

Complete Solutions for Terrestrial Surveying



Capture Every Dimension





CAUTION - CLASS 3B
INVISIBLE LASER
RADIATION WHEN OPEN
AVOID EXPOSURE TO BEAM



POWER



ANTENNA

USB 1

USB 2

GPS PPS

ETHERNET

GPS SERIAL

PAN TILT

POWER IN



OpTech



Optech's prominence as a world leader in the development and manufacture of advanced laser-based survey and imaging instruments extends over 35 years. During this time, Optech has worked closely with academic, government, military, naval, air force and space-based organizations to meet their specialized application requirements. From this innovation heritage, our commercial terrestrial survey clients have come to depend on us to provide industry leadership in new technologies to maximize their data collection accuracy and efficiency.

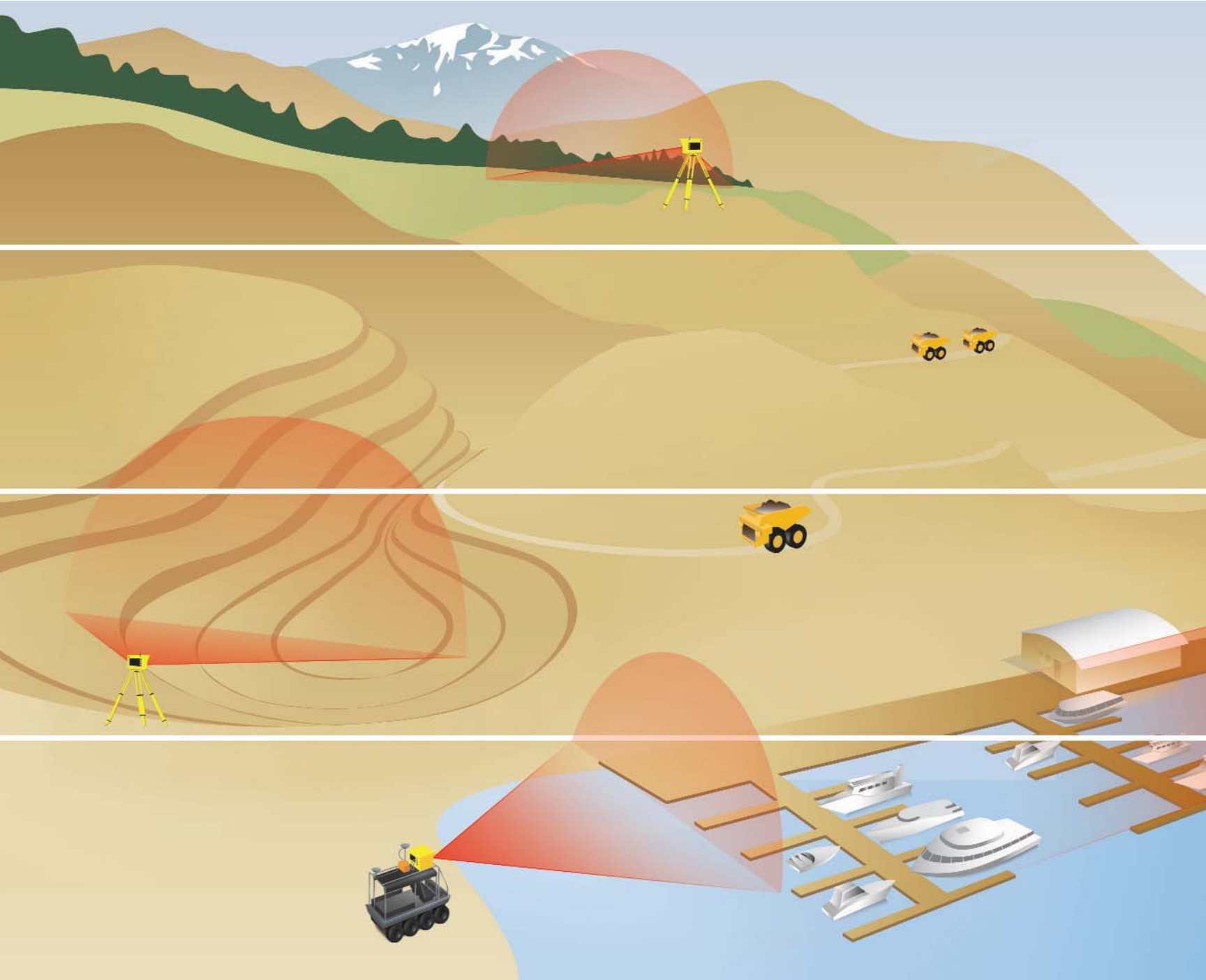
In 2001, Optech created the ILRIS-3D Intelligent Laser Ranging and Imaging System. A direct result of our efforts with the Canadian Space Agency, this tripod-mounted system quickly scans and outputs XYZ geospatial data to produce highly accurate 3D point cloud information of a surveyed scene. This technological achievement was commercialized specifically to meet the demanding terrestrial survey market.

