Accurate Positioning Services for IoT

GNSS Correction Services Technology

TOPCON

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ACCURATE
POSITIONING

WHY
TOPCON?

Table of Contents

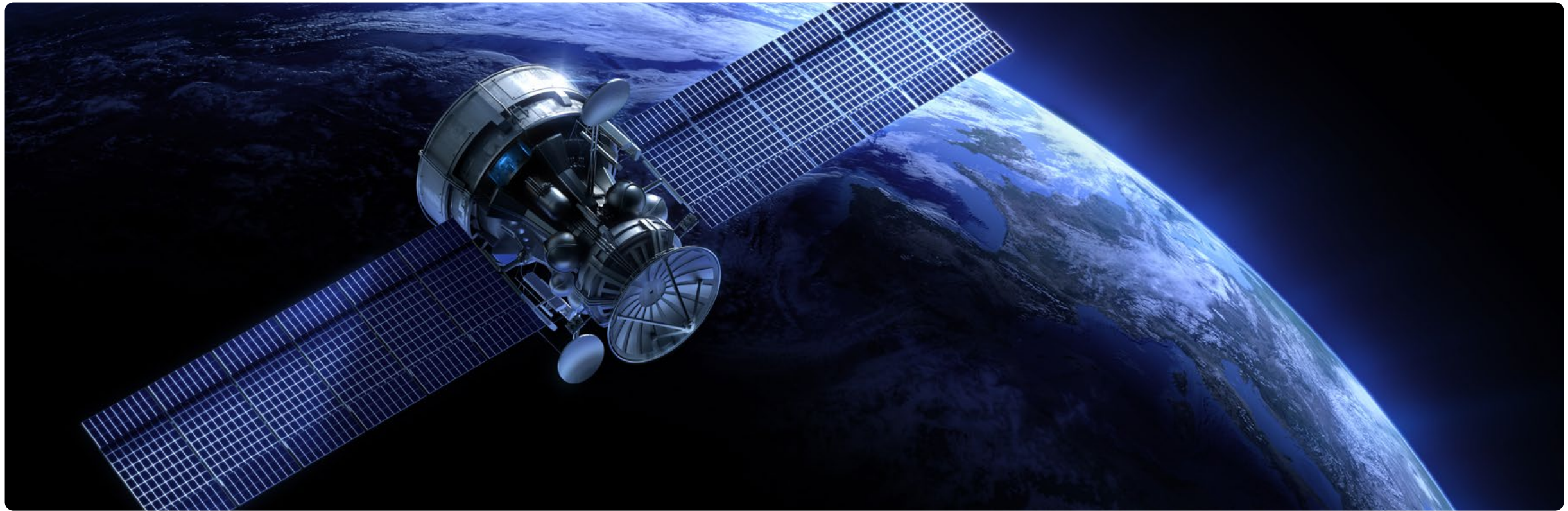Navigate sections by clicking the buttons below.

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WHY
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Expanding Vision

Topcon delivers advanced positioning, navigation and timing solutions.
Bring highly-accurate GNSS technology to IoT devices and enhance your competitive
advantage for IoT solutions with Topcon GNSS correction services.

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Enhanced accuracy

GNSS correction services provide greater accuracy than standard GNSS.

Value added services

IoT devices require enhanced positioning, therefore they require GNSS corrections services. Be more competitive with an improved value proposition for your customers.

Extend your expertise

Connect with a leading company in precise positioning services. Take advantage of 20+ years of expertise in GNSS integration and testing.

Telecom Services

The evolving scenario for mobile operators

The telecommunications sector has recently seen an exceptional growth of data services through the upgrade of broadband cellular network technologies and new types of equipment.

Technological advancement has opened the doors to new types of services – for both B2B and B2C purposes. This requires massive usage of data, analytics and AI. The telecommunications sector has become an essential factor in driving business success in many application fields and industries.

