Leica GeosystemsMachine Control Solutions









Leica Geosystems' iCON portfolio offers you tailor-made hardware and software solutions for all positioning and measuring tasks in road and building construction.

Intelligent and easy-to-use, the customisable solutions enhance your performance and increase your profitability through perfecting your workflow.

iCONstruct

Tailor-made hardware and software solutions for positioning and measuring tasks on site.



- Straightforward
- Extendable
- Interchangeable



Providing you with perfect communication between construction personnel on site and our comprehensive



portfolio of machine control solutions.

- Suitable for small to large sites
- Reliable and seamless sensor communication
- Streamlined workflow & data handling

intelligent COnstruction

iCONsult

An extensive support network, with clear guidance on intelligent CONstruction benefits to grow your business.

- Worldwide network
- Personal service
- Professional consultancy



iCONnect

Connect your system to a superior network. Wireless data transfer, easy, fast and secure.



- Instant guidance and checks
- Real-time data guarantees accurate jobs
- High productivity
- No delays





Leica iCON gps 60 Versatile smart antenna

for multi-purpose positioning tasks.

Leica iCON site field software

Core central interface to all iCONstruct sensors and devices with unmatched simplicity and no compromise on functionality.



Leica iCON CC65/66

Rugged, mobile tablet PC with enhanced connectivity and functionality.



Leica iCON robot 50

One-person operation, saving time and increasing productivity when carrying out layout tasks and as-built checks.



Leica iCON gps 80 GNSS machine receiver

Versatile, powerful GNSS receiver for machine control and in-vehicle applications.



iCON robot 60

High-end robotic total station with superior technology and iCON on-board.



Leica iCON CC55

Lightweight, handy PDA for easy and efficient field work.



Leica iCON office software

Data preparation and verification of simple and complex project plans.

Leica iCON site

Profit from your investment

Advanced user interface customised for construction personnel

iCON site is designed to increase your productivity and enable you to adapt to any given scenario on site. If you work with machines on site, use iCON site to check your progress to determine if you are working to the correct depth, profile, grade or surface, without having to wait for an engineer or surveyor to carry out these tasks. iCON site is developed to seamlessly integrate with any of the iCONstruct sensors and the iCONtrol machine solutions.

Using the same, interchangeable user interface means:

- You only need to learn its functionality once resulting in less training, increased motivation and significantly reducing your investment
- The ability to exchange hardware and data between on-machine and off-machine use, projects and site personnel maximises your flexibility and reduces possible downtime

Exceptional application functionality

The exceptional features and unmatched graphical support within iCON site allow you to carry out specific tasks on site in an easier, straightforward way. Use iCON site for checking dimensions, volumes, positions and the status of key site elements. iCON site allows the user to complete all site related tasks from one measuring device ensuring an effortless process from start to finish.

- Simply measure, stake-out or check site elements without waiting for an engineer or surveyor to do the work for you
- Benefit from quick volumes and checks by using iCON site for Site Navigation on your vehicle
- If using 2D machine control, iCON site allows the operator to mark out the required starting point or boundary of the profile to be used on the excavator or dozer







Leica iCON CC55/CC65/CC66 Perfect real-time communication on site



Leica iCON CC55/CC65/CC66 versatile tablet PC's are designed to transport a user's office directly to the field

The rugged, lightweight devices have a clear and easy-to-use 7" touchscreen designed to facilitate with data collection tasks on site, while at the same time communicating with the central office, real-time data transfer is made easy!