The past decade has seen tremendous growth in lidar scanning and imaging applications. The demand for 3D images and datasets is increasingly common in projects and project requirements. As consumer confidence grows, more applications and projects are adding 3D laser scan data as a deliverable product. While surveyors continue to embrace 3D laser scanning in their workflows, the demand for accuracy and efficiency improvements drives product development and innovation. And once again Optech has answered. The ILRIS-HD High Density Laser Scanner and the latest ILRIS-LR Long Range Laser Scanner deliver increased performance and accuracy—to capture every dimension.

Facing page: ILRIS-LR Long Range Laser Scanner

Complete Solutions for Today's Surveyor

Optech's ILRIS Laser Scanner enables surveyors to capture and define the world point by point. From single to multiple scans, you can coordinate and document your subject in 3 dimensions. An ideal complement to a surveyor's tool-kit, the ILRIS brings high-density engineering and survey-grade data to the table at amazingly high data collection rates.



Complete Solutions for Long Range Surveying

Optech's ILRIS-LR Laser Scanner has more range capability than any other tripod-based laser scanner. Additionally, the ILRIS-LR's design enables surveyors to scan ice, snow and wet surfaces with the same high accuracy and precision as other ILRIS models.



GEOLOGICAL SURVEY

CIVIL ENGINEERING

MINE PLANNING

IN-MOTION SCAN

ILRIS LASER SCANNER

ILRIS in Geology

When scanning geological features, range, accuracy and precision are the key differentiators that set the ILRIS apart. This compact, portable laser scanner is field-ready. Its modular design enables you to plan an expedition, taking only the essential components for each particular journey.

Applications

- Rock fall monitoring and analysis
- Change detection
- Outcrop data collection and modeling



