Topcon for Human Life

https://global.topcon.com

TOPCON CORPORATION

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TOPCON

A digital transformation
with a human touch

Corporate Profile

Contents

TOPCON WAY

Corporate Identity

Topcon contributes to enrich human life by
solving the societal challenges
within healthcare, agriculture and infrastructure.

Management Policy

Topcon focuses on leading-edge technology to
provide new value through innovation and manufacturing.
Topcon respects diversity and acts as a global company.
Topcon places the utmost priority on compliance and
continues to be a trustworthy partner to all stakeholders.

Topcon for Human Life

Societal issues around the world

If eye disease is found earlier,
people might not go blind.

If food production is more stable,
people might not suffer from hunger.

If there are safer bridges, families might be able to
attend hospitals and schools.

At least 2.2 billion people have a vision impairment globally.
Over 800 million people are affected by hunger globally.
Globally, almost 1 billion people don't have
safe access to health care or education.

Let's focus on what is happening in the world.
Look around and imagine someone in trouble.

This is the future Topcon is aiming for

A world where everyone can live
a comfortable life with healthy eyes.

A world where everyone can benefit from
robust and stable food production.

A world where everyone can live safely in
an environment with good infrastructure.

Look at what's going on in the world and
imagine everyone happy.

We can make that happen with our innovation
and technology.
Topcon has that in mind.

A digital transformation with a human touch

Our innovative technologies are changing the ways to detect and treat eye diseases, build cities, and produce the food needed to feed our world. We’re creating solutions that make a positive impact now and finding new paths to a better, more sustainable future.

Healthcare | Agriculture | Infrastructure

Topcon’s digital transformation

That's why Topcon continues to solve societal challenges in healthcare, agriculture, and infrastructure with our leading-edge digital transformation solutions to help people around the world live better lives.

医 Healthcare

Societal challenges

- Increase in eye disease resulting from global population aging
- Global shortage of ophthalmologists

Topcon's Solution

Creating a system for eye disease screening

7 P

食 Agriculture

Societal challenges

- Food shortages resulting from global population growth
- Decreases in crop production and damage caused by global warming and extreme weather events

Topcon's Solution

Automation of farm operations

11P

住 Infrastructure

Societal challenges

- Shortage of skilled engineers resulting from globally rising infrastructure demands
- Intensifying and frequent disasters associated with climate change