Furthermore, with the introduction of always-on and always-connected technologies, the telecommunications sector can introduce new profitable business scenarios with massive impact on the markets.

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Telecoms Company

The telecommunications sector mainly focuses on wireless communication through the design and delivery of mobile equipment and the definition of data services.

Mobile Communications – Mobile Data

Technology has established different types of communications (voice, video, multiconference, chat and augmented reality). Instant communication is now possible regardless of location and time zones and without any physical connection. This technology has unleashed new business opportunities and boosted growth and cost savings globally. The telecommunications sector invests a great part of its resources designing and developing mobile devices (e.g., mobile phones) and services to establish full duplex two-way radio telecommunication over a cellular network of base stations (i.e., cell sites). Today, a new technological type is at the doorstep.

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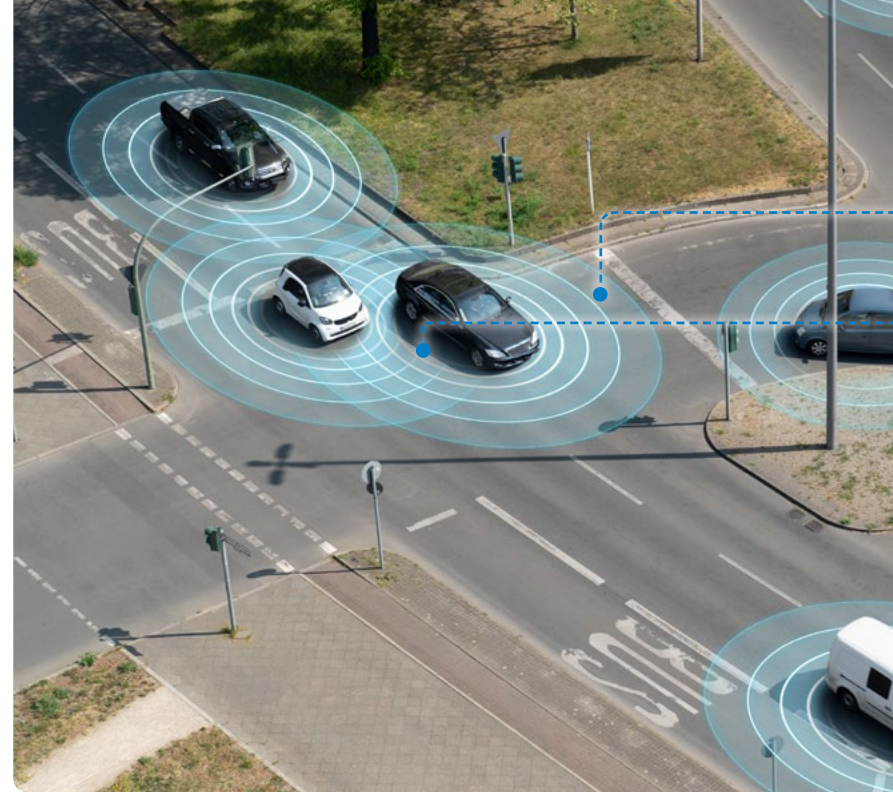
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Positioning Data Connectivity

At the same time, the introduction of devices connected through the Internet (Internet of Things) is creating for great synergies between the traditional business of the telecommunication industry and the IoT markets. These markets focus on interconnected devices. Connectivity and positioning are essential services to sustain this business. Today, telecommunications companies can bundle high-speed connectivity and highly accurate positioning in a unique offer.

Positioning services

Most current players already employ GNSS technologies to provide positioning, navigation, and timing (PNT) data. Telecommunication companies can now enhance PNT services with higher accuracy. When standards GNSS technologies can provide 2-meter accuracy, Topcon GNSS Correction Services can offer up to 2-centimeter accuracy and expand the implementation of new services to the customers. With higher positioning accuracy, IoT devices would perform better with great returns of time and costs.

Standard GNSS services
2 meter accuracy

High-accuracy GNSS correction services
2 centimeter accuracy

Your SIM card
Provide 2-centimeter accuracy to IoT device manufacturers to enhance the potential of your value proposition.

Smart Infrastructure
In the context of Smart Infrastructure, accurate measurement is essential for transportation, safety, resource management and cost savings (e.g., positioning of people and devices, tracking solutions – including the deployment of local geofences to notify movement away from the perimeter).

Internet of Things

Enhancing IoT devices' positioning

Entering the Internet of Things era requires a radical shift. IoT goes far beyond the idea of products as typically thought. Products are framed in both their physical and digital features. The continuous stream of collected data provides a digital representation of products in real-time through connectivity and positioning. This means that each physical product is represented by its "digital twin." For instance, OEM customers will know how their products have been used in the environment into which they operate. The more the environment is connected, the greater the chance to perform deep analytics and discover reliable information models. Digital twins make it possible to visualize updated representations of products' position, performance and conditions. It is possible to know whether they were altered or malfunctioning in a specific environment.

Smart Connected Products

Through smart, connected products, companies can better understand the customer experience by gaining accurate information about product usage and customer preferences in a specific environment. Precise positioning at centimeter level will provide additional insights for improved analytics and innovative tracking solutions. This will be an asset to perform finer customer segmentation and work out new insights on product design and manufacturing, with a great return to prevent customer defections and understand where a customer could benefit from additional product functionalities or tailored services.

IoT and Telecommunications

The adoption of IoT technologies into the telecommunication sector will create new value through data. Internet of Things devices will bring the telecommunication sector closer to the machine-to-machine connections. Telecommunication companies will benefit from the opportunity of rolling out new applications with superior functionalities for uninterrupted services.

This scenario would reshape current business models by empowering companies with the option of product-as-a-service business models and succeeding in new business relations with their customers.
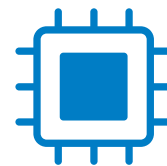
Topcon OEM hardware components
Smart connected products can provide enhanced positioning, navigation and timing with Topcon GNSS boards.

Topnet Live

Global GNSS correction services for IoT devices

GNSS correction services and hardware for improved data services through positioning.

The conjunction of the telecommunication sector and Internet-based real-time technologies will shape a cyber-physical system to offer a unified and multifaceted set of services. This scenario will bring new value to client companies. Each process of the chain can be monitored and compared with others to understand how assets are working together, know their status, energy consumption and performances in a specific environment.

Accurate positioning, navigation and timing (PNT) will be a core factors. GNSS technology is a key enabler for this paradigm shift.

Topnet Live is a real-time GNSS correction service delivering high-quality data to GNSS receivers.

Positioning, Navigation and Timing

Positioning is the capability to accurately and precisely determine an asset's location through a satellite navigation system with global coverage (GNSS). IoT devices are usually equipped with 2-meter accuracy GNSS receivers. Topcon GNSS Correction Services can provide up to 2-centimeter accuracy to IoT devices. This would improve the navigation system by determining more accurate data for optimized orientation, route-planning and geo-fencing. The Coordinated Universal Time (UTC), based on the uniform atomic time scale International Atomic Time (TAI), would ensure the most accurate timing anywhere in the world.

GNSS Correction Services

A GNSS receiver needs to compensate for inaccuracies caused by satellite constellations, receiver hardware, and atmospheric conditions to provide precise positioning accuracy.

These inaccuracies can be calculated by a network of fixed reference stations that constantly receive GNSS data.

This correction information is then broadcast to GNSS receivers as a correction service. Topnet Live is a real-time GNSS correction service delivering high-quality data to GNSS receivers.

GNSS Correction Services

- 2-centimeter accuracy with great return in terms of improved positioning, navigation and timing.

- Enhanced geo-marketing activities. Consumer behavior is processed and combined with positioning data to provide targeted and preference-based offers.

- Advanced route planning and turn-by-turn systems to monitor users' performance and status.

- Enhanced applications for safety, monitoring, health and impairment services.

Hardware

- Topcon has 20+ years experience in hardware design and development.

- With 2150+ patents, Topcon designs and develops technology for a broad set of application fields (infrastructure, construction, agriculture, survey, monitoring, logistics and more).

- Full capability to assist any manufacturer with fully integrated machine automation solutions, no matter where they are located.

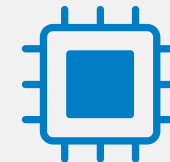- Advanced testing facilities around the globe.

Topnet Live

GNSS high-accuracy correction services

Telecommunications

Telecom companies can bundle GNSS correction services and broadband connectivity in a unique offering for IoT devices

Topcon OEM hardware components

Supplying hardware and expertise to IoT device manufacturers

Information for OEM

Trust Topcon

We are the ideal partner for developing advanced solutions for your positioning and machine control challenges. Our experience, technical expertise and overall company strength make us uniquely qualified to provide enhanced automation technology and ultimately drive your customers' productivity – along with your market share – to ever higher levels.

SPEED TO MARKET | GLOBAL NETWORK | EXPERIENCED OEM TEAM

A History of Topcon Corporation
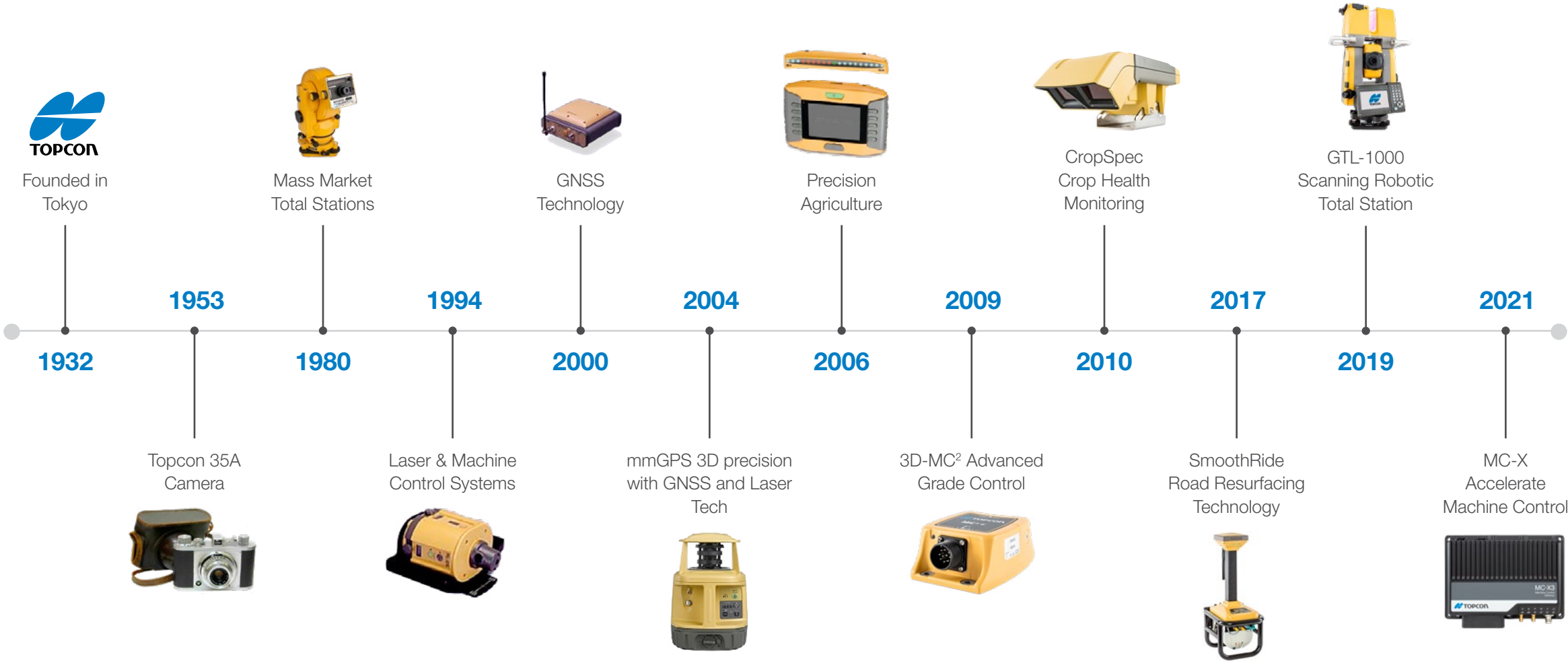
Founded in
Tokyo

Mass Market
Total Stations

GNSS
Technology

Precision
Agriculture

CropSpec
Crop Health
Monitoring

GTL-1000
Scanning Robotic
Total Station

1953

1994

2004

2009

2017

2021

1932

1980

2000

2006

2010

2019

Topcon 35A
Camera

Laser & Machine
Control Systems

mmGPS 3D precision
with GNSS and Laser
Tech

3D-MC^2 Advanced
Grade Control

SmoothRide
Road Resurfacing
Technology

MC-X
Accelerate
Machine Control

Information for OEM

Trust Topcon to get you there faster with high-quality positioning and automation solutions tailored to your product strategy.

Independent solutions

In an industry with many contractual alliances, we remain independent. We have the freedom to develop technologies that best fit your unique goals. Our custom OEM solutions are all clean-sheet designs, providing more opportunities to differentiate your product from the competition.

Speed to market

Product development carries an inherent pressure to do everything faster and better than before, particularly since technology is only viewed as innovative if it arrives before the competition. Our experience helps simplify and shorten the design process, allowing you to go to market with your product faster – and with the utmost confidence.

Topcon Training Center,
Livermore, CA

Topcon Technology
Roadshow Truck

Topcon Positioning Systems Headquarters,
Livermore, CA

Information for OEM

4900+ Employees | **2150+ Patents**

Global Network

With an extensive worldwide network of corporate offices, R&D centers and technical groups, we have an unmatched capability to assist any manufacturer, no matter where they are located, with fully integrated machine automation solutions. This also positions us to create programs to assist and support dealer networks, directly or through extensive training programs.

Experienced OEM Team

Our experienced OEM team knows what questions need to be answered first and the potential pitfalls to be avoided along the way. Their first objective is to make sure our technology is the right fit for your application and be your partner every step of the way.

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Training Center

Topcon Training Center
Concordia, Italy

Topcon Training Center, Concordia provides facilities and advanced equipment for testing and training purposes. The training programs offered have been developed to provide advanced knowledge of Topcon GNSS technology, correction services as well as to improve operators' skills and expertise in ICT-aided construction and agriculture.

The campus covers an area of approximately 135,000 square meters of which 24,000 square meters are dedicated to machine control and precision agriculture testing. The center has classroom facilities on-site accommodating 200+ participants for seminars and coursework ranging from basic to advanced.

Conveniently located in Northern Italy, the Topcon Training Center, Concordia is just an hour away from major Italian airports in the region.

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Training Center

Topcon Training Center
Livermore, California

Topcon Training Center, Livermore is a dedicated space to train our customers, dealers, and Topcon employees on all construction and geopositioning-related products. With nearly six acres, the facility boasts two classrooms, outdoor theatre-style seating for live demonstrations and training and an equipment garage for hands-on installation training.

The training facility plans to train up to 2,000 participants annually. Topcon has designed the training center to simulate live applications that take place on a typical construction site which provides the participants with a fully immersive experience and a heavy focus on job site workflow. An added use of this facility, Topcon offers select OEM prospects the opportunity to fly in their VIPs for a complete workflow demonstration of our products including a hands-on experience.

Livermore is located in northern California and is easily accessed from San Francisco and Oakland airports.

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Always One Step Ahead

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