Yosemite National Park
Glacier Point

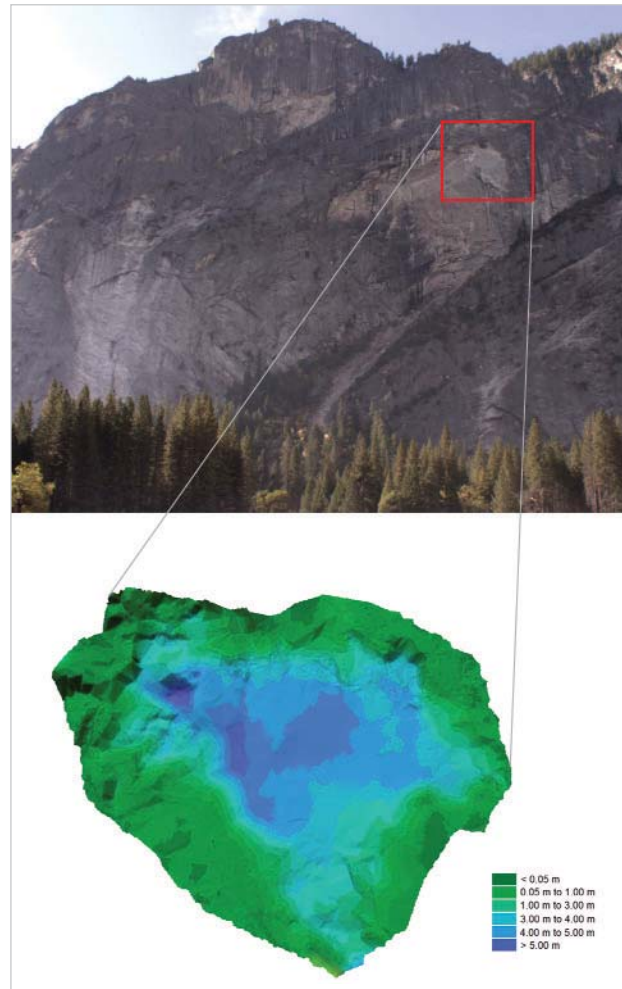
37°43'38.66"N
119° 33'54.24"W

The ILRIS Advantage

The ILRIS-HD and ILRIS-LR boast a laser repetition rate of 10 kHz while maintaining the superb ranging capability of the ILRIS-3D. With the Enhanced Range (ER) option, the ILRIS-HD's range capability is increased while maintaining the scanner's industry-leading range specification.

High Definition

The ILRIS family of scanners employs a dual-mirror scanning process that provides precise, gridded scan patterns in both X and Y axes. The even dispersion of points benefits modeling methodology and improves the final results.



This graphic illustrates a TIN (Triangulated Irregular Network) created from two scans, before and after a 5700-m³ rock fall. The color scale indicates the difference between scans. The point cloud data used to create the models was scanned at an average range of 1250 m from the scanner to the granite cliff.

Features

- Reliable data at over 3000 m range
- User-definable, evenly spaced scan patterns for improved modeling
- Surveys from safe locations

Benefits

- Strike and dip calculation
- Mineralogy and fracture identification
- Rock mechanics



ILRIS in Civil Engineering

With the ILRIS Laser Scanner, high-definition scanning has never been easier and faster. Instrument orientation and position are measured or established with standard survey practices. These parameters can be entered into the scanner, enabling point cloud alignment and registration in the field—no need to return to the office for post-processing. Accurate dimensions can now be extracted directly from the point cloud, permitting immediate construction or assembly verification—no more long delays for extensive data processing time.

Applications

- Construction verification (as built)
- Inspection tool
- Engineering tool—volumes, surface calculations, spatial dimensioning



43°47'39.35"N
79° 32'23.93"W

The ILRIS Advantage

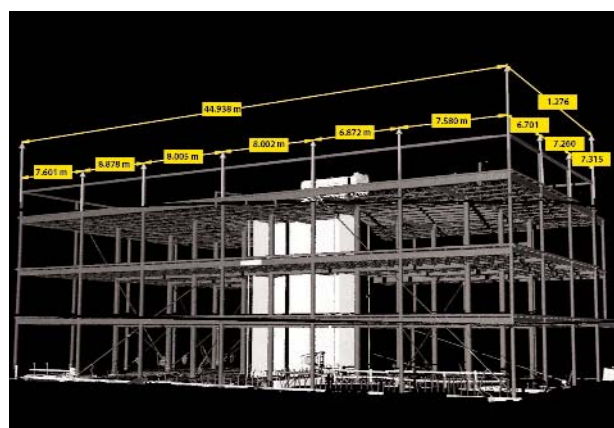
This highly accurate engineering tool can be applied in the inspection and monitoring of construction projects, and to capture details for the documentation of as-built or retrofit projects. Powerful 3D modeling tools are also available to model the subject efficiently, and to perform further data extraction by checking cross-sections, point-to-point distances and clearance measurements.

Modularity

The ILRIS is deployed by a single operator with all functionality available for easy operation. Set-up is rapid and simple, and the system is controlled via a wireless handheld PDA or laptop. The target area and scan status are displayed locally on the ILRIS screen, with data written to removable media.

High Precision

High Precision Mode lets you select the level of precision you require for your project. Before starting a scan, you can select the level of laser shot averaging to create data as precise as your survey requires. Combined with the ILRIS' industry-leading angular resolution, High Precision Mode yields impressive results for target scanning.



Features

Rapid Survey Mode offers georeferencing so that you can ensure that all necessary data has been collected before returning to the office for post-processing. Intuitive built-in workflows enable you to calculate target center locations and manage control network data.

