Caterpillar
- Fletcher
- Hitachi
- Joy
- Mercedes Benz
- Sandvik
- Terex

Advanced Technologies by 5DT:

- 6 Degrees of freedom (6-DOF) electrical motion base
- High performance ground interaction technology
- Active force-feedback steering
- 360° Field of view training simulators and visualization studios
- SimCAB™ swap-out within 3 minutes without the use of any tools or cranes

5DT works very closely with its customers. This approach has led to unprecedented growth for 5DT.

We look forward to working with you in the near future.

TRAINING SOLUTION BENEFITS

Real Results

The following results are achievable with Training Simulators:

Production:	Up to 26% Increase
Machine Downtime:	Up to 40% Decrease
Training Time:	Up to 70% Decrease
Spot Time:	Up to 14% Decrease
Brake Abuse:	Up to 60% Decrease
Abusive Gear Shifting:	Up to 65% Decrease
Engine Overspeed:	Up to 50% Decrease
Fuel Use:	Up to 6% Decrease
Haul Truck Tire Use:	Up to 50% Decrease
Dust in Tunnels:	Up to 60% Decrease
Cutting into Roof and Floor:	Up to 40% Decrease

5DT Training solutions enable an organization to develop both the *Knowledge* as well as the *Skills* of its personnel. This approach offers a wide range of benefits for all departments of an organization, such as:

Corporate and Investors

- Higher Return on Investment (ROI):
 - Increased production
 - Lower maintenance costs
 - Reduced number of accidents
- Lower risk
- Improve skills and knowledge of workforce
- Better corporate image

Human Resources (HR)

- Screening of new employees
- Training of local populations
- Off-site recruitment
- Off-site training
- Higher workplace skills and knowledge

Training

- Training of new operators
- Evaluation (assessment) and re-training of existing operators
- Familiarization and induction tool
- Shorter operator training periods
- Greater training flexibility
- 24/7 Training
- Consistent high training standard
- Accurate training paper trail

Operations and Business Improvement

- Increase productivity
- Reduce loss of production as a result of training with real machines
- Improve application of best practices
 - Evaluate current best practices in simulator
 - Optimize best practices in simulator
 - Use simulator as instrument to roll out best practices into an organization
- Enhance operator skills development

Maintenance

- Reduce machine damage and wear and tear
- “Park and test” machine training for mechanics and artisans

Health and Safety

- Increase safety awareness
- Practice life-threatening scenarios without risk of injury or risk of damage to equipment. The correct response to an emergency may be practiced over and over again.
- Ensure that personnel has been trained to handle emergencies.
- Training of operators of machines with no passenger seat
- Reconstruction of accidents
- Implementation of changed policies and/or SOPs

Marketing and PR

- Showcase operations to groups of people without exposing them to typical mine hazards.
- Showcase operations far away from the site, for example on a trade show floor.

Environment

- Reduce burning of greenhouse gases because real machines are not used for training.

Research and Development (R&D)

- Try new techniques and procedures in the simulator first, before validating it in reality.
- Check machine compatibility with site design before the start of procurement and/or construction

Overall

- Increase **Motivation**: The combination of increased safety awareness, increased production, smarter production and reduced machine damage normally leads to a highly motivated workforce.

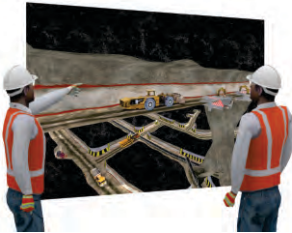
THE 5DT INTEGRATED TRAINING PLAN

5DT offers a Training Plan, not merely Training Simulators.

Our training plan has been developed to provide a systematic development of the trainee's knowledge and skills.

The Training Plan has 5 stages:

Visualizers



Knowledge Transfer

Objective

Teaches the trainee where the specific machine fits into the overall process. Gives the trainee a big-picture, holistic view. It is ideal for coordination and supervisor training.

E-Learning Systems



Knowledge Transfer

Objective

Teaches the trainee the theory, basics and terminology of specific machines. The E-learning is delivered at the site or via the worldwide web (online).

With the 5DT Training Plan you can have more than 10 persons training at the same time, instead of a single person in a simulator, as offered by conventional training simulator providers.

Walk-Around Inspection Training Systems



Knowledge Transfer

Objective

Teaches the trainee how to perform a walk-around inspection. The trainee must visually inspect a virtual machine that has been set up with specific faults.

Pre-Simulators

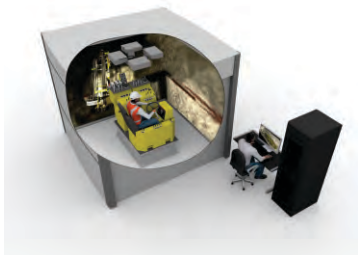


Skills Transfer

Objective

Teaches the trainee the controls of a specific machine, so that no time is wasted teaching controls on the main simulator.

Training Simulators



Skills Transfer

Objective

Submits the trainee to training scenarios, ranging from easy to difficult. Teaches the trainee how to handle the machine during emergencies.

TRAINING SIMULATORS

OVERVIEW

A 5DT Training Simulator consists of a Simulator Base System (SimBASE™) and a Simulated Machine Cab (SimCAB™):

$$\text{Simulator} = \text{SimBASE}^{\text{TM}} + \text{SimCAB}^{\text{TM}}$$

The Simulator Base System (SimBASE™) acts as a base framework. It consists of a visual display system, computer hardware, an instructor station and a motion base. It also includes software functionality.

The Simulated Machine Cabs (SimCABs™) are modular units that resemble specific mining, construction and transport machines/vehicles that are simulated. It consists of a simulated cab built with real OEM parts, machine controls and instruments. It also includes software functionality specific to the real machine that is being simulated.

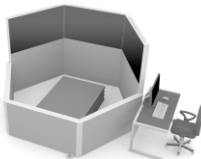
The SimCABs™ are rolled into the SimBASE™ on transport trolleys (dollies). Several different SimCABs™ may be used with a single SimBASE™.

5DT offers 4 different types of Simulator Base Systems (SimBASEs™):

- | | |
|---|-----------------|
| Cube-type Simulator Base System: | SimBASE™ - CUBE |
| Hexagon-type Simulator Base System: | SimBASE™ - HEX |
| Head Mounted Display Simulator Base System: | SimBASE™ - HMD |
| Pre-Simulator Base System: | SimBASE™ - PRE |



$$\text{Simulator CUBE} = \text{SimBASE}^{\text{TM}} \text{ CUBE} + \text{SimCAB}^{\text{TM}}$$



$$\text{Simulator HEX} = \text{SimBASE}^{\text{TM}} \text{ HEX} + \text{SimCAB}^{\text{TM}}$$



Simulator HMD = SimBASE™ HMD + SimREMOTE™



Simulator PRE = SimBASE™ PRE + SimCAB™

General Simulator Base System (SimBASE™) Features:

- User management
- Weather settings (dust, fog, rain)
- Continuous monitoring of operators and error logging in all training scenarios
- Time of day settings (day, dusk, night, dawn)
- Outside view (e.g. top-down view) on instructor and classroom screens
- Simulator safety switch for instructor
- Graphs, metrics and reports
- Record and playback

General Simulated Machine Cab (SimCAB™) Features:

(Specific SimCAB™ Features are shown separately with each machine)

• The same SimCABs™ may be interchanged between any 5DT SimBASE™.