Topcon's Solution

Automation of construction process

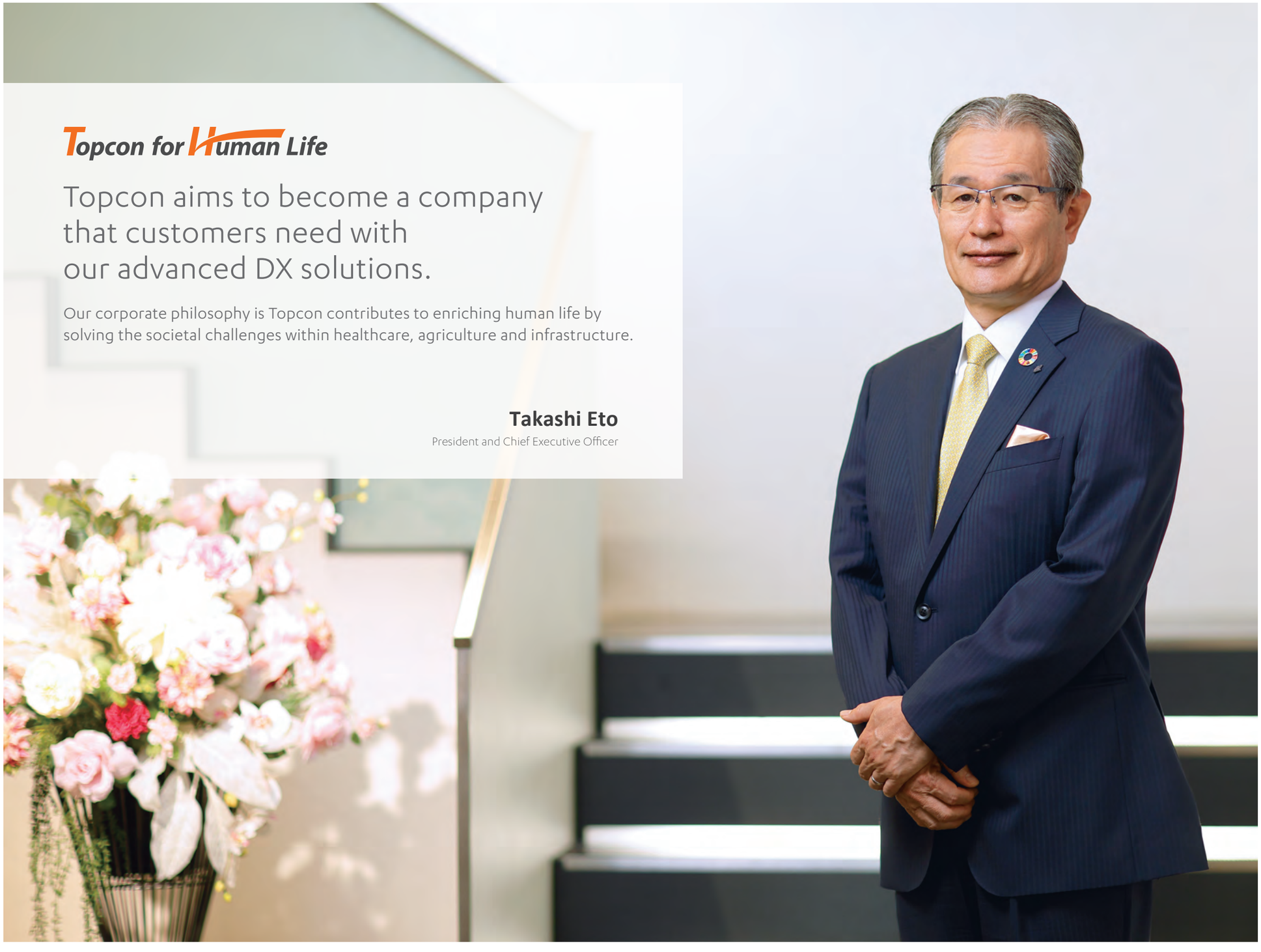
15P

Topcon for Human Life

Topcon aims to become a company that customers need with our advanced DX solutions.

Our corporate philosophy is Topcon contributes to enriching human life by solving the societal challenges within healthcare, agriculture and infrastructure.

Takashi Eto
President and Chief Executive Officer



Since our founding, we have developed our business globally, focusing on surveying instruments and ophthalmic medical devices, leveraging our strengths in precision optics and optomechatronics technology.
In 1994, we came up with a new concept of "automating the construction process," which no one had thought of at that time, and created a new business market and potential demands.

This was a turning point, and we promoted mergers and acquisitions of various overseas technology venture companies and distribution companies, integrating our unique technology and ideas and transforming into a solution provider for the "healthcare, agriculture, and construction industries."

Our customers are professionals with specialized knowledge. With a "Think Global, Act Local" mindset, we try to explore their needs, listen to their opinions, and propose new unique DX solutions they don't even think of to contribute to creating a prosperous society globally.
This is the "TOPCON WAY" that we aim for.

Going forward, with a customer-oriented, field-oriented approach and a spirit of challenge, we will continue to strive for "the company that is needed" by stakeholders and promote ESG (environmental, social, and governance) management through our business.

A digital transformation with a human touch

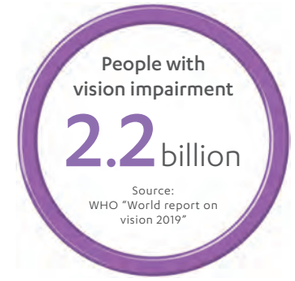
Future of Topcon's "Healthcare"

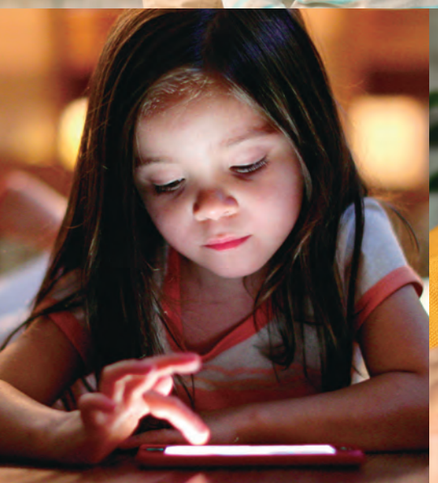
Initiatives to help people live a healthy, comfortable life

Globally, it is estimated that one out of 3.5, or approximately 2.2 billion people have visual impairment. Furthermore, eye disease due to ageing and lifestyle changes are on an increasing trend, becoming a global issue. Eye are an important organ, with over 80% of the information obtained in daily life coming directly from the eyes. Topcon is working on creating a system that supports early detection/early treatment of eye diseases in order to maintain healthy eyes.