- Large 7" sunlight readable touchscreen display for convenient operation
- Windows 7 Ultimate Edition multi-lingual operating system
- Various communication possibilities (Bluetooth®, WLAN, 3G modem, LAN, USB, RS232) for the use with different sensors for different applications
- Leica iCON CC55 is a long lasting & lightweight entry level controller, ideal alternative for simple stake out and data capturing tasks
- Leica iCON CC65 model features 3G modem
- Leica iCON CC66 model features 3G modem and long-range Bluetooth®



Leica iCON gps 60

Smart positioning on any construction site



Leica iCON gps 60 is a versatile SmartAntenna for all construction positioning tasks

- Superior GNSS technology for maximum accuracy and reliability, featuring Leica SmartTrack+ and SmartCheck+
- Future-proof satellite tracking, works with all existing and future satellite systems
- Multi-purpose GPS solution can be used as construction site GNSS Base, Rover or NetRover, in supervisor vehicle on site and entry level machine control mounted inside a machine
- Unique communication flexibility, featuring integrated radio, modem and Bluetooth®
- HSPA modem provides excellent network performance
- Integrated NTRIP Server and Caster for internet based Reference Station, means no radio frequency interference or radio range limitations. GNSS measurements are made even easier!
- No controller required for base station set up means you need less hardware

Leica iCON robot 50

Robotic total station for one-person operation

Save time and increase your productivity by doing layout work and as-built checks yourself. With Leica iCON robot 50 you don't need an operator at the instrument. The robotic total station can be operated from the field controller at the prism pole, at the point you need positioning.

Leica iCON robot 50 is designed specifically for ease-of-use within the construction industry, simply level the instrument and go! With the iCONstruct software, you can use it for a wide range of measuring and positioning tasks on site.

- Most accurate reflectorless measurements in its class
- One-button keyboard for simple operation
- PowerSearch (patented search technology)
- Superior tracking performance
- Flexible data communication: WLAN (150m range) or long-range Bluetooth® (350m), simply upgrade your communication by swaping the instrument handle
- Electronic Guide Light (EGL) assisting the operator with the prism targeting
- Easy hand-over control from rover to machine control and vice versa
- Wide range of applications with the custom-built iCONstruct software
- Operates seamlessly with all Leica iCON sensors







iCONtrol PowerSnap

Wireless cradle - all set in one snap!







Leica iCON excavate iXE2 2D Excavating solution Full 2D functionality presented on multicolour panel. Simple and intuitive user interface which provides ease-of-use.



PowerSnap concept Unique patented Snap-on & Snap-off capability. Contact free. Easy upgrade 2D -> 3D. Intelligent storage of machine data.



Leica iCON grade iGx3 3D Grading solution Fully customisable 3D views of your machine and job site. Auto/manual information is presented on the screen.

Leica iCON grade iGx2 2D Grading solution Easy monitoring of the blade

easy operation.