- Realistic machine cab with real OEM controls
- Photorealistic virtual machine
- Photorealistic virtual terrain
- Realistic ground interaction
- Realistic machine engine model
- Realistic physics (dynamic model) for operator
- Training scenarios
- Operator errors (up to 50)
- Machine failures (up to 40)
- Production metrics
- Easy machine console swap-out
- Single connector interface with computer
- Simulator safety switch
- Instructor initiated events (e.g. brake failures, engine fires, tire bursts, machine failures)

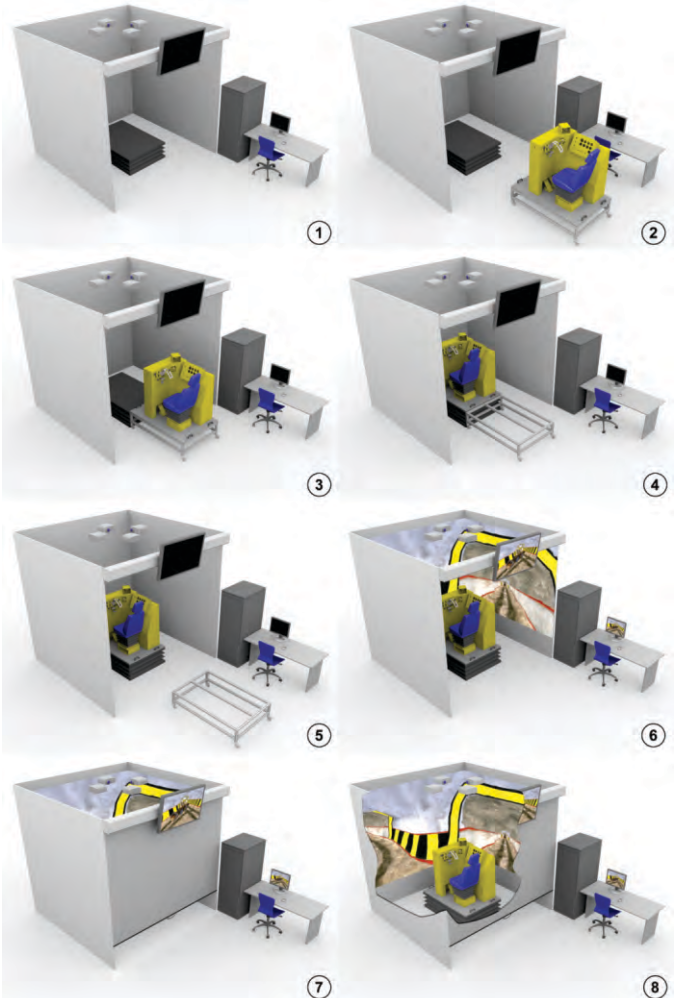
General Training Scenarios for SimCABs™:

(Specific Training Scenarios are shown separately with each machine)

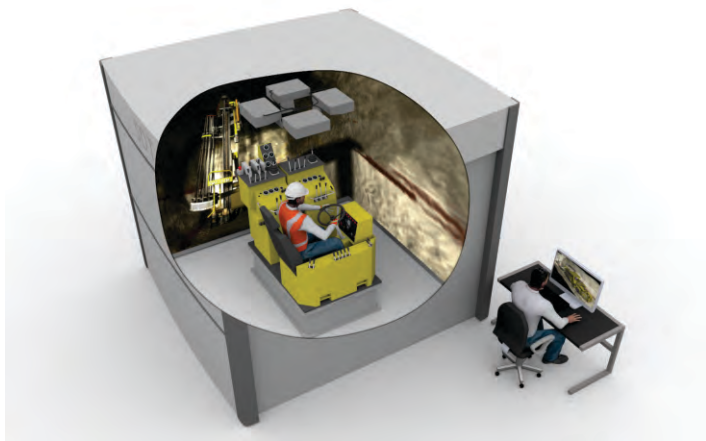
- Machine startup
- Machine shutdown
- Machine part movements
- General driving
- Controls familiarization (pre-simulator)

SIMULATOR BASE SYSTEMS

SimCAB™ SWAP-OUT



Swap-Out in Less than 3 Minutes



The 5DT Cube-Type Simulator Base System (SimBASE™ - CUBE) includes 4 projectors, 4 projection screens, a classroom screen, a computer system, a motion base and an instructor station. The Simulator Base System accommodates a wide variety of Simulated Machine Cabs (SimCABs™) and Simulated Machine Remotes (SimREMOTES™) for Underground Coal Mining, Underground Hard Rock Mining, Surface Mining and Construction machines. The Cube-Type simulator family has been developed specifically for Underground Mining training simulator applications

Features

- Modular solution
- High immersion (360° horizontal and 56.25° vertical field of view)
- More than 100 SimCABs™ and SimREMOTES™ available
- 6 Degrees of freedom (6-DOF) motion base
- Ultra low profile motion base available (for machines where the operator is required to stand upright when operating the machine)
- Classroom screen
- Motorized rear screen
- Surround-sound
- Easy SimCAB™ swap-out
- Interactive whiteboard functionality on left, right and front screens
- Colour laser printer for reports
- Virtual instruments shown on instructor and classroom screens
- Safety switches for instructor and operator
- Ideal for groups and team training

SimCAB™ Swap-Out

- Less than 3 minutes swap-out time
- No tools or cranes required

SIMULATOR BASE SYSTEMS - HEXAGON

SimBASE™ - HEX



The 5DT Hexagon-Type Simulator Base System (SimBASE™ - HEX) includes 3 ultra high definition [UHD] screens, a classroom screen, a computer system, a motion base and an instructor station. The Simulator Base System accommodates a wide variety of Simulated Machine Cabs (SimCABs™) and Simulated Machine Remotes (SimREMOTES™) for Underground Coal Mining, Underground Hard Rock Mining, Surface Mining, Construction and Transport machines/vehicles.

Features

- Modular solution
- Ultra high definition [UHD] screens
- High degree of classroom interaction
- More than 100 SimCABs™ available
- 210° Horizontal field of view (180° front, 30° rear)
- Vertical field of view: 67.5° (for double vertical screen)
- 6 Degrees of freedom (6-DOF) motion base
- Safety switches for instructor and operator
- Classroom screen
- Rear-view screen available
- Surround-sound
- Easy SimCAB™ swap-out
- Colour laser printer for reports
- Virtual instruments shown on instructor and classroom screens

SimCAB™ Swap-Out

- Less than 3 minutes swap-out time
- No tools or cranes required



The Head Mounted Display-type Simulator Base System (SimBASE™ - HMD) is an ergonomic framework that includes a head mounted display (HMD), a head tracker, an LCD classroom screen, a barricaded training area with anti-slip flooring and an instructor station. The Simulator Base System accommodates a wide variety of Simulated Machine Remotes (SimREMOTES™) for Underground Coal Mining and Underground Hard Rock Mining machines.

Applications

The system offers a wide range of applications for training simulators and viewing stations, for example:

- Continuous Miner and Longwall Mining Training Simulators
- Virtual Reality Viewing Stations
- Virtual Binoculars and Virtual Laser Range Finder Viewing Stations
- Welding and Spray Painting Simulators

Features

- Modular solution
- Integrated solution
- Classroom screen
- Colour laser printer for reports
- Single connector interface with SimREMOTES™
- High degree of classroom interaction
- Non-slip floor material
- Barricaded training area
- Easy-to-reach HMD stowage

An HMD Setup generally works best for applications where the real vehicle/machine is operated with a wireless remote control device, for example a Continuous Miner or a Longwall Shearer.