Benefits

- Georeferenced scan capability in the field
- Intuitive target selection tools
- Target acquisition and confirmation in real time
- Surveys from safe locations



ILRIS in Mining

Optech's ILRIS Laser Scanner is a fully portable, laser-based, ranging and imaging system for the commercial survey, engineering, mining and industrial markets. A compact and highly integrated instrument with digital image capture and sophisticated software tools, the ILRIS is an industry-leading solution that addresses the needs of commercial users. The ILRIS is field-ready and requires no specialized training for deployment. Similar in size to a motorized total station, with on-board high-resolution digital camera and large-format LCD viewfinder, the ILRIS has a visual interface similar to that of a digital camera.

Applications

- Volume calculations
- Production/safety monitoring
- Slope analysis
- Mine planning
- Change detection



Escondida, Chile

24°16'37.25"S

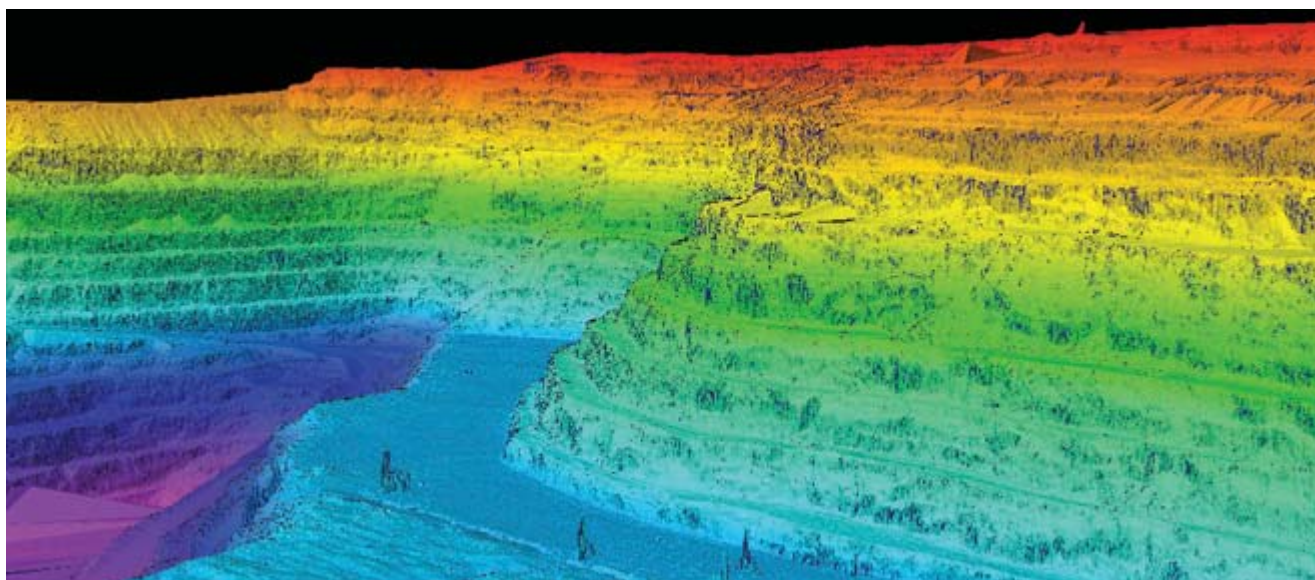
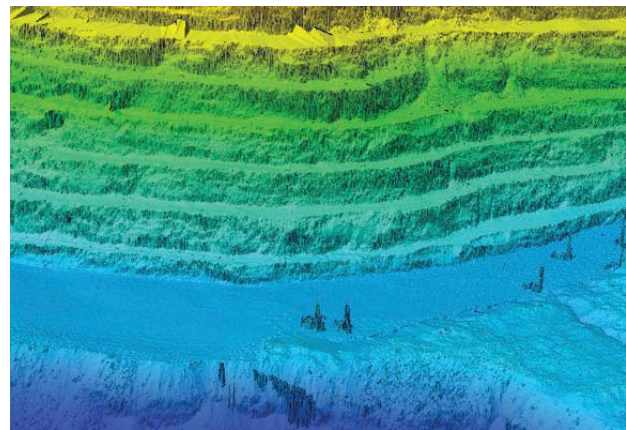
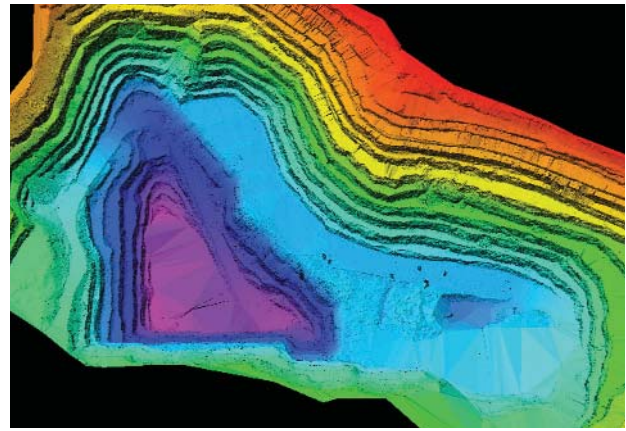
69° 4'14.29"W