KEY POINT

Current situation of the global "healthcare" in numbers





Societal Challenge

Global increase of eye diseases and shortage of ophthalmologists

Countermeasure

Creating a system for eye disease screening

Future

Health maintenance of the entire body through the eyes

Increase of eye diseases due to global ageing and lifestyle changes

Globally, approximately 2.2 billion people have vision impairment. Causes of vision impairment include typical eye diseases such as cataract, age-related macular degeneration and diabetic retinopathy, as well as presbyopia and high myopia*. Eye disease is said to be difficult to cure completely once it has progressed to the point that the patient notices its symptoms. In recent years, the healthspan of the body is becoming longer in accordance with the ageing population, but the "healthspan of the eyes" is not extended proportionally. Rather, the risk of eye disease is increasing with age. In addition, in this era of digitization where smartphones are globally widespread, near-sightedness among the younger generation is expected to increase as well. In contrast, the number of ophthalmologists is estimated at around 240 thousand globally, leading to a challenging situation in which some patients may lose their sight for not being able to receive diagnosis or treatment due to a shortage of doctors, especially in emerging countries.

Early detection/early treatment of eye diseases by enabling screening in places other than ophthalmic hospitals

The progress of eye diseases can be delayed by treatment, but a complete cure is difficult. Therefore, early detection before symptoms progress is critical. While there is a global shortage of ophthalmologists, it is estimated that there are approximately 2 million general practitioners and 1 million optical and drug stores. If eye health checkups can be performed at familiar places like this, early detection/early treatment of eye diseases may be possible. Topcon believes that by combining systems that enable remote diagnosis with fully-automated screening equipment that can be easily operated by non-clinical staff, we can increase opportunities for eye screening, or eye health check-ups to support early detection and diagnosis.

A healthy and comfortable life with the widespread use of eye screening

Topcon is contributing to the promotion of eye screening through coordination with optical stores, drug stores and health check centers, as well as the development of screening equipment that can be operated easily by non-clinical staff. Our vision is for a screening system that has global application, meaning more people will have less risk of losing their sight to preventable or treatable eye disease. Furthermore, in recent years, studies that detect symptoms of non-ocular diseases such as dementia and arteriosclerosis from fundus images have been published**, ***. Based on its mission "Healthcare Through the Eye," Topcon is working towards a future where eye health check-ups can have a more holistic application to both eye and general health, making it easier for people to lead healthy and full lives.

* WHO "World report on vision 2019"
** Peter J Snyder, Jessica Alber et al. Retinal imaging in Alzheimer's and neurodegenerative diseases. 2021 Jan;17(1):103-111.
*** Wong TY, Klein R, Couper DJ, Cooper LS, Shahar E, Hubbard LD, Wofford MR, Sharrett AR. Retinal microvascular abnormalities and incident stroke: the Atherosclerosis Risk in Communities Study. Lancet. 2001; 358:1134–1140.

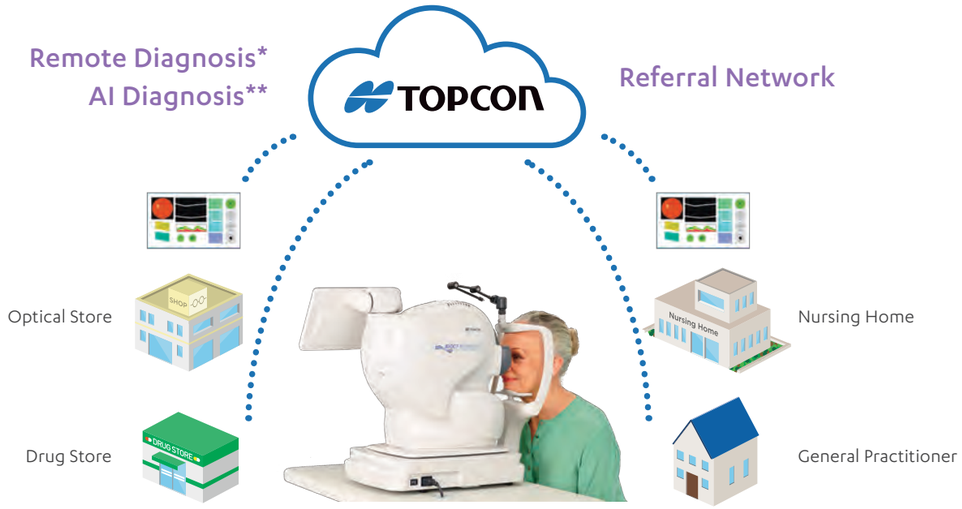
Digital (DX) solutions to solve societal challenges