SURFACE MINING SIMULATORS

OVERVIEW



HAUL TRUCKS



SHOVELS



WHEEL LOADERS



GRADERS



DRAGLINES



EXCAVATORS



DOZERS



BLASTHOLE DRILLS



LIGHT VEHICLES



SURFACE MINERS

SURFACE MINING

HAUL TRUCK TRAINING SIMULATOR



This simulator develops the skills of a Haul Truck operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Electrical drive and mechanical drive truck models available
- Major suppliers accommodated
- Artificial intelligence (AI) shovels and excavators

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Parking truck for loading by shovel and excavator
- Loading Patterns:
 - Back-up
 - Drive-by
 - Single-side
 - Double-side
 - Modified back-up
- Hauling material
- Retarder use
- Brake test
- Dumping material at crusher
- Dumping material at waste dump

Emergency Training Scenarios:

- Brake failure
- Engine fire
- Tire fire
- Tire burst
- Hydraulic failures

SURFACE MINING

SHOVEL TRAINING SIMULATOR



This simulator develops the Skills of a Shovel operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Advanced ground interaction software
- Hydraulic and electric (rope) shovel models available
- Artificial intelligence (AI) haul trucks
- Cycle time analyses
- Simulation of on-board systems

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Loading a truck with shovel:
 - Single side back-up
 - Dual side back-up
 - Modified back-up

Emergency Training Scenarios:

- Fires
- Hydraulic failures

SURFACE MINING

EXCAVATOR TRAINING SIMULATOR



This simulator develops the Skills of an Excavator operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Advanced ground interaction software
- Artificial intelligence (AI) haul trucks

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Digging a trench
- Loading a truck with excavator:
 - Bench back-up
 - Bench drive-by
 - Top loading
 - Trench loading
 - Stockpiling
 - Building a ramp

Emergency Training Scenarios:

- Fires
- Hydraulic failures



This simulator develops the Skills of a Wheel Loader operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Advanced ground interaction software

Specific Training Scenarios:

(*General Training Scenarios* are shown separately under Training Simulator Overview)

- Loading a truck
- Stockpiling
- Brake test

Emergency Training Scenarios:

- Fires
- Hydraulic failures



This simulator develops the Skills of a Dozer operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Advanced ground interaction software
- Rear screen for reversing and ripping

Specific Training Scenarios:

(*General Training Scenarios are shown separately under Training Simulator Overview*)

- Levelling an area
- Cutting a V-ditch
- Ripping
- Stockpiling
- Cleanup at loading area
- Overburden (topsoil) removal
- Pushing material over
- Shaping walls (berms)
- Shaping embankments
- Filling a trench
- Removing trees

SURFACE MINING

GRADER TRAINING SIMULATOR



This simulator develops the Skills of a Grader operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Advanced ground interaction software
- Lever-type and joystick-type control models available
- Collision detection between machine parts

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Levelling an area
- Ripping
- Shaping embankments
- Levelling a road
- Mixing material
- Cutting a V-ditch
- Stockpiling
- Grading a cul-de-sac
- Trimming

SURFACE MINING

DRAGLINE TRAINING SIMULATOR



This simulator develops the Skills of a Dragline operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Propel Mode (walking) and Production Mode (dragging)
- Accurate simulation of dragline system
- Accurate shadows to facilitate better depth perception
- Production analyses tool - measures the relevant data of each of the production cycle elements: Drag, Swing, Spoil, Return-Swing, Spot
- This data is compared to editable baselines that are set by the instructor
- Real-time overlays of bucket zones
- Real-time overlays of dragline dials and instruments
- Advanced reporting - results are categorized such that an instructor can easily identify problem areas
- Advanced rope dynamics model
- Advanced ground interaction model

Specific Training Scenarios:

- (General Training Scenarios are shown separately under Training Simulator Overview)
- Walking
 - Production Cycle: Drag, Swing, Spoil, Return-Swing, Spot



This simulator develops the Skills of a Surface Miner operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Artificial intelligence (AI) haul trucks

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Steering modes
- Starting a cut (ramping down)
- Park-up in cut
- 3-Point turn
- Cutting against the high wall
- Cutting a strip (continuous loading)
- Alignment for cutting
- Completing a cut (ramping up)
- Park-up outside cut
- U-Turn
- Cutting a strip (windrow)



This simulator develops the Skills of a Blasthole Drill (Surface Drill) operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Tramming (driving) and drilling
- Realistic cab
- Drill string management
- Drill process management
- Tri cone drilling (rotation)
- Down hole drilling (percussion)

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Leveling of machine
- Bit changing
- Drilling sequences
- Tower raising and lowering
- Pre-start checks

Note:

5DT may also provide training simulators for Exploration Drills and Directional Drills.



This simulator develops the Skills of a Light Vehicle operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Driving in a live mine with haul trucks and other machines
- Manual, automatic or semi-automatic gearboxes
- On- and off-road terrain databases

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

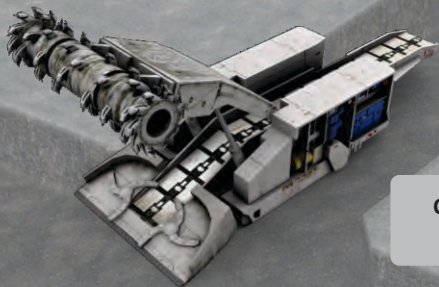
- Brake test
- Collision avoidance
- 4WD driving skills

Note:

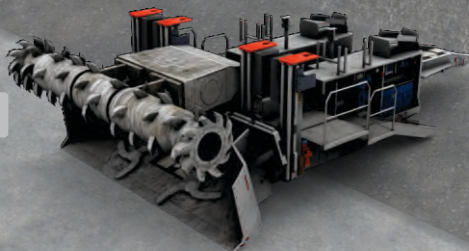
The light vehicle training simulator may also be used to train drivers for underground conditions like coal mines and hard rock mines. It is also useful for construction training.

UNDERGROUND COAL MINING SIMULATORS

OVERVIEW



**CONTINUOUS
MINERS**



**MINER
BOLTERS**



**SCOOPS/
LHDS**



LONGWALLS

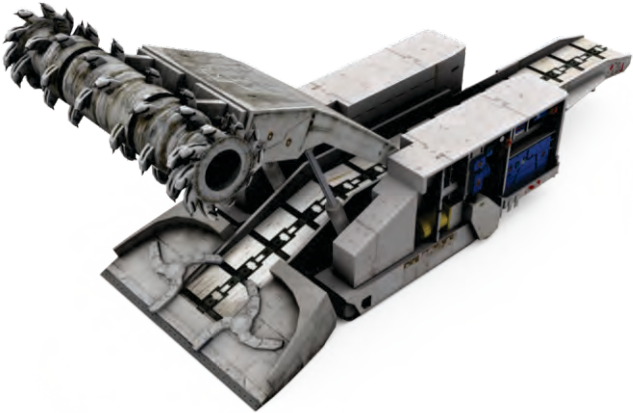
ROOF BOLTERS



SHUTTLE CARS

UNDERGROUND COAL MINING

CONTINUOUS MINER (CM) TRAINING SIMULATOR



This simulator develops the Skills of a Continuous Miner operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Simulated remote control (with radio device) or on-board (from cab) operation
- Production analyses tool - Measures the relevant data of each of the cutting cycle elements: Sump, Shear, Clear Cusp, Raise Boom, Advance
- Artificial intelligence (AI) shuttle cars and humans
- Different seam heights simulated