The ILRIS Advantage

The ILRIS-HD and ILRIS-LR boast a true measurement rate of 10 kHz while maintaining the superb ranging capability of ILRIS-3D. With higher data collection rates and unmatched range and angular accuracies, the ILRIS delivers extremely precise point clouds for modeling and processing.

Rapid Surveys

Rapid Survey Mode offers georeferencing, resection and back-sight functionality, dramatically reducing data collection and post-processing times. In this mode, the ILRIS controller automatically calculates the georeferenced positions of all scans from its location. It also provides direct real-time confirmation of each scanned target, which the operator can accept or reject based on the resulting data quality.



Features

Using traditional dual-axis scanning mode and area-of-interest scan selection techniques, the scanner's efficiency is 100%—all laser shots are aimed at the selected targets.

Benefits

- Georeferenced scan capability in the field
- Fewer scanner set-ups required for the same scan coverage
- Surveys from safe locations



ILRIS in Mobile Scanning

Optech's ILRIS Motion Compensation feature enables the collection of precise dynamic motion-compensated 3D data sets from a moving platform. When integrated with an INS system, ILRIS Motion Compensation delivers georeferenced data sets for a multitude of applications. Boats, off-road vehicles and airships are now suitable platforms to scan what you have never been able to scan before.

Applications

- Shoreline mapping
- Harbor entrances
- Navigation features and obstacles
- Coastal mapping

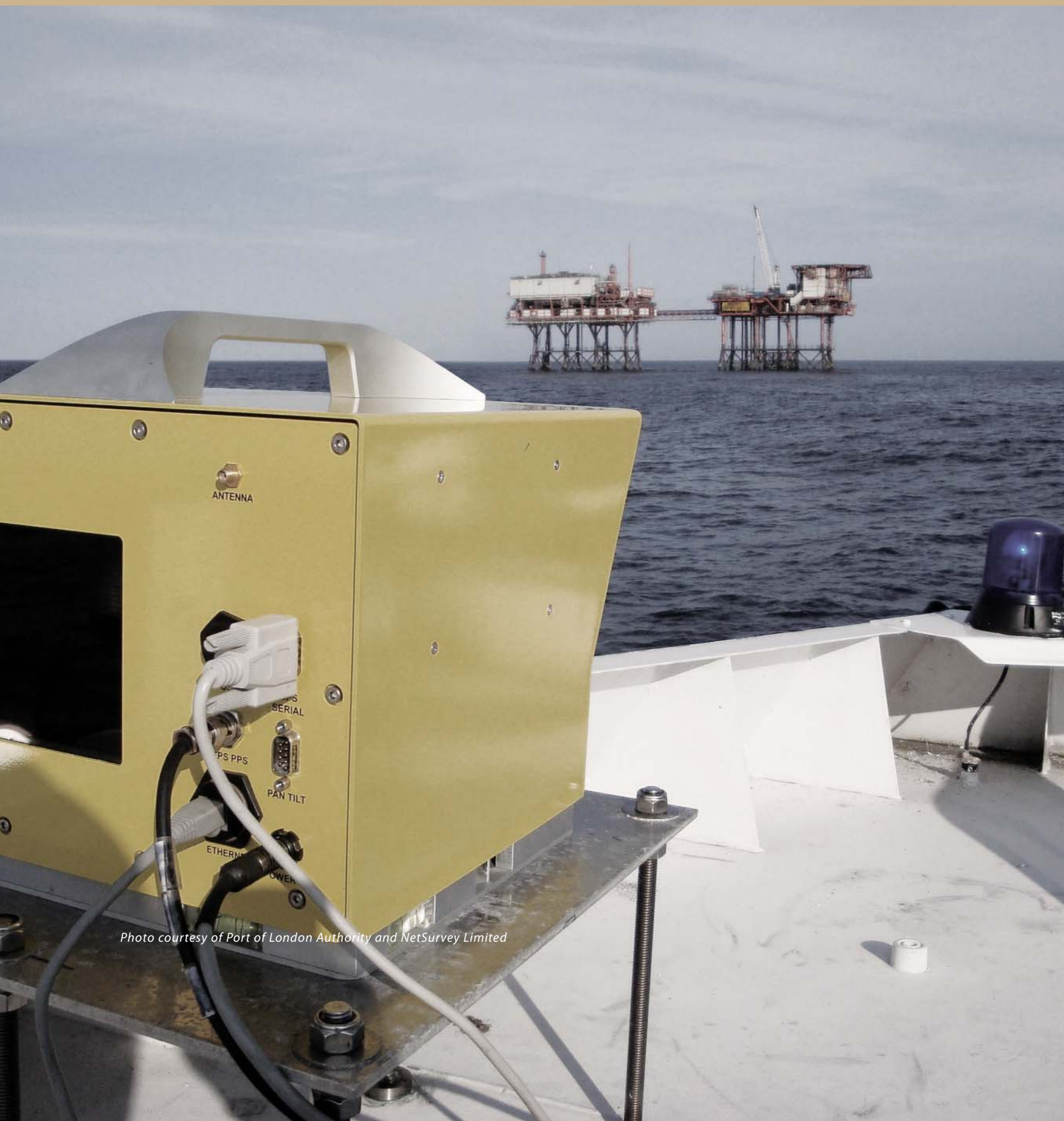
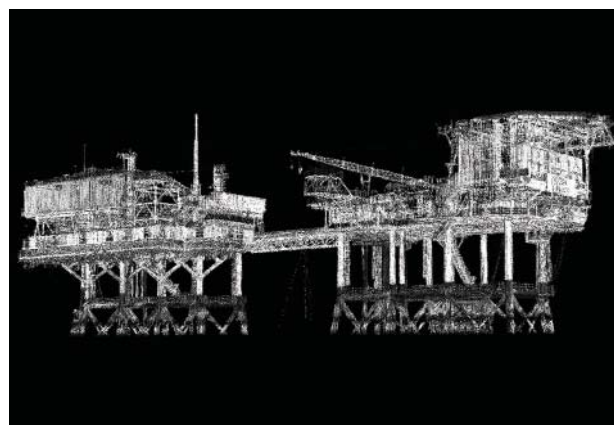


Photo courtesy of Port of London Authority and NetSurvey Limited

The ILRIS Advantage

The ILRIS can perform Motion Compensation with either dual-axis or single-axis scanning. In single-axis scanning—the more traditional method—the ILRIS is oriented at 90° to the platform's direction of travel, and scans while the platform is moving. The ILRIS captures data along the Y-axis using only one mirror, but the motion of the platform enables it to capture data along the X-axis as well. As a result, objects beside the scanning platform are scanned as the ILRIS moves past the areas of interest.



Moving Platforms

ILRIS Motion Compensation also uses dual-axis (step and stare) scanning to collect survey-grade data even on unstable platforms such as moored watercraft. In dual-axis scanning, the ILRIS uses both mirrors to scan the X- and Y-axes, while ILRIS Motion Compensation corrects for any swaying of the platform. The ILRIS also employs this feature when calibrating and synchronizing the scanner with the INS system.