position. Main function keys for



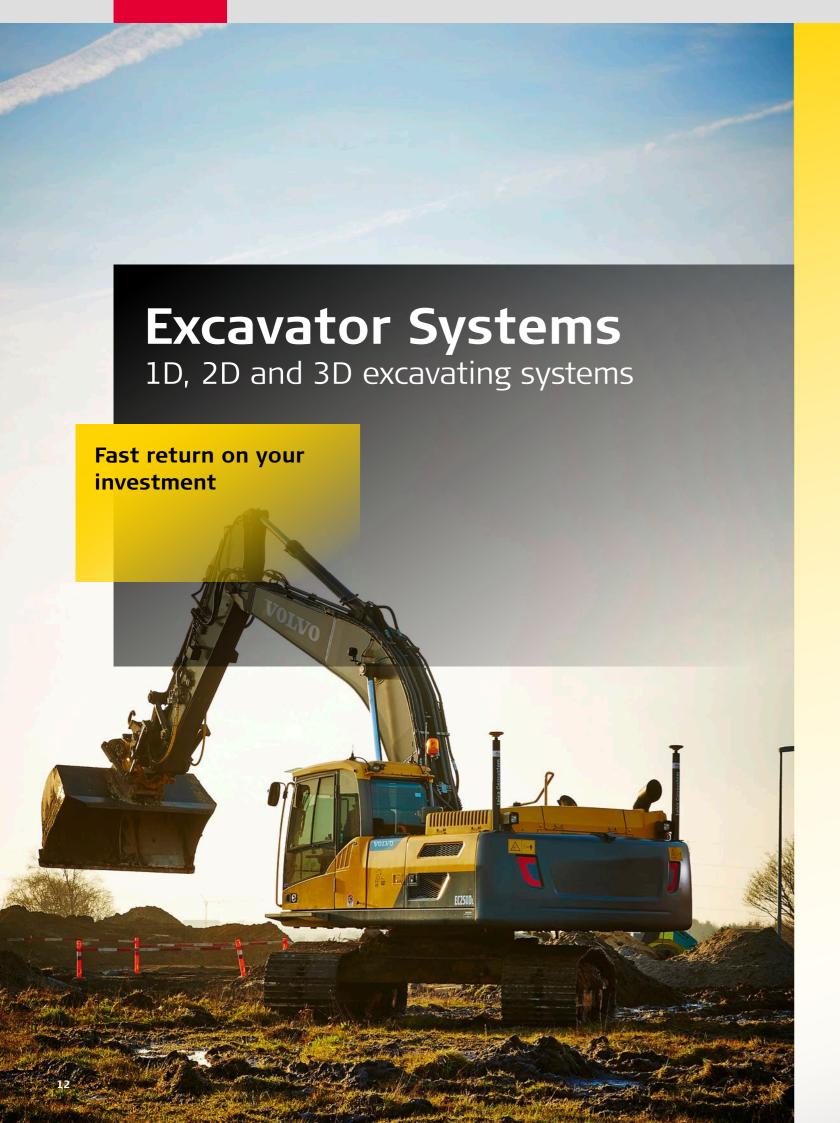
3D Excavating solution Full visual guidance of the bucket see the job as you want. Menu keys give the operator an easy overview of functions.

Leica iCON excavate iXE3



iCP41 & iCP42 -3D solution

Combines full 2D with full 3D in ONE panel. Toggle between 2D and 3D by a simple touch of a button. Presented on a 7" large graphic colour touchscreen.



iCON excavate

iXE1, 1D excavating system

With the single slope system from Leica Geosystems you do not need to use a laser. The cutting depth is directly presented on the control box display in the cabin.

The 1D excavator system uses three inclinometer sensors mounted on the boom, stick and bucket. The sensor on the stick also has a built-in laser receiver.

The system is reset by means of a laser plane or a physically defined reference height,

e.g. a grade bar or curb stone height. The desired depth and slope are entered into the control box.

With this system, you only work with a one-direction slope. The arrows on the display will indicate whether you are too low, too high or "on-grade". This information is also given by means of an audible signal, while the LED screen also displays the level in metric units or US feet.



Easy-to-use graphical

Short learning curve thanks to smart menus

Robust and reliable construction

1D excavating system functions



DEPTH

Commonly used for bases, foundations,



UNDERWATER WORK

The bucket motion is shown on the graphical display.



GRADIENT

In the longitudinal direction.



SLOPE

Set the desired slope for the embankment.



GRADING WORK

Set the right depth and the desired tilt in one direction.



HEIGHT ALERT

An audible signal warns the operator if the defined limit is exceeded. Useful around bridges and overhead lines.



PIPELAYING

Set the desired depth and slope of the pipe trenches.



LASER REFERENCE

Offers the possibility of using rotating laser as a reference.



iCON excavate

iXE2, 2D excavating system

Our dual-slope system combines the depth, pitch and roll – giving you a complete picture of the excavation works.

iXE2 is suitable for small road excavation jobs, drainage work or parking lot excavations.

An additional rotation sensor on the counterweight upgrades the system to a dual-slope capability. The 2D function uses a compass to fix the slope direction. This means

that you can move the machine without the system losing the direction.

The dual-slope system contains two sensors that record the pitch and roll and compensate for the tilt of the machine.

The machine can thus stand at an inclined position and still carry out levelling work around the entire machine.