Contributing to the early detection/early treatment of eye diseases through the creation of the eye screening system

DX solution offered by Topcon

Contribute to the early detection/early treatment of eye diseases and improvement of medical efficiency by making fundus photography available in settings that people frequent, such a general practitioners and optical stores, thereby utilizing cloud-type IoT platforms to enable remote diagnosis by specialist physicians and AI diagnosis.

Creating a system for eye disease screening



Screening examination becomes available at the places other than ophthalmology

* to digitally control images captured by Topcon's hardware devices, and to have doctors diagnose from a remote location
** combining Topcon's hardware device "TRC-NW400" and software developed by other companies (e.g., "Idx-DR" by Digital Diagnostics Inc. etc.), enabled by the software. Japan is outside of the applicable area

learn more

Solution technology offered by Topcon

Proprietary technology that enables a healthy and comfortable life

Using Topcon's proprietary technology such as the fully-automated screening devices and digital tele-medicine, images and examination data necessary for diagnosis can be obtained easily. Since the data management system enables integrated management of optometry data and fundus images, data-sharing and coordinated diagnosis between medical institutions will become possible.


Fully-Automatic Screening Equipment


Tele-Medicine


Data Management System

Report

Case Study Report of Issue Solving

in Australia


Mobile examination Vision Van


Route of the Vision Van crossing the vast land of Western Australia

Aboriginal medical staff performing examination using a full-auto medical device

Contributing to the prevention of blindness among the Aboriginal people; supporting remote eye care

The rate of blindness among Australia's Aboriginal people is about three times that of non-indigenous people. Of these cases, it is said that 90% could have been prevented*.
Topcon, assenting to an NGO that offer remote diagnosis services in Wester Australia to promote the early detection/early treatment of eye diseases and prevent blindness, provided fully-automatic medical devices and remote care platforms. By installing Topcon devices on the NGO's mobile vision van to support remote check-ups and having expert ophthalmologists perform remote diagnosis by reviewing data via the cloud, Topcon supported real-time remote eye care in remote indigenous communities. By supporting the remote medical system using Topcon's systems, we are contributing to the early detection/early treatment of serious eye diseases such as diabetic retinopathy.

*The Fred Hollows Foundation https://www.hollows.org/au/what-we-do/indigenous-australia/aboriginal-and-torres-strait-islander-eye-health

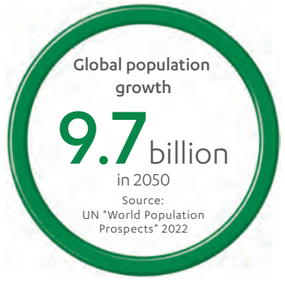
Future of Topcon's "Agriculture"

Initiatives to provide people with a rich and stable diet

It is said that 1 in 10 people worldwide suffers from hunger due to a lack of food caused by poverty and natural disasters. In the future, crop acreage per person is expected to decrease due to population growth, and crop yield is becoming globally unstable due to the frequent occurrence of abnormal climate. Topcon is working on improving productivity and quality of agriculture for stable food production.

KEY POINT

Current situation of the global "agriculture" in numbers



Societal Challenge

Concerns for food shortage and unstable crop yield

Countermeasure

Automation of farm operations

Future

Enabling environmentally friendly agriculture

Unstable food supply demands due to global population growth and climate changes

800 million people in the world face hunger. It is said that 278 million people in Africa (1 in 5 out of the entire African population) and 425 million people in Asia suffer from hunger*. The global population is currently approximately 8 billion, which is expected to reach 9.7 billion by 2050. In contrast, the global crop acreage is limited. In addition, due to the unstable crop yield caused by recent climate changes, food production for the entire population may become harder and harder. Furthermore, in recent years, fuel and fertilizer prices are skyrocketing due to the destabilized global situation, which leads to a concern about the rise in production costs. To achieve the UN goal to eradicate hunger by 2030, global agricultural productivity needs to be improved by 28% in the coming decade**.