Off-road vehicles and airships are suitable mobile platforms to perform scans of areas that were previously very difficult or impossible to survey.



Photo courtesy of CC & E - Coastal Consulting and Exploration

Features

- Integration with most existing INS systems
- Data can be combined with bathymetric scans
- Scan continuously with bathymetric systems

Benefits

- Dynamic scanning ranges beyond 1500 m
- Intuitive boresight software
- Georeferenced scan capability in the field



ILRIS-3₆D

The ILRIS-3₆D offers panning and tilting capability with a motorized base that is seamlessly controlled through the ILRIS user interface. The standard 40° x 40° field of view is extended to a full 360° x 360° with no loss of accuracy or functionality. This option also includes Profile Scan Mode. By controlling the rotational speed of the pan/tilt base and scanning in the vertical axis only, the ILRIS-3₆D performs a complete or selected portion of a 360° scan that is saved in a single scan file.



Power Options

ILRIS Portable Field Power

The availability and reliability of field power in remote locations are key elements to efficiency that cannot be overlooked. The ILRIS battery/charging system shares the same technology that has been adopted worldwide by video and broadcast professionals.



Dual battery charger

Robust and Modular Battery System

- Two batteries provide a scan time of approximately 2.5 hours
- Hot-swap capability to change batteries without interrupting scanner operation
- Uses as many pairs of batteries as required
- Easy to transport, set up and re-pack
- Used anywhere with universal 85-265 VAC, 50/60-Hz operation



Battery and holder

Economical Operation from Line AC

- Compact, rugged universal input voltage (85-256 VAC, 50/60 Hz) for operation where AC mains are available



AC power supply, shown with a penny

System Features

Eye safety

- Class 1 laser, eye-safe in all ranges and conditions
- CDRH, US FDA and IEC Class 1
- ILRIS-LR is a Class 3 laser

Product Approvals

The ILRIS carries Class 1 laser safety approval as well as a CE marking. The unit has passed the most stringent tests for EMC (radiated and immunity) as carried out by an independent testing authority (Canadian Standards Association). The unit is also sealed for operation in wet and damp locations.