Easy-to-use graphical display

Short learning curve thanks to smart menus

The Snap-on, Snap-off capacity makes it easy to remove the machine control box from the cab



Arrow display indicating the bucket height

2D excavating system functions



DEPTH

Commonly used for bases, foundations, etc.



GRADING WORK

Set the right depth and the desired tilt in one direction.



ROLL

Sensors record and compensate for the machine tilt.



SLOPE

Set the desired slope for the embankment.



LASER REFERENCE

Gives possibility to use rotating laser as a reference.



PITCH

Sensors record and compensate for the machine tilt.



PIPELAYING

Set the desired depth and slope of the pipe trenches.



GRADIENT



UNDERWATI WORK

The bucket motion is shown in the graphical display.



COMPASSThe system uses a

compass to establish the direction of the tilt.



HEIGHT ALERT

An audible signal warns the operator if the defined limit is exceeded. useful around bridges and overhead lines.

iCON excavate

iXE3, 3D excavating system

With the 3D system from Leica Geosystems, you will work with high precision GPS and be able to monitor the excavation position by means of a digital model.

The iXE3 enables you to use the excavator for point collection and stake out activities.

iXE3 is suitable for projects requiring staking out, e.g. large road and infrastructure projects and subdivisions, industrial sites or dereliction works.

Connect the machine computer via the built-in GSM modem to get quick support and transfers files.

Our 3D system enables you to take the last step towards machine control. Your efficiency rate will improve by up to 30% making it easy to gain return on the investment.

Clear screen display that can be easily read in strong sunlight

LED illuminated buttons

The wireless cradle makes it easy to place and remove the computer unit from the cab

Remote site and machine access

The iCON telematics services include fast and easy data transfer from office to site and to construction machines, remote support for the operators and basic fleet management functionality.

GPS/3D functions





3D/GPS

Our 3D system enables you to use dual slope in 2D and reference models





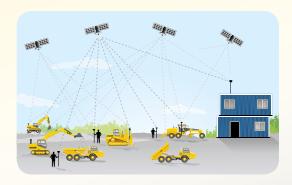
2D or 3D

Switch between the 2D and 3D screens by just pushing a button!



ICON 3D software

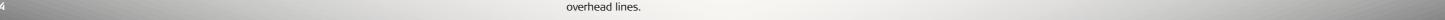
Complete your system with iCON 3D, the software that allows you to create terrain models directly on the screen. A function that gives you great onsite freedom.

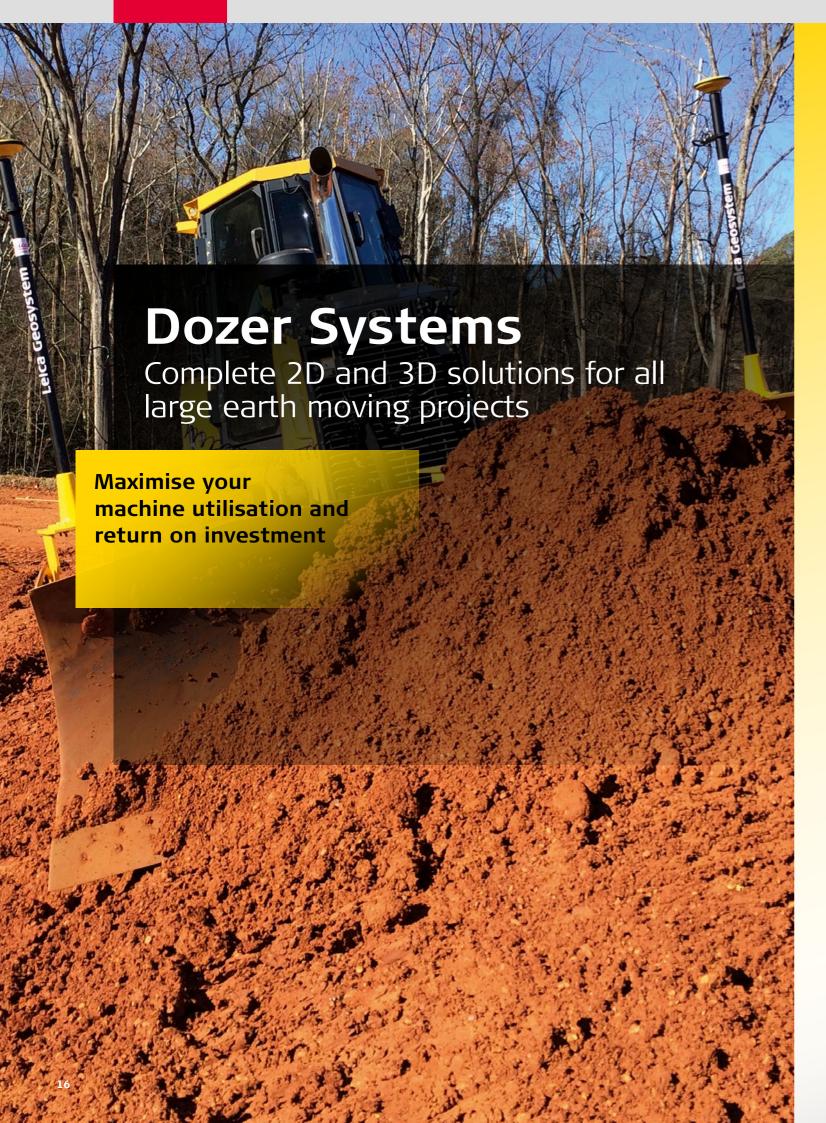


GPS/3D on your machine

The machine computer receives the machine position through a GPS signal and the bucket position from the excavation system.

These values are then matched with the digital surface. You will see the bucket move over the design surface telling you how deep to go.





iCON grade iGD2, 2D dozer system

Fully automatic blade control



Easy-to-use graphical display

Short learning curve thanks to smart menus

The PowerSnap system makes it easy to remove the machine control panel from the cab

Automatic tilt function

The automatic tilt function allows you to be in permanent control over the dozer blade.

Blade tilt sensor

The MSS130x inclinometer sensor is mounted on the machine to detect the tilt of the blade.



Automatic height function

The laser receivers have a capture angle of 360 degrees. The MLS800 has an adjustable center point for height adjustments made from the control box.



iGD3, 3D dozer system

Efficient grading using 3D design information



User definable views such as Plan View and Cut & Fill View

Clear screen display that can be easily read in strong sunlight

Integrated SIM card slot for connection to iCONnect services

Industry standard data Formats iCON 3D machine
software supports
standard file formats such
as .dxf and LandXML eliminating the
need for a proprietary office
software Package to convert data files.

The iGD3 3D dozer system opens new dimensions in earthmoving and fine grading. It brings the design surfaces and alignments inside the cab. You are no longer dependent on stringlines, stakes or hubs. Work independently, and accurately, anywhere on the project design guided by GNSS system or iCON robot, Leica Geosystems' unique robotic total station.

iCG82 GNSS receiver

Leica iCON gps 80 is a compact and rugged GNSS receiver especially dedicated for a wide range of machine control applications to increase the overall positioning performance on all construction equipment; such as dozers, excavators, wheel loaders, drilling rigs and pavers.



iCON grade

iGD4^{SP}, 3D dozer system

Multiply your dozer's performance by the power of SP!



Combining SP Technology with a dual GNSS antenna solution allows the customer to operate their machine at full speed, while the blade is angled to efficiently control material from pass to pass.

A customer can purchase an entry level GNSS system, iGD3 and then add additional components to the system as their projects dictate growing their system to a state-of -the art iGD4^{sp} dozer system.

Dual GNSS configuration

iGD4^{sp} is ideal for customer's who have a six way (PAT) blade mounted on their bulldozer. Having a second GNSS antenna on the blade will improve the accuracies you can achieve when working in very demanding environments such as steep slopes with the blade fully angled.



SP sensor

Leica Geosystems sensor technology provides high precision at higher speeds

Thanks to its unrivalled speed and precision, SP technology offers you new possibilities. The improved hydraulic control allows faster grading with more consistent results. The need for rework and the need for different machines will decrease dramatically. Maintain speed without sacrificing precision.





iGG2, 2D grader system

Fully automatic blade control

The Leica iCON grader systems offer new site preparation possibilities. The system regulates the elevation and crosslope by means of robust and high-tech sensors. The system helps you improve your productivity as well as save material costs.

The iGG2 system is easy to upgrade. Start with a height control solution using laser receivers or an ultrasonic tracer and upgrade your system on the basis of your needs. You can step from a laser-based 2D solution to a complete 3D solution with a robotic total station by just adding the iCP42 panel and the iCON robotic station.



Easy-to-use graphical display

- the same panel is used on
your dozer and grader, giving
you the ultimate in equipment
flexibility

Short learning curve thanks to smart menus

The wireless cradle makes it easy to place and remove the panel from the cabin

Multi-switch

Two switches are mounted on the up and down levers of the machine. You never let go of the controls.

Blade tilt sensor

The MSS1300 sensor, which is an inclinometer sensor, is mounted on the machine to detect the tilt of the blade.

Mainfall sensor

Mainfall compensation allows for precise grade and slope control whatever the project conditions.









Rotation sense

The rotation sensor contains a potentiometer that establishes the rotation angle of the blade.

iGG3, 3D grader system

With optional side shift technology



Clear screen display that can be easily read in strong sunlight

LED illuminated buttons

The wireless cradle makes it easy to place and remove the wireless panel from the cab

Remote site and machine control access

The iCON telematics services include fast and easy data transfer from office to site and to construction machines,

construction machines, remote support for the operators and basic fleet management functionality.

Cross Slope



Multi-switch

Mounted on the control levers allow you to stay in control at all times – safer, faster and more productive.



Rotation sensor

The MRS1300 rotation sensor compensates the moldboard's rotation angle influence on cross-slope - set the blade exactly how you need it, iCON grade takes care of the rest.



Blade tilt sensor

The MSS1300 tilt sensor maintains the desired cross-slope precisely.



Mainfall sensor

Mainfall compensation allows for precise grade and slope control whatever the project conditions.

Elevation



Ultrasonic sensors

Using the Leica Geosystems patented Trisonic is very simple. The curbstone, adjacent road surface or a stringline provides the reference elevation for the moldboard. Ultrasound is often used as a reference on one side and cross-slope on the other.



MLS700 laser receiver

The MLS700 is a laser receiver with a 360 degree range.



Total Station/GPS

The Leica iCON measuring equipment fits seamlessly into your machine control system and the file formats used are supported wordwide. The iCON GPS and the robotic systems will help improve your productivity and precision right from the start.



Our machine control displays

Leica Geosystems offers both 2D and 3D solutions. With our unique PowerSnap system, one single 3D display can be used on your dozers, graders, excavators, and wheel loaders. This allows you to spread your investment across more machines and obtain a mixed fleet that you can use for many different tasks.



iCP32 iCP42

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iGW3, 3D wheel loader system

Swift accurate levelling in soft material



Experience the unique benefits of Leica iCON grade machine control now in your wheel loader! Get your earthworks jobs done faster and right the first time. Save time and money by reducing rework and eliminating over excavation and grade checking.

With Leica Geosystems' control system for wheel loaders, you know the bucket position

at any time. The system uses 3D design (CAD) models and state-of-the-art GPS/GNSS technology to guide the operator. Design information and real-time cut/fill indications are displayed in the cab for fast, accurate operation, increasing your precision and productivity from day one.



iGSS2, 2D skid steer system

Fully automatic attachment control

Leica iCON grade for skid steers is the ultimate tool for box blades. This flexible system can be used for push blades mounted to a skid steer or drag boxes mounted to a skip loader. Single or dual laser configurations allow for height control only or height

plus cross slope, giving you the ability to configure your system as the job dictates. Expand your system by adding the iCP42 and associated GNSS accessories and you have full 3D capability on your skid steer!