Specific Training Scenarios:

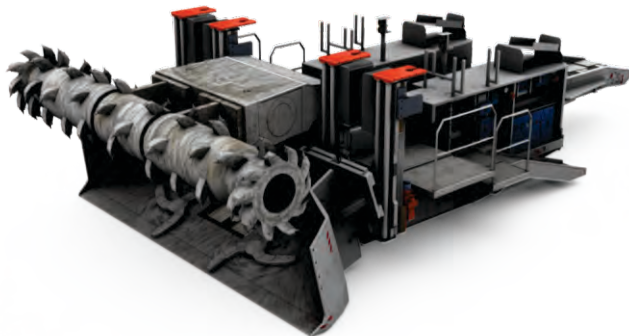
(General Training Scenarios are shown separately under Training Simulator Overview)

- Alignment with coal face
- Cutting cycle
- Cutting a cross-cut
- Sweeping the floor
- Trimming the roof
- Cutting Cycle: Sump, Shear, Remove Cusp, Raise Boom, Advance

Emergency Training Scenarios:

- Gas detected
- Machine failure under unprotected roof

UNDERGROUND COAL MINING MINER-BOLTER TRAINING SIMULATOR



This simulator develops the Skills of a Miner-bolter operator team. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Team trainer (miner-operator and bolter-operator may work simultaneously)
- Artificial intelligence (AI) shuttle cars

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Cutting cycle
- Bolting cycle

UNDERGROUND COAL MINING

SCOOP/LHD TRAINING SIMULATOR



This simulator develops the Skills of a Scoop/LHD operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Scoop or Load Haul Dump (LHD) virtual machine
- Artificial intelligence (AI) continuous miner

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Loading/Scooping material
- Hauling material
- Brake test

UNDERGROUND COAL MINING SHUTTLE CAR TRAINING SIMULATOR



This simulator develops the Skills of a Shuttle Car operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- North-south (stick-steer) and side-saddle machine models
- Low seam and high seam machine models
- Artificial intelligence (AI) continuous miner

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Loading material at the continuous miner
- Hauling/shuttling material
- Discharging material at the feeder breaker



This simulator develops the Skills of a Roof Bolter operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

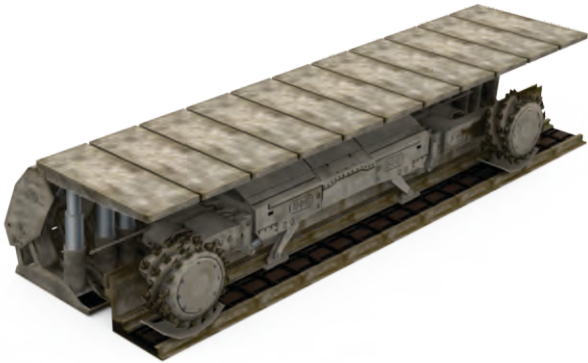
- Virtual tool table
- Team trainer
- Left boom and right boom operation
- Joystick-type and lever-type operation
- 'Spin to stall' and 'spin & hold' bolt installation cycles
- Configurable cycle timing and evaluation

Specific Training Scenarios:

- (General Training Scenarios are shown separately under Training Simulator Overview)
- Deploying the Temporary Roof Support (TRS)
 - Installing single bolts
 - Installing bolt patterns

UNDERGROUND COAL MINING

LONGWALL TRAINING SIMULATOR



This simulator develops the Skills of a Longwall operator team. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

The trainee controls the machine with the same radio controller that is used for the real machine. The trainee is first taught how to start the shearer. The trainee is then taught how to operate the radio device. From this point the trainee moves on to cutting coal with the shearer. The trainee can control the primary and secondary booms, the cutting drums, the cutting direction, the water spray booms and the cowels.

The support shields of the longwall are controlled from the simulator keyboard.

Apart from teaching the trainee how to control the shearer, this simulator is also very useful to teach trainees about the long wall process. The trainee may 'walk' up and down the long wall underneath the plates. The trainee may view the advancement of the long wall in accelerated mode, leading to rapid understanding of the process. The system also has a see-through mode where the long wall may be viewed from any angle through the coal.

Features:

- Real shearer remote control used in simulator

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Cutting coal (to tailgate)
- Cutting coal (to maingate)
- Movement of support shields

UNDERGROUND HARD ROCK MINING SIMULATORS

OVERVIEW



DRILL RIGS



BOLTERS

**UNDERGROUND
LOADERS (Load-Haul-
Dumps [LHDs])**



UNDERGROUND TRUCKS

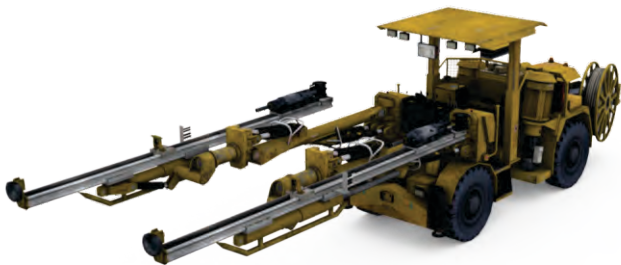


**UTILITY VEHICLES
(UVs)**



UNDERGROUND HARD ROCK MINING

DRILL RIG TRAINING SIMULATOR



This simulator develops the Skills of a Drill Rig operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Analyses of individual holes
- Analyses of drilling patterns
- Tramming controls as well as drilling controls

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Collision avoidance
- Drilling single holes
- Drilling hole patterns

Emergency Scenarios:

- Brake failure
- Machine fire



This simulator develops the Skills of an Underground Loader operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Artificial intelligence (AI) haul trucks and humans

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Collision avoidance
- Loading material (boggging)
- Hauling material
- Dumping material
- Dumping material on trucks
- Brake test

Emergency Scenarios:

- Brake failure
- Machine fire

UNDERGROUND HARD ROCK MINING

BOLTER TRAINING SIMULATOR



This simulator develops the Skills of a Bolter operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Analyses of individual bolts
- Analyses of bolting patterns
- Tramming controls as well as bolting controls

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Collision avoidance
- Installing single bolts
- Installing bolt patterns

Emergency Scenarios:

- Brake failure
- Machine fire

UNDERGROUND HARD ROCK MINING

UNDERGROUND TRUCK TRAINING SIMULATOR



This simulator develops the Skills of an Underground Truck operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Artificial intelligence (AI) Underground Loaders (LHDs) and humans

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Collision avoidance
- Park truck for loading
- Hauling material
- Dumping material
- Brake test

Emergency Scenarios:

- Brake failure
- Machine fire

UNDERGROUND HARD ROCK MINING

UTILITY VEHICLE (UV) TRAINING SIMULATOR



This simulator develops the Skills of a Utility Vehicle (UV) operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Artificial intelligence (AI) vehicles and humans

Specific Training Scenarios:

(*General Training Scenarios are shown separately under Training Simulator Overview*)

- Collision avoidance
- Brake test
- Deploying cassette
- Picking up cassette

Emergency Scenarios:

- Brake failure
- Machine fire

OTHER TRAINING SIMULATORS



5DT offers a wide variety of simulators for other industries, such as:

Port Training Simulators

- Bulk Ship Loader
- Stacking Crane
- Yard Tractor
- Container Crane
- Straddler Crane

Crane Training Simulators

- Mobile Crane (telescopic boom)
- Gantry Crane
- Tower Crane

Industrial Simulators

- Welding Simulator
- Spray Painting Simulator

Aerospace and Defence Training Simulators

- Aircrew Training Simulators (Pilot, co-pilot, flight engineer, navigators, radar operators, radio operators, observation officers) (shown above)
- Gunnery Crew Training Simulators
- Driving Training Simulators (Military Vehicles)

Please contact us if you have a requirement for a simulator not listed above or if you need more information.