Sturdy backpack

Multi-Purpose

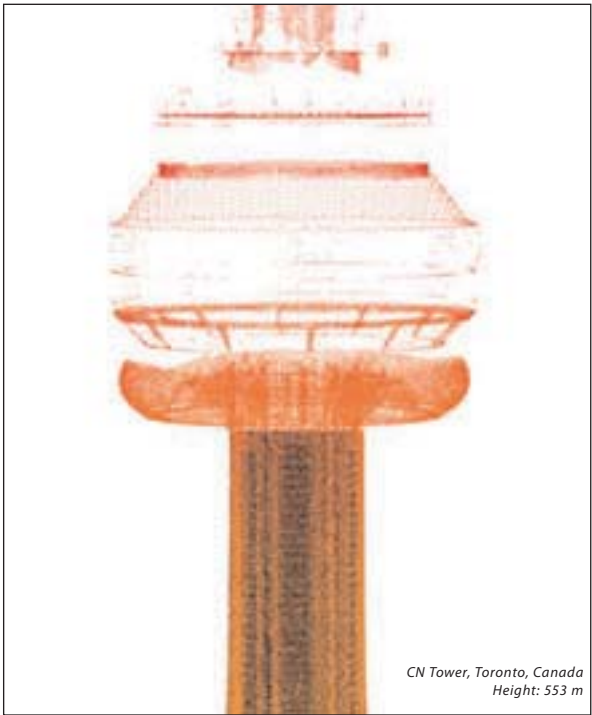
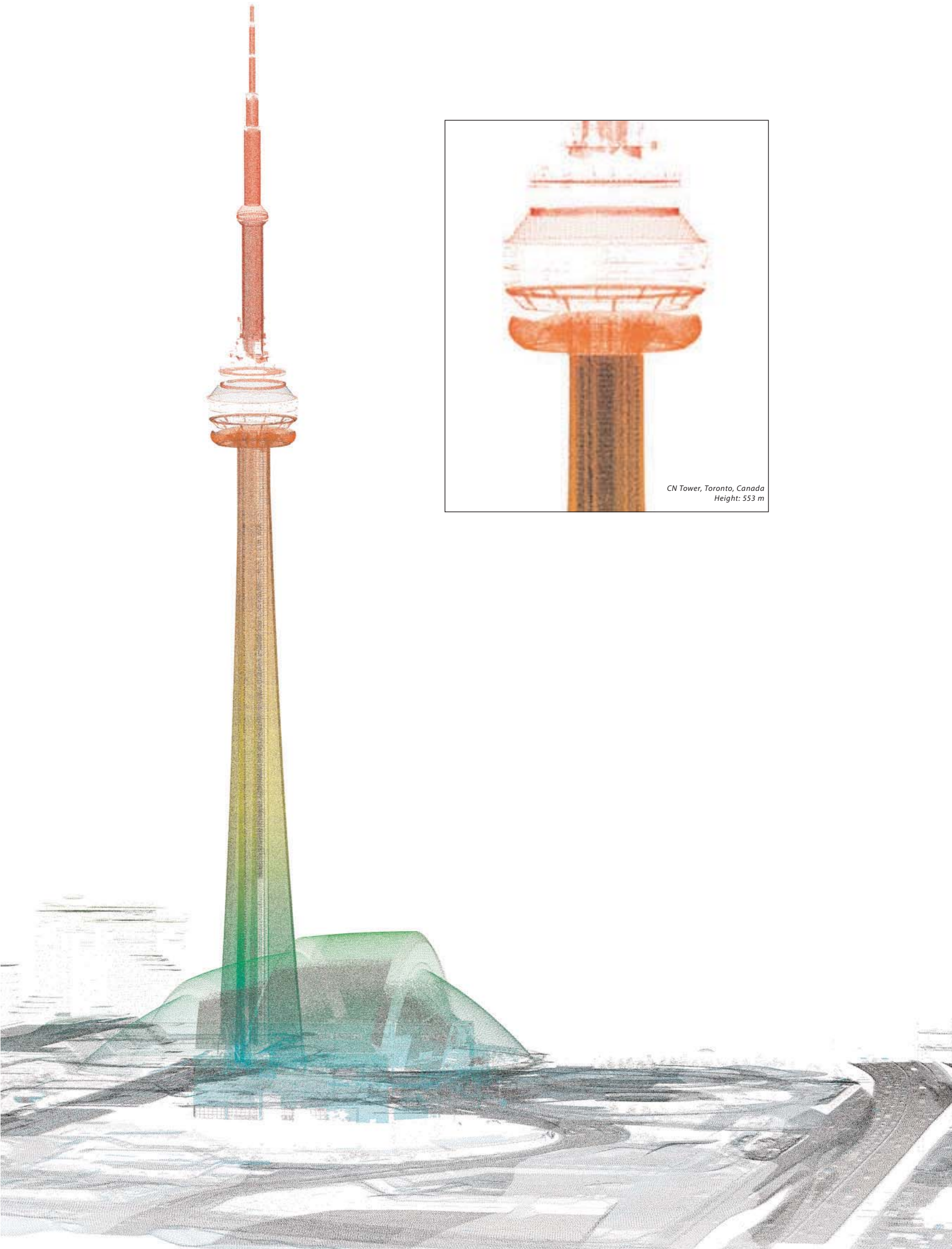
The ILRIS is the most versatile scanning system of its kind:

- Cross-deployable over a wide range of applications and industries
- Convenient to use
- Quick to set up in any environment



Convenient and easy-to-use traveling case





CN Tower, Toronto, Canada
Height: 553 m



About Optech

Optech is the world leader in the development, manufacture and support of advanced lidar and imaging-based survey instruments. With operations and staff worldwide, Optech offers both standalone and fully integrated lidar and camera solutions in airborne terrestrial mapping, airborne laser bathymetry, mobile mapping, mine cavity monitoring, and industrial process control, as well as space-proven sensors.

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