Easy-to-use graphical display

Short learning curve thanks to smart menus

The wireless cradle makes it easy to place and remove the panel from the cab



Multi-switch

The multi-switch can be mounted inside the skid steer cab, allowing the operator to remotely override the hydraulics on the attachment for raising and lowering at the end of a run.



The result of 15 years knowledge and experience from the world's first provider of stringless concrete and asphalt paving, trimming and milling technology

With Leica Geosystems' unique PaveSmart 3D control system, the machine is controlled without stringlines. Starting from the project data, the actual 3D position is measured by robotic total stations and/or GPS receivers and transmitted to the Leica Machine Computer.

High-accuracy machine-mounted slope sensors provide long and cross-slope. The results of this "design-vs-actual" comparison represent the elevation and slope corrections required to keep the machine on-grade, typically within an accuracy of ± 5mm (±3mm for concrete), depending on jobsite conditions.

PaveSmart 3D transmits corrections to the machine controller which regulates the hydraulics, in a similar way to controlling with the conventional sensors – meaning your crew doesn't need to be retrained to work with 3D.

- Fully automatic grade, slope and heading control
- Works with the following industry-leading Slipform pavers manufacturers:

Gomaco

G&Z

Wirtgen

PowerCurbers & PowerPavers

- Supports all MOBAmatic (PWM & CAN) and Vögele NaviTronic/ NivelTronic levelling systems and all modern asphalt paver brands
- Puts the project plans directly on the machine
- Imports from as good as every CAD system
- Puts crews in control of their own work all paving information available at a glance
- Uses Leica Geosystems world-leading 3D sensor technology
- One supplier, one integrated modular solution



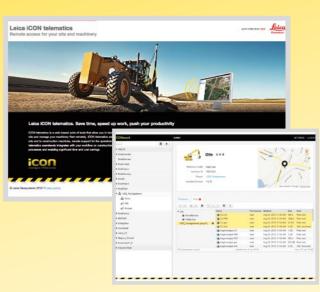








Leica iCON telematics is a web-based suite of tools that allow you to increase the efficiency of your machine control operations on site and manage your machinery fleet remotely.



WWW.ICONTELEMATICS.COM

Sync



Design data for construction often need to be updated.
Sync offers the possibility to upload the latest design data to your fleet immediately.

Manually uploading data via USB stick

is no longer required. Data can be transferred remotely in both directions from the field to the office.

Remotely validate individual project files on machines in your fleet, ensuring they are up-to-date.

- Reduce machine visits and decrease downtime
- Save time and money by avoiding rework
- Effective handling of support and maintenance by remotely uploading the latest firmware

View



View provides the project manager the ability to remotely view the operator's screen.



View enables remote diagnostic. If the operator needs help, the off-site supervisor can take action on the screen via remote access.

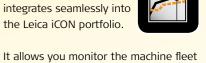
Support personnel can use this function to provide quick response when needed.

- Reduce machine down time and maintain productivity
- Reduce site visits and save time by remotely checking settings on the machine.
- Increase uptime by scheduling operator training by using a remote instructor
- Save time by remotely monitoring data used on the machine

Track



Track is a fleet management tool which integrates seamlessly into the Leica iCON portfolio.



in real-time and provides reports. Entry and exit can be monitored for multiple geographical areas.

Several reports can be created, such as activity, routing and others filtered by calendar, time, geographical area and/ or machine type.

- Quick reponse by use of real-time reporting
- Improved day-to-day operations by recording results on the utilisation of equipment
- Save time and reduce repetitive work by generating on demand reports or create predefined schedules
- Monitor the utilisation of equipment on site

SmartNet GNSS RTK Network Service





SmartNet is a subscription based service offering GNSS Network RTK corrections throughout the world.

SmartNet provides high-precision, high-availability Network RTK corrections for any application, using any constellation, and is available to everyone.

Leica Geosystems directly operates, manages, and maintains all segments of the network, from the reference stations in the field to the server and IT infrastructure.

SmartNet is built on the powerful Leica Geosystems GNSS
Spider software providing a variety of real-time data products
to the end-user. It is open to all data formats, offering a GNSS
RTK solution to anyone in the precision measurement
marketplace.

SmartNet has the largest coverage of GNSS RTK Network
Services in the market. The SmartNet team carry the global
experience into the local support to succeed in customer
projects. Leica Geosystems offers everything from the
reconnaissance and installation of the reference stations
themselves, managing subscriptions services, to monitoring
the network's health and operation 24/7.

SmartNet has innovated precise measurements applications across many industries such as Precision Agriculture and GIS, while at the same time providing a stable and reliable infrastructure for the traditional construction and surveying applications.

SmartNet Advantages

Quality
Productivity
Reliability
Cost















Construction

SmartNet is being used more and more frequently in high-profile construction projects. Highway construction projects, airport runways, sport stadiums and any construction application that requires precise machine operations and repeat centimeter accuracy.



Land Surveying

SmartNet is widely used and trusted in a variety of land surveying applications such as building and monitoring bridges, towers, highways, and dams. SmartNet eliminates the need for land surveyors to set up individual base stations which dramatically increases production and safety. Annual subscriptions for all network RTK GNSS (GPS and GLONASS) rover systems are available.



SmartNet is ideal for any high-precision mapping projects such as utility mapping, asset management, GIS data collection and any application that requires consistent high-precision centimeter accuracy. GIS professionals can use any network RTK GNSS (GPS and GLONASS) rover system and the coverage is available 24/7.



SmartNet can be used in a variety of agricultural applications such as cropping, fertilisation and land-levelling. With a networked RTK correction from SmartNet, communication distance is not restricted by the communication device. Inside of SmartNet, you can continuously get position over 30 miles away without having to switch base stations or worry about distance from the base.





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Leica Geosystems Customer Care Packages Get maximum benefit from your investment

With a Leica Geosystems CCP contract you receive:

- High level of service and reduced downtime
- Access to the latest software
- Optional extended warranty packages



Global coverage - local support

When you buy your Leica Geosystems Customer Care Package, you can rest assured that our service team supports you while you work. Local knowledge, reliable support, and understanding our customers' needs is essential for you get maximum benefit from your machine control investment.

Each region will tailor the service to the Customer Care Package with their local resources, networks and knowledge of projects working with equipment supplied by Leica Geosystems.

For more information, contact your local Leica Geosystems sales representative.

myWorld @ Leica Geosystems Product information at your fingertips

myWorld offers Leica Geosystems customers and partners a wide range of services, information and training material. With direct access to myWorld, you are able to access all relevant services whenever it is convenient for you, 24 hours a day, 7 days per week. This increases your efficiency and keeps you and your equipment instantly updated with the latest information from Leica Geosystems.



myTraining

- Train yourself online
- Download training material
- Register for courses & seminars

myService

- View service history
- View details of service cases
- View current service status

mySupports

- Create new support requests
- View your support history
- Review detailed information on support requests

myProducts

- Add your products
- Buy options online
- Upgrade Software
- Dowload user manuals



Leica Geosystems intelligent CONstruction.

Whether you construct buildings, roads, bridges or tunnels, you benefit from intelligent CONstruction. Leica iCON is more than a new product line or software package, it enables you to enhance your performance, and increase your profitability through perfecting your construction workflow.

Understanding construction demands outstanding solutions:

- Custom-built
- Complete
- Straightforward
- High performance

When it has to be right.



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Leica iCON site Custom-built Solutions for Site Construction



Leica Geosystems iCONtrol Custom-built Solutions for Machine Control



iGD4SPHigh efficiency grading solution for dozers with 6 way blades

Leica iCON grade



Leica iCON gps 80 Increasing productivity Maximising uptime