CONSTRUCTION TRAINING SIMULATORS

OVERVIEW



EXCAVATORS



GRADERS



TIPPER TRUCKS



ARTICULATED DUMP TRUCKS (ADTs)



DOZERS



FRONT-END LOADERS



MOBILE CRANES



This simulator develops the Skills of a Grader operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Lever-type and joystick-type control models available
- Advanced ground interaction software
- Virtual road construction landscape

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Levelling an area
- Ripping
- Shaping embankments
- Levelling a road
- Mixing material
- Cutting a V-ditch
- Stockpiling
- Grading a cul-de-sac
- Trimming



This simulator develops the Skills of a Dozer operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Advanced ground interaction software
- Virtual road construction landscape
- Rear screen for reversing and ripping

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Levelling an area
- Ripping
- Cleanup at loading area
- Pushing material over
- Shaping embankments
- Removing trees
- Cutting a V-ditch
- Stockpiling
- Overburden (topsoil) removal
- Shaping walls (berms)
- Filling a trench



This simulator develops the Skills of an Excavator operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Advanced ground interaction software
- Virtual road construction landscape

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Levelling an area
- Digging a trench
- Loading a truck:
 - Bench back-up
 - Bench drive-by
 - Top loading
 - Trench loading
- Stockpiling
- Removing trees
- Laying pipes



This simulator develops the Skills of a Front-End Loader operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Advanced ground interaction software
- Virtual road construction landscape

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Filling a trench
- Loading a truck
- Stockpiling
- Brake test
- Cleaning an area



This simulator develops the Skills of a Tipper Truck operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Manual, automatic or semi-automatic gearboxes
- On- and off-road terrain databases
- Artificial intelligence (AI) vehicles

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Parking for loading by excavator
- Brake test

Note:

This training simulator can also be used to train operators for mining and transport applications.



This simulator develops the Skills of Mobile Crane operators. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Rough Terrain and All Terrain cranes
- Trimming (driving) and handling of objects

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Stabilization of machine
- Boom deployment and stowing
- Lifting of objects
- Positioning of objects
- Working with spotters

Note:

5DT may also provide training simulators for Gantry Cranes, Tower Cranes, Harbour Cranes and Container Cranes.



This simulator develops the Skills of an Articulated Dump Truck (ADT) operator. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Construction and mining terrain databases
- Artificial intelligence (AI) vehicles

Specific Training Scenarios:

- (*General Training Scenarios are shown separately under Training Simulator Overview*)
- Parking for loading by excavator
 - Brake test

Note:

This training simulator can also be used to train operators for mining applications.

AUTONOMOUS AND TELE-REMOTE OPERATION SIMULATORS



5DT constantly looks towards the future. Our simulators can be adapted to train individual operators, technicians and teams to achieve a Safer, more Productive and less Destructive work environment. Examples are:

Autonomous Operation

Our simulator framework is ideal for the simulation of autonomous operations. We offer artificial intelligence machines with configurable behavior and attributes.

Tele-Remote Operation

Our simulators can be modified to accommodate tele-remote operation. Our simulator framework accommodates virtual cameras that can be attached to mining machines or that can be positioned at specific spots in a virtual mine.

Undersea Mining

5DT has already mastered the technologies required for undersea mining training simulators, for example, sonar simulations and tele-remote operation.

Please contact us if you have a requirement for a simulator not listed above or if you need more information.



This simulator develops the Skills of a Passenger Bus driver. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Left-hand and right-hand drive available
- Single and Articulated (Tandem) buses are available
- Various trailer configurations are available

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Various traffic conditions
- Emergency situations
- Bus failure conditions
- Bus parking

Other Transport Training Simulators:

- Tipper Trucks
- Light Vehicles



This simulator develops the Skills of a Road Truck driver. Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Features:

- Left-hand and right-hand drive available
- Rigid Truck and Tractor-Trailer configurations available
- Automatic and Manual Gearbox available
- Changing centre of gravity (CoG) for fluid tankers and concrete mixers

Specific Training Scenarios:

(General Training Scenarios are shown separately under Training Simulator Overview)

- Various traffic conditions
- Bitumen and gravel road conditions
- Emergency situations, for example downhill runaways and jackknifing
- Reversing with trailers (1, 2 or more)
- Truck failure conditions

Other Transport Training Simulators:

(Please refer to the CONSTRUCTION section of this product catalog for detail descriptions)

- Tipper Trucks
- Articulated Dump Trucks (ADTs)
- Light Vehicles



These simulators develop the Skills of the following military vehicle operators:

- Commanders
- Drivers
- Weapons Systems Operators

Skills are developed progressively by subjecting the trainee to general, specific and emergency Training Scenarios. Operator errors are recorded and reported.

Training Simulators:

- Light Vehicles (e.g. Humvee, Landrover or Jeep)
- Trucks (supply trucks, troop carriers, low bed trucks)
- Armoured Personnel Carriers (APCs)
- Infantry Fighting Vehicles (IFVs)
- Main Battle Tanks (MBTs)

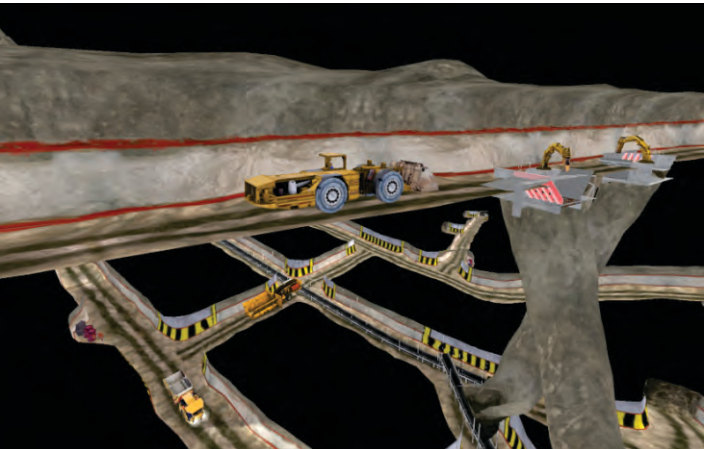
Engineering Corps Training Simulators:

(Please refer to the CONSTRUCTION section of this pocketbook for detail descriptions)

- Graders
- Excavators
- Dozers
- Tipper Trucks
- Tractor-Loader-Backhoes (TLBs)
- Front End Loaders (Wheel Loaders)
- Construction Cranes & Telehandlers
- Articulated Dump Trucks (ADTs)



The training simulators come standard with a generic terrain database. Site-specific terrain databases may be developed on request at additional cost. These virtual mines closely resemble the real mines.



WALK-AROUND INSPECTION TRAINING SYSTEM



This system teaches trainees how to perform walk-around inspections. The trainee inspects a virtual machine. The trainee is presented with a random collection of photographs of good and faulty parts or fluid levels. The trainee must indicate a pass or fail for each part or fluid level.

The system generally develops the Knowledge of a trainee.

This system is particularly useful for teaching trainees not only the correct condition of each inspection point, but also to identify the incorrect/defective items.

This system can be used to quickly retrain a large number of operators when site-specific Standard Operating Procedures (SOPs) are changed.

Features:

- Wide range of machine faults
- Wide range of fluid levels
- Instantaneous feedback



Pre-Simulators are used to teach the trainee how to identify and operate the controls of a machine. The use of a pre-simulator station frees up the main simulator. A Pre-Simulator consists of a Simulator Base System (SimBASE™ - PRE) and a Simulated Machine Cab (SimCAB™). The Pre-Simulator utilizes the same SimCABs™ that are used in the Main Simulator. If a SimCAB™ is not used in the Main Simulator, it can be used productively in the Pre-Simulator.

Pre-Simulator training generally develops the Skills of a trainee, specifically focused at machine controls. It helps to develop muscle memory and rapid reaction in an emergency.

Benefits:

- Trainees can familiarize themselves with the controls of a vehicle/machine before going to the main simulator. This ensures that valuable main simulator time is not wasted on teaching a trainee the machine basics.
- Machine controls familiarization in the pre-simulator can take place in parallel with scenario-based training in the main simulator. More people can therefore be trained simultaneously.
- Training can generally be conducted without an instructor present.

Features:

- Explore Mode
- Test Mode
- Instruct Mode
- Voice over descriptions of controls

2.2.3 Machine Parts and Functions

Part	Description
Air Filter	Prevents dust from the outside environment from entering the engine and causing engine damage
Air Tank	Provides compressed air to various components in the haul truck such as the horn and brake system
Body Lift/Hoist Cylinder	Lifts or lowers the dump body
Differential	Balances the power applied to each wheel equally allowing the inside and outside wheels to rotate at different speeds which is useful when travelling on slippery roads.
Dump Body (Tray)	Carries the payload during haul truck operation
Exhaust Pipes	Discharges burnt waste gases when the engine is running

E-Learning (also known as Computer Based Training [CBT]) is ideal for teaching trainees the basics before they graduate to simulator training.

E-Learning generally develops the Knowledge of a trainee.

E-Learning Systems are ideal for teaching the following:

- Walk-around inspections (pre-shift and post-shift)
- Vehicle/Machine terminology (e.g. parts and functions)
- Standard operating procedures (SOPs)
- Guidelines, rules, regulations and safety measures
- Machine safety (e.g. machine blind spots)
- Accident and incident reporting
- Lockout procedures

← → ↻
 Haul Truck CBT
 Haul Truck CBT
 1 Introduction to Haul Trucks
 2 Components and Controls of
 2.1 Size of a Haul Truck
 2.2 Haul Truck Parts and Fit
 2.3 Haul Truck Controls and I
 2.4 Vital Information Manag
 2.5 Questions
 3 Haul Truck Safety
 3.1 Haul Truck Safety
 3.1 Wearing Personal Protec
 3.2 Managing Hazards
 3.3 Haul Truck Blind Spots
 3.4 Isolation Lockout and Ta
 3.5 Mounting and Descending
 3.6 Fire Safety
 3.7 Questions
 4 Driving a Haul Truck in a Shift
 4.1 Driving a Haul Truck in a S
 4.1 Haul Truck Traffic Rules
 4.2 Two-way Radio Commens
 4.3 Horn Signals for Haul Tru
 4.4 Questions
 5 Operating a Haul Truck
 5.1 Handling Haul Trucks in Emer
 5.2 Advanced Haul Truck Subje
 5.3 Final Questions



3 Points of Contact

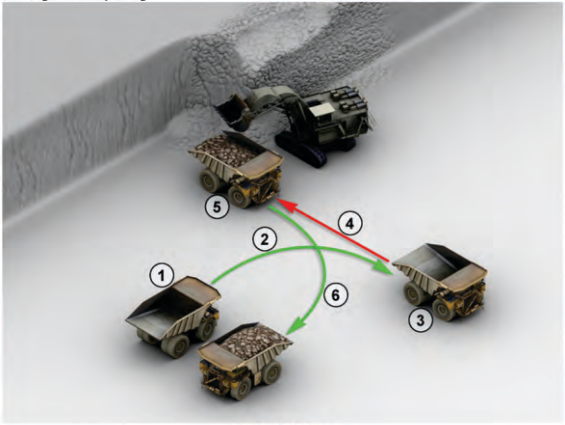
- Look where you are going and concentrate on the next step or hand rail positions particularly in poor light conditions
- Clean the next hand rail position and step of any material such as mud and grease that may cause you to slip before proceeding
- Never attempt to mount or dismount a moving haul truck
- Always face the access ladder when using it

Some common errors that you should avoid when climbing onto or climbing off the vehicle are as follows

- Avoiding steps on the access ladder and choosing instead to jump directly from the truck to the ground

← → ↻
 Haul Truck CBT
 Haul Truck CBT
 1 Introduction to Haul Tru
 2 Components and Contri
 3 Haul Truck Safety
 4 Driving a Haul Truck in
 5 Operating a Haul Truck
 5.1 Pre-Shift Inspection
 5.2 Cabin Inspections fi
 5.3 Start-up procedure
 5.4 Parking and shut do
 5.5 Brake Test Procedure
 5.6 Moving off procedur
 5.7 **Advanced Haul Truck S**
 5.8 Haul Truck Loading
 5.9 Haul Truck Loading
 5.10 Haul Truck Queuein
 5.11 Haul Truck Outgoin
 5.12 Haul Truck Downin
 5.13 Reducing Tyre We
 5.14 Common Haul Tru
 5.15 Operating a Haul T
 5.16 Post shift inspecto
 5.17 Questions
 6 Handling Haul Trucks in
 7 Advanced Haul Truck S
 8 Final Questions

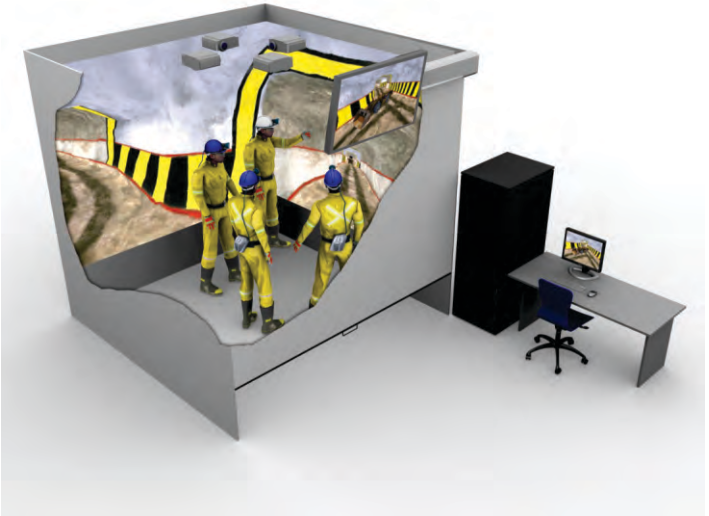
5.7.6 Single side backup loading



Single Side Loading

VISUALIZERS

OVERVIEW



The purpose of a Visualizer is to enable users to visualize the processes and activities on a worksite.

Users get the opportunity to interactively manage a worksite. This develops their management skills in a safe and controlled environment.

Visualizer training generally develops the *Knowledge* and *Supervisory Skills* of a trainee, specifically focused at big picture understanding.

This package is aimed at mine section or site managers. It may however be used equally effectively for the training and induction of machine operators, site managers and administrators.

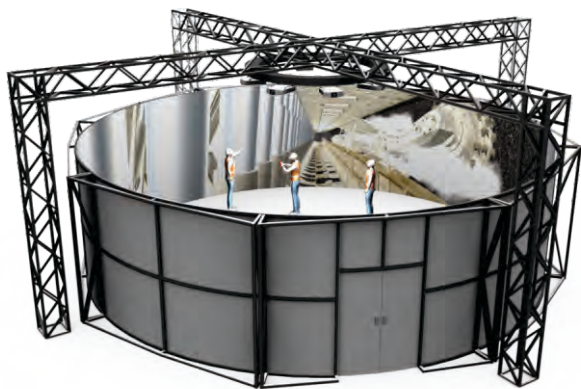
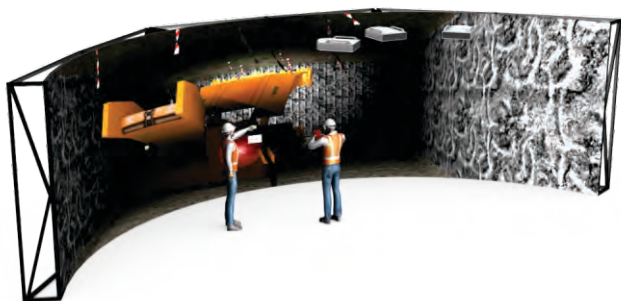
The visualiser gives users a holistic view of the process and enables them to see where a specific machine fits into the overall process.

Visualizations may be viewed with any of the following hardware, as shown above and to the right:

- Large LCD Screen
- Cube-Type Simulator Base System
- 120° Visualization Studio
- 360° Visualization Studio

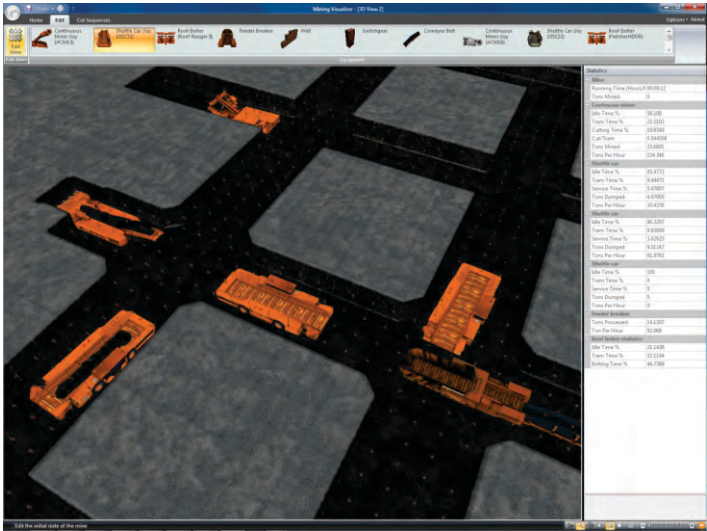
Benefits:

- Training tool
- Planning tool
- Optimization tool
- Production management tool
- Orientation tool



VIZUALIZERS

MineVIZ™ Underground Coal



The purpose of the 5DT Underground Coal Mining Visualizer (MineVIZ™ - UG Coal) is to enable users to visualize the processes and activities in an underground coal mining section.

Users get the opportunity to interactively manage an underground coal mining section. This develops their management skills in a safe and controlled environment.

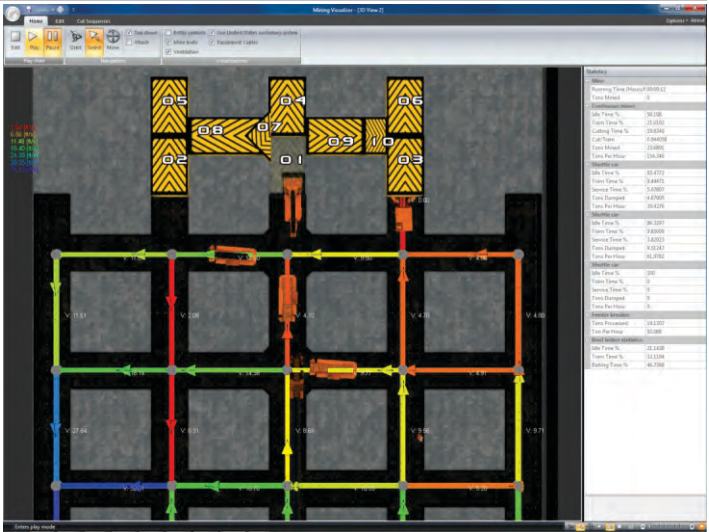
This package is aimed at underground coal mine section managers. It may however be used equally effectively for the training and induction of machine operators, mine managers and administrators.

Benefits

- Training Tool
- Planning Tool
- Optimisation Tool
- Production Management Tool
- Orientation Tool

It is possible to set up a virtual mine with one continuous miner and two shuttle cars and let the process run its course for a specific time-period. One could then increase the number of shuttle cars and perform another run. The outcomes of the different runs (measured in tons of coal produced per time period) could then be compared with each other.

In terms of the operational use of the system one could set up the virtual mine according to the plan of an existing mine and with the same number and type of machines. The system could then be used for planning, briefing and debriefing (feedback) purposes.



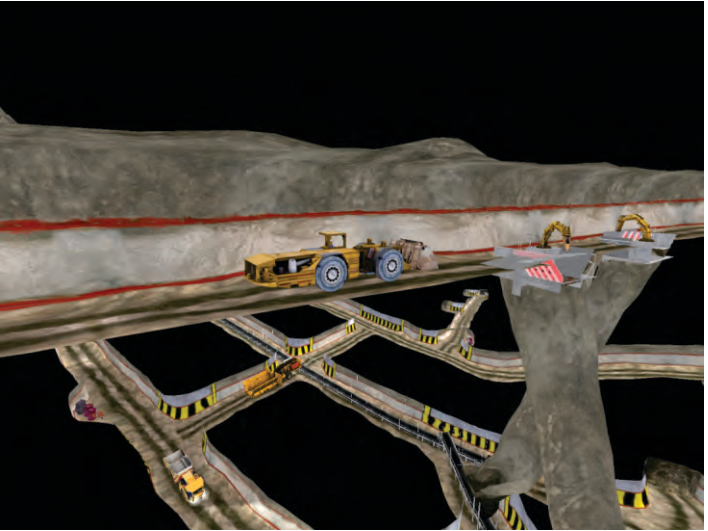
The total system consists of the system software, a high performance notebook computer and a large screen display for classroom viewing.

MineVIZ™ UG Coal Program Modes:

- Edit a Mine Section (Setting up the virtual mine)
- Edit a Scenario (Setting up the virtual machines in the virtual mine)
- Run a Scenario (Pre-programmed mode)
- Control a Scenario (Interactive mode)

MineVIZ™ UG Coal Features:

- Active indicators: Time and Production (tons of coal mined)
- Visualization can be run in normal, accelerated or decelerated time
- Transparency view (look through rock to see what is hidden)
- Ventilation view (air/gas flow is continuously calculated)
- Hazards view (illuminated hazards in the workplace)
- Static viewpoints (e.g. at coal face or at feeder-breaker)
- Dynamic viewpoints (e.g. driving on-board a shuttle car)
- Viewpoint navigation with computer mouse
- Cut sequences may be programmed
- Artificial intelligence (AI) machines



This visualization shows a multi-level underground hard rock mine with inclines, machines and ore shoots. Artificial intelligence (AI) machines are programmed to perform certain tasks in a circuit. The user can view the entire mine to see how everything is happening. The user can also zoom in on specific processes by jumping to that location or by navigating him/herself to that position with a space controller like a computer mouse.

Features:

- Supervisor / shift boss management training
- Artificial intelligence (AI) machines
- Jump to static viewpoints
- Jump to dynamic viewpoints (outside or inside machines)
- Viewpoint navigation
- Visualization can be run in normal, accelerated or decelerated time



This visualizer allows the user to experience the operation of a surface mine. A shovel with a circuit of 10 haul trucks is set up. The haul trucks are spaced all over the circuit. The scenario is then started. The user can view activities at the shovel where ore is loaded on the trucks, or he/she can take a ride in one of the haul trucks on its way to the crusher. The user can then jump to the crusher and see how another haul truck is dumping its load there.

Features:

- Supervisor / shift boss management training
- Artificial intelligence (AI) control of machines
- Jump to static viewpoints
- Jump to dynamic viewpoints (outside or inside machines)
- Viewpoint navigation
- Visualization can be run in normal, accelerated or decelerated time

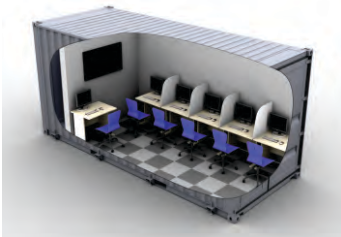
MOBILE SOLUTIONS

OVERVIEW

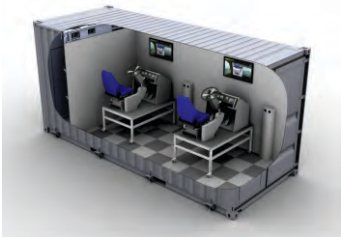
**SIMULATOR
CONTAINERS**



**CLASSROOM
CONTAINERS**



**PRE-SIMULATOR
CONTAINERS**



**STORAGE
CONTAINERS**



5DT's Simulator Base systems (SimBASEs™) can be mounted inside a classroom (building) or can be mobilized.

The 5DT Mobile Solutions are based on High-Cube ISO shipping containers. These containers are 300mm (1') higher than normal ISO containers.

5DT offers a turnkey Containerized Training Centre solution, consisting of the following:

- Simulator Container
- Classroom Container
- Pre-Simulator Container
- Storage Container

The containers may be transported with container trucks or with container trailers. When using the trailer, the container can be left on the trailer permanently or it can be removed from the trailer at the target site. The trailer can then be used elsewhere.

The containers may also be attached (by means of container locks) onto a truck. This solution provides for very rapid deployment and deployment over difficult road conditions.

General Features for all 5DT Mobile Solutions:

(Specific Features are shown with the individual solutions)

- Modular, standardised and turn-key solution
- High-Cube ISO containers are used (some applications require that machine operators stand upright on motion base)
- Eco-friendly (recycling of shipping containers and use of low-energy lights)
- Rugged and secure
- Fully insulated
- Painted with special high reflection and high thermal resistance paint
- Air conditioned (cooling and heating)
- Non-slip flooring
- Anti lock-in for occupants
- Waterproof
- Emergency lighting
- Fire extinguisher
- Whiteboard for instructor
- Electrical distribution board



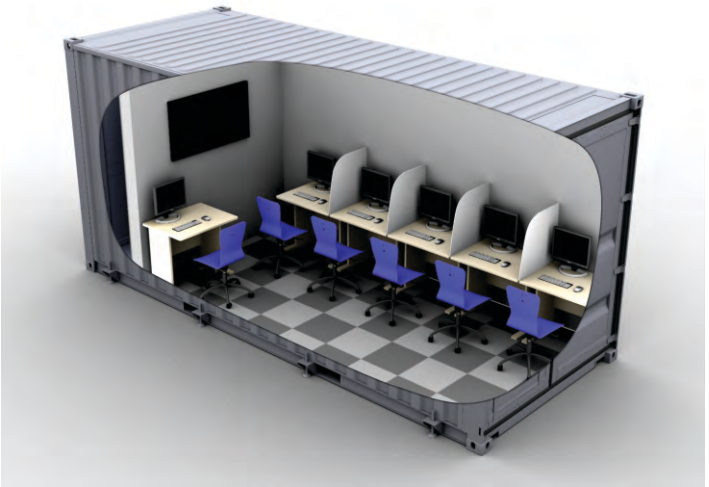
The 5DT Simulator Container is 5DT's mobile workhorse. 5DT applied ergonomic design principles to ensure that there is *as much as possible free floor space* inside the container. The single container is ideal for housing the 5DT Cube-Type Simulator Base System.

Specific Features:

(General Features are shown under Mobile Solutions Overview)

- Motorized roll-down rear screen
- Space for other class members
- Uninterruptable power supply (UPS)
- Separate compartment for computers

MOBILE SOLUTIONS CLASSROOM CONTAINER



The objective of the 5DT Classroom Container is to provide a mobile E-learning classroom. A classroom consisting of one instructor desk and six to ten operator desks are mounted in a single container.

Specific Features:

(General Features are shown under Mobile Solutions Overview)

- Cubicle dividers between trainees
- No computers on ground to ensure maximum comfort for students
- Screen PCs with touch screen functionality
- Separate instructor station
- Large LCD classroom screen
- Classroom whiteboard
- All computers are networked

MOBILE SOLUTIONS

PRE-SIMULATOR CONTAINER



The 5DT Pre-Simulator Container accommodates up to 3 Pre-Simulator base stations.

Specific Features:

(General Features are shown under Mobile Solutions Overview)

- Uninterruptable power supply (UPS)
- Separate compartment for computers

MOBILE SOLUTIONS STORAGE CONTAINER



The 5DT Storage Container accommodates up to 5 Simulated Cabs (SimCABS™).

Specific Features:

(General Features are shown under Mobile Solutions Overview)

- Insulated to prevent high temperature variations
- Ramp for quick move-in and move-out
- Lighting inside container

SUPPORT

Our simulators are designed with availability in mind from the ground up, where availability is a function of reliability and maintainability. We choose the most reliable parts, sub-systems and designs. We also design our simulators so they can be maintained easily and effectively.

A 3-year support plan is strongly recommended. The plan may also be extended to 5 years.

The support plan includes the following:

- Warranty extension to 3 years
- Two (2) preventative (planned) site visits per year
- Two (2) corrective (unplanned) site visits per year
- 5DT Train-the-Trainer (T³) program for instructors
- All parts, labor, travel and accommodation costs
- Free software upgrades
- Free documentation upgrades

Support is generally provided progressively as follows:

- Telephone and E-mail Support
- Internet or Modem Support
- On-Site Support

Emergency spares for the systems are kept on site to ensure that it can be serviced quickly and efficiently.

CONTACT INFORMATION

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The logo consists of the characters '5DT' in a bold, sans-serif font. The '5' is red, the 'D' is green, and the 'T' is blue. Each character has a subtle drop shadow effect, giving it a slight 3D appearance.

***We make operators Safer, more Productive
and less Destructive!™***

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