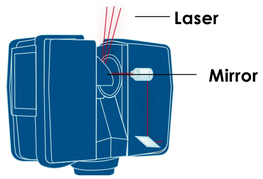
HOW THE LASER SCANNER WORKS

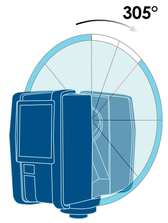
Distance

THE LASER SCANNER uses a laser beam which is reflected back to the scanner by an object. The distance is measured in millimeter-accuracy by the phase shift between the ending and receiving beam.



Vertical angle

THE MIRROR deflects the laser beam in a vertical direction onto the same object. The angle is encoded simultaneously with the distance measurement.



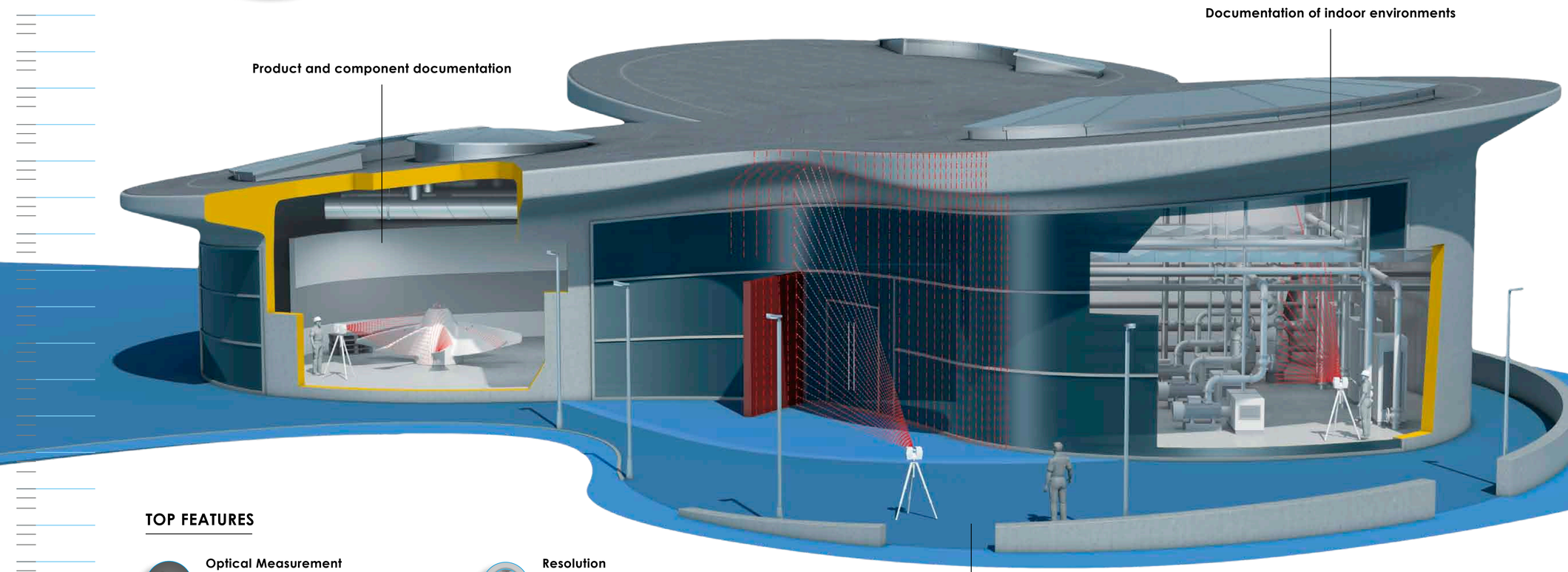
Horizontal angle

THE LASER SCANNER revolves 360° horizontally. The horizontal angle is encoded simultaneously with the distance measurement.

Laser Scanner for 3D Documentation

Computation of the 3D coordinate

DISTANCE, vertical angle and horizontal angle make up a polar coordinate (δ, α, β), which is then transformed to a Cartesian coordinate (x, y, z).



SCANS LARGE OBJECTS TOO

A statue rendered as a "point cloud"

A POINT CLOUD is a data file representing the surface of a scanned object or space. It is created as a 3D image through a set of vertices measured by the Laser Scanner.

TOP FEATURES

Optical Measurement
THE INTELLIGENT LASER SYSTEM facilitates remote measurements of large areas with an extraordinary accuracy of up to 2mm.

Resolution
THE LASER CAPTURES up to 976,000 measurement points per second, and renders a 3D image with an extremely high resolutions of up to 711 million pixels per scan.

Measuring Volume
SPHERICAL MEASUREMENT VOLUMES with a radius of up to 120 meters can be made indoors or outdoors. Anything from 60cm away can be measured

Portability
WEIGHING ONLY 11 LBS. the Laser Scanner is easy to transport. The battery provides power for more than 5 hours of continuous operation.

Facts and figures

RANGE: 0.6m - 20m (Focus^{3D} 20)
0.6m - 120m (Focus^{3D} 120)

MEASUREMENT SPEED: 976 000 points/second

WEIGHT: 5kg

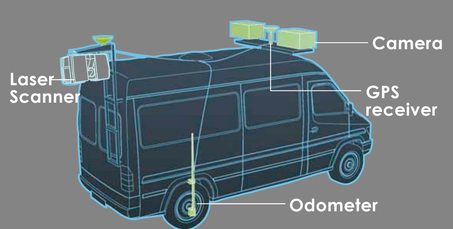
FIELD OF VIEW: 305° vertical
360° horizontal

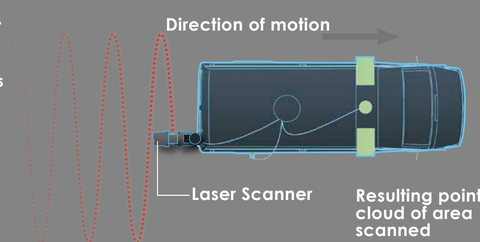
SCANNER CONTROL: via ethernet cable or WLAN using PC or iPod Touch within a local network or Internet.

APPLICATIONS: Accident Reconstruction, As-Built Documentation, Crime Scene/Forensic Investigation, Digital Factory, Inspection/ Reverse Engineering, Power & Process, Surveying, Tunnel & Mining

How to scan a road

Accurate scans of roads, alleys, railways and tunnels are useful for creating construction plans. The Laser canner can be mounted on a vehicle to produce 3D images of site locations in full colour. A combination of four devices is required. The Scanner is first mounted on a vehicle. Digital cameras produce a stream of images of the environment every three meters as the vehicle moves along. An odometer records the distance the vehicle travels as its coordinates moving through space are tracked and captured simultaneously via a GPS receiver. This data is then collated and stored by an on-board computer, and processed later by the Laser Scanner software.





Resulting point cloud of area scanned