Improve productivity and quality through unified data management and auto-steering of agricultural machinery

To produce enough food for everyone, maximizing productivity within the limited farmland is important. However, in reality, the accurate operation of agricultural machinery or the appropriate area and amount of water and fertilizer depends on the farmers. Topcon offers solutions that lead to streamlining work, yield maximization and quality improvement by optimizing the rate of fertilizer application through the promotion of digitization and automation of agricultural tasks, analyzing the data obtained and visualizing the changes over the years.

A rich and abundant food supply for everybody through sustainable agriculture

By aiming for the improvement of productivity and quality through "automation of farm operations", Topcon will contribute to resolving concerns about food shortage. In addition, the introduction of auto-steering of agricultural machinery reduces operating hours by 20%, which enables CO_2 reduction. Furthermore, by appropriately controlling fertilizer, pesticides and water usage through the utilization of growth data, soil pollution can be prevented and water can be saved. Topcon will aim for a rich and abundant diet for everybody by promoting sustainable agriculture through "automation of farm operations" that can help conserve the environment and eradicate hunger.

* UN "The State of Food Security and Nutrition in the World Report (SOFI)" 2022
** OECD (Organisation for Economic Co-operation and Development) - FAO (Food and Agriculture Organization) "Agricultural Outlook 2022-2031"

Digital (DX) solutions to solve societal challenges

Contributing to the improvement of productivity and quality through "automation of farm operations"

learn more

DX solution offered by Topcon

Unified management of all data of the agricultural management cycle (planning, seeding, growing and harvesting). Through performing agricultural tasks combining auto-steering systems and growth sensors based on those data, Topcon will contribute to the improvement of productivity and quality of agriculture.

Automation of farm operations

Planning ▶ Seeding ▶ Growing ▶ Harvesting

Auto steering and unification of data management

Solution technology offered by Topcon

Proprietary technology that enables a rich and abundant diet

Topcon enables the optimization of agricultural tasks, including the use of fertilizer and pesticides, through the unified cloud management of farm management cycle data. Our agricultural management system features an auto-steering system that utilizes precision GNSS (global navigation satellite system), and laser-type growth sensors that measure the growth of crops in a non-contact manner.


Auto Steering System for Agricultural Machines


Crop Canopy Sensor

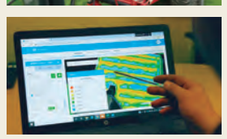

Agriculture Management System

Report

Case Study Report of Issue Solving

in Ireland

Laser-type growth sensor



Visualizing by color-coding the level of crop growth on the map

Fertilizer distributor mounted with laser-type sensors and auto-steering system

Contributing to "green" agriculture in harmony with the environment "Visualize" the level of growth to increase potato production

With the aim of environmentally friendly and sustainable agriculture, a large-scale potato farm in Ireland was searching for a method of farming that could reduce chemicals such as pesticides while maintaining productivity. They used Topcon's laser-type growth sensors to research the correlation of changes in soil caused by the amount of fertilizers and pesticides and the growth level of potatoes, and succeeded in eliminating excessive use of chemicals. In addition, their crop yield increased in areas that were considered to be difficult soil by enabling the optimization of fertilizer use. They also contributed to the reduction of CO_2 by using Topcon's auto-steering system. With our systems, Topcon will contribute to a "green agriculture" that enables improved productivity and reduced environmental burden.

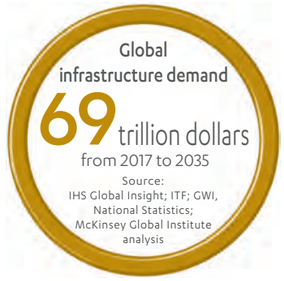
Future of Topcon's "Infrastructure"

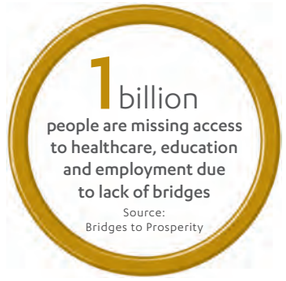
Initiatives to build a social infrastructure that enables people to live with peace of mind

Demand for infrastructure is rising worldwide, while sufficient investment is difficult to secure and there is also a shortage of skilled construction engineers. In addition, the increasing intensity and frequency of natural disasters due to climate change call for the maintenance and fortification of social infrastructures. Topcon is working on streