

Accelerate machine control

MC-Max: The latest innovation in machine control by Topcon



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Accelerate machine control

Machine control technology can improve your workflows, increasing productivity and profitability, while reducing rework and waste.

Planning | Execution | Data Management



Accelerate machine control

The only constant is change

The world of technology changes every day. Anyone who pays little or no attention to these changes and developments will inevitably fall by the wayside, especially in the construction industry.

Construction machines with automatic controls, which guarantee a high level of precision and enable smooth data transfer, form the foundation for efficient execution of a construction project.

Increase the visibility of construction resources and optimize the use of the right machines and the right jobs at the right locations. The result? Lower costs for you.

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Resource management is key

Each construction project is unique; there are no two alike. There are continuous challenges due to diverse conditions, individual requirements for the project and company, different employee qualifications, and a low degree of standardization and repeatability. Skilled operators have never been harder to find and keep. Worker shortages cause delays and limit the ability to win more jobs.

Even when two or more projects are comparable, the conditions are usually different.


Reducing costs without loss of quality is the primary goal for construction companies to beat their competition.



People - As the demand for construction projects grows, the pool of skilled workers is shrinking and their wages are rising.



Material - Poor estimates around what and how much material is needed greatly impact costs.



Equipment - Unoptimized use of machinery increases the cost of maintenance and the need for spare parts.



Budget



Time - Construction has never had a large margin for error – and it is quickly running out of whatever wiggle room it had.

Successful construction projects require effective planning for the crew, the timeline, the equipment and the material.

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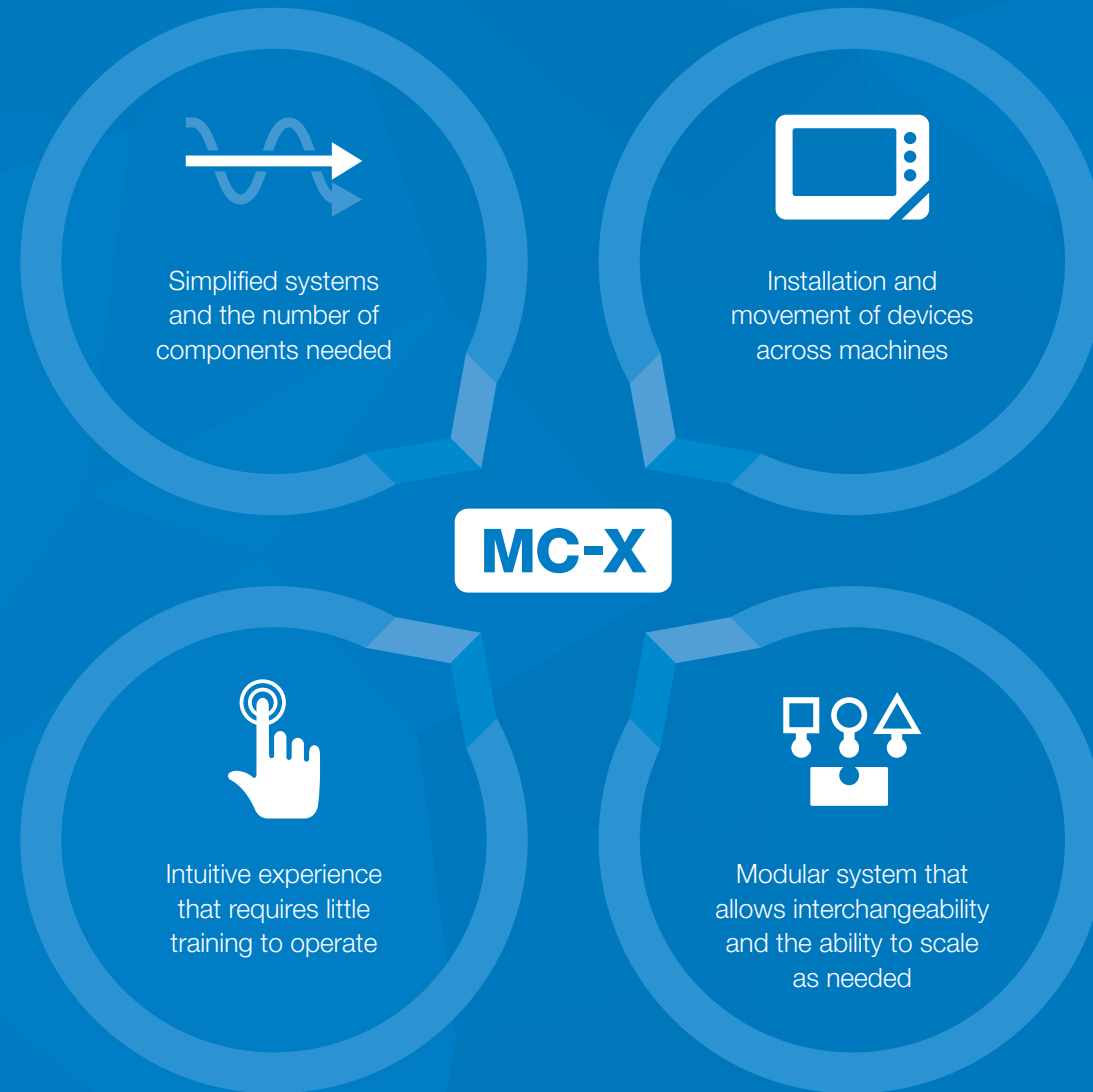
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The solution is flexibility

We designed the MC-X architecture to allow for ultimate flexibility for dozer, grader and excavator systems. Combining multiple communication technologies, support for numerous elevation sensors, IMUs (Inertial Measurement Unit) and GNSS antennas makes this platform the go-to choice for a wide variety of applications.

MC-X leverages modularity and easy-to-use functionalities to help you get more out of your machines with solutions tailored to the way you need to work. This approach reduces unnecessary equipment purchases and gives you a better return on your investment.



The MC-X Platform makes machine control easy to use and affordable for all contractors. The platform ties together mixed fleets by interacting with multiple versions of 3D-MC, providing connectivity to Sitelink3D and taking advantage of the multi-constellation capabilities of GNSS antennas.





Modular components



**Scale with more components
for different machines as fleets grow**



**Connectivity across different
machine communications**



MC-X adapts to your application

Platform advantage

The advantages of flexibility

The MC-X Platform is as flexible as it is powerful. It adapts across applications and machine types. The system improves grading performance and speed for newer and seasoned operators.

Advanced algorithm processing power and modern CAN bus technology make it possible to process positioning data from Inertial Measurement Units (IMUs) at higher rates than previous generation sensors.

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Software and correction services

With a redesigned, immersive software experience, the MC-X Platform delivers the same feature-rich applications as before, now with an easier framework.

Improved control of operation and data is enabled through the seamless experience and integration of onboard and cloud-based services.

We ensure accuracy and reliability, often referred to as a full-constellation service with coverage including the major GNSS satellite systems (GPS, GLONASS, Galileo and BeiDou).

Choose from local base stations or network-based correction solutions. We also provide robotic total station-based positioning systems for situations when satellite coverage is unavailable.



Topnet Live* provides a wide range of global GNSS correction services, with a variety of subscription packages, designed to meet the unique needs of our customers by providing accurate and reliable positioning information.

Eliminating on-site base stations, Topnet Live is increasingly used in high-profile construction projects.

[Click here](#) to learn more about Topnet Live correction services.

*Topnet Live is an additional subscription service.



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Seamless connectivity

A complete redesign of how machines connect to the cloud and job site data management in general.

- Simple and intuitive site data-sharing and synchronization options with Sitelink3D
- Integration opportunities with third-party cloud solution providers support mixed-fleet operations mixed-fleet operations



Planning / Design



Connected via the cloud



Performance / Results




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The Topcon component portfolio*

Trusted GX series displays and a new Android tablet for MC-Mobile systems




Precise inertial sensors for measurement of inclination and rotation




Compact, rugged, state-of-the-art controllers designed for machine guidance and control applications




UHF and Spread Spectrum (SS) GNSS radios



Compact, safety-certified valve controllers and joysticks



Traditional 2D elevation sensors



A selection of full-constellation GNSS antennas, LPS prisms and Millimeter GPS sensors



*Components will vary with applications.

Platform modular components overview



Powerful control unit

The heart of the MC-X Platform is the control unit.

MC-X1 is the ECU with high-processing power capable of simple slope control and 2D and fully automatic control. The MC-X1 provides ultimate flexibility.

MC-X3 has the same powerful processor as the MC-X1 with integrated UHF, spread spectrum and cellular*¹ communications all inside the same housing. The MC-X3 also has the option of built-in single or dual high-precision, multi-constellation GNSS to provide a convenient, all-in-one device.



Precise angle measurement

TS-i4 Inertial Measurement Units (IMUs) take state-of-the-art MEMS technology and package it in a compact, ruggedized sensor for mounting on the machine body, blade and bucket.

TS-i4s provide static and dynamic angular accuracies – even when its -30°C outside.

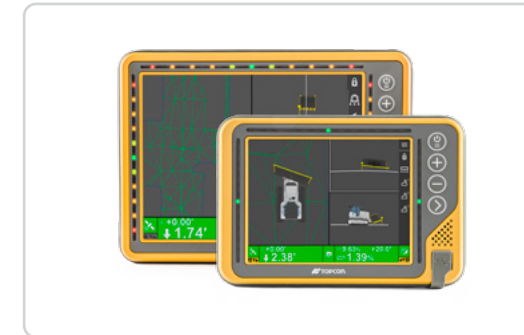
Since TS-i4s have such small gyro-drift, they can be used for precise blade-yaw, body- and boom-swing estimation.



Multi-constellation, wired and wireless GNSS sensors

New receivers track all major constellations, including BeiDou and Galileo.

Rugged integrated receiver/antenna designs offer greater flexibility and less signal loss than previous models.



Rugged, wired and wireless displays

The MC-X Platform supports our traditional, rugged GX series displays for reliability in extreme environments.

The MC-X platform also supports wireless tablets that can be moved from machine to machine and from machine to range pole for MC-Mobile*².

¹ Cellular services may require an additional fee.
² Fully automatic blade and bucket control limited to use with GX series displays

The advantages of a truly modular platform

Click on the sections to see more details.

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Machine control's power to improve a business

Fewer workers to complete the same jobs

Cut construction costs

Complete inspections as you work

Shorten construction timelines

Improve accuracy and minimize error

Reduce material waste

Win more contracts

Increase competitiveness



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MC-Max explained

Get more out of your construction workflow.

Planning | Execution | Data Management



Introducing MC-Max

Complete visibility for complex operations

MC-Max is the latest evolution of machine control, designed as a solution for a mixed-fleet environment backed by a real-time, cloud-based data-management ecosystem.

We have created a flexible solution that can continue to grow as your needs and capabilities expand. MC-X can be installed on a full range of machines using the same components.

With MC-Max, machine control isn't just for certain aspects of a job, but across the entire workflow, as well as across multiple locations.

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A fully redesigned experience

The MC-X Platform gives operators an improved user experience and intuitive interactions between the control system and design interface.

The screen now scales the machine size based on the configuration file to increase the accuracy of the machine's components and footprint representations in relation to polylines, curbs and potentially dangerous job site obstacles and areas.

This same scale-accuracy gives remote Sitelink3D users a clearer real-time view of machine positions, activities and onsite progress.



A new level of performance

MC-Max can increase your speed, accuracy, versatility and reliability. The modern redesigned user and product interfaces are based on real-world applications, customer needs and feedback.

Designed for a full range of applications on a broad range of machines, the modular, flexible solution adapts to your needs across your fleets and as you scale.

Some modular components of MC-X can be moved from machine to machine. Buying fewer components can reduce your cost.

The simplified and immersive user experience allows an operator to learn the system without any prior knowledge or skill.



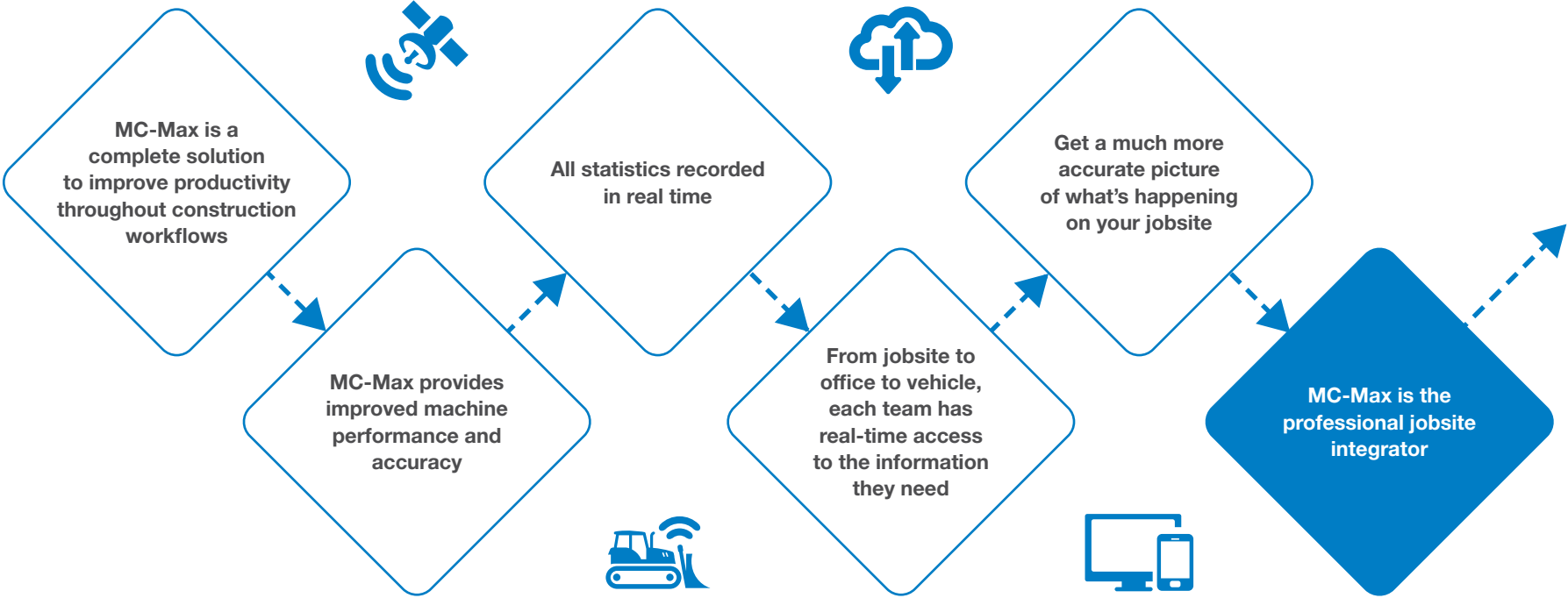
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A flexible solution to get more out of your construction workflow



- Flexible cab- and blade-mounted solutions
- Optional automatic blade and bucket control
- Plug-and-play flexibility of positioning technologies ranging from slope control to laser, 3D GNSS multi-constellation, Local Positioning System and Millimeter GPS
- Flexible site communications options

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Power meets flexibility

Advanced machine control technology meets contractors where they are. Because the MC-X Platform delivers modular components, the MC-Max solution can carry through an entire operation and create visibility between processes and locations.



Click on the boxes to see more details.

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Excavation

Get more accurate cuts every time, meaning no more double-handling of materials. Lower your time per stage, man-hours, truck time and diesel expenditures. Each of those elements adds up, where even one less cut can mean massive savings.

Rough grading

MC-Max replaces feel and guesswork with precision and accuracy. Automatic functionality ensures your work is on-grade.

Connectivity

With Sitelink3D*, files easily transfer between the office and machinery. The operator performing the job can quickly and easily send as-built drawings back to the office.

Plus, being connected means that remote support is available for operators needing information or assistance.

*Requires optional Sitelink3D service.

**No more overcutting
Less rework**

No longer 'by feel'

**Keep the jobsite
and office in sync**

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Why MC-Max?



Minimized stake out on the jobsite



Reduce the amount of people needed



No delays waiting around for skill-specific people to show up



Always perform great work on time



Accurate and validated work and elimination of rework



Enhanced ability to confidently do more jobs in a year



Track and measure all activities and amounts of material moved



Automated machines allow more competitive bids



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The MC-X Platform: flexible solutions



MC-Max

Full functions and automatic

Dedicated to one machine to improve the performance of that machine



MC-Mobile

Portable indicate functionality

Many components can be shared across machines or used to self-perform measurement and layout tasks



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About Topcon

Our technology can improve your workflows for increased productivity and profitability while reducing rework and waste.

Information for OEM



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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

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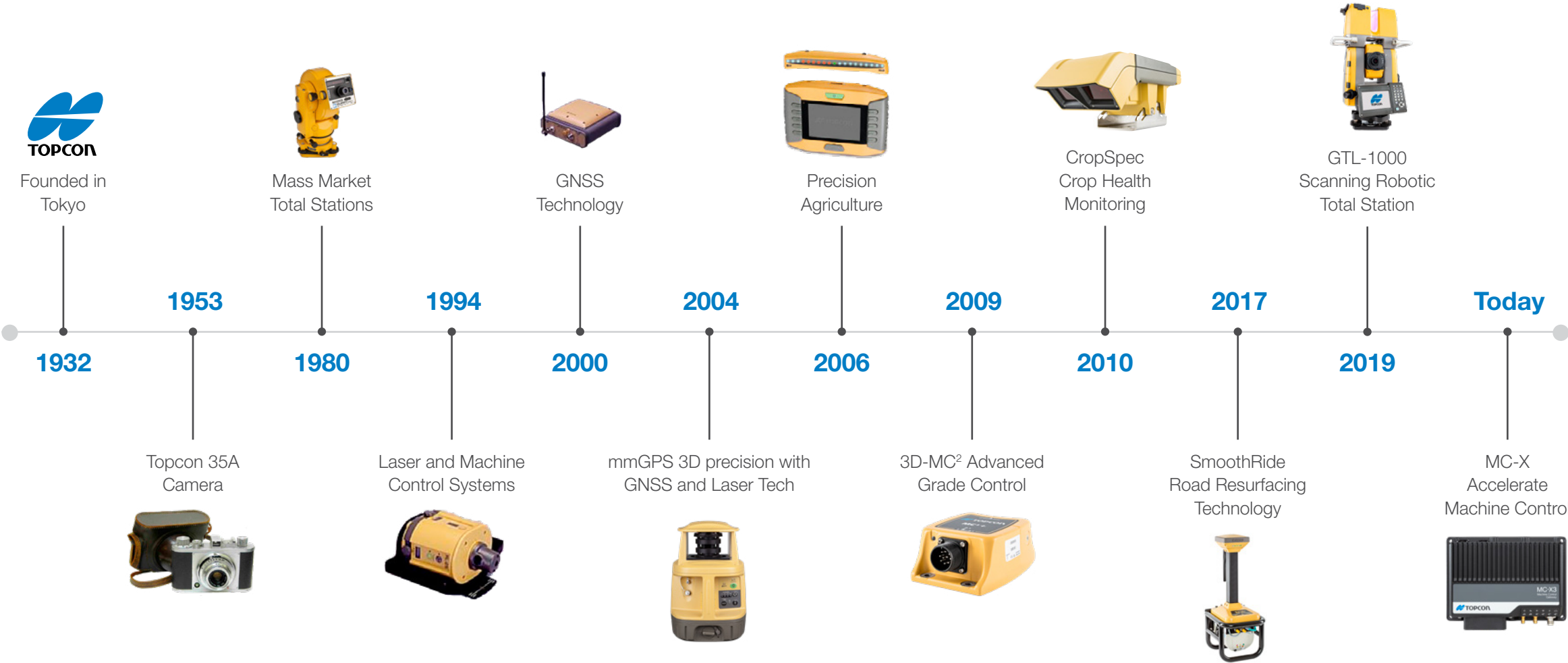
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A History of Topcon Corporation

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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

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4900+ Employees | 2100+ 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 will be your partner every step of the way.

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Always One Step Ahead

topconpositioning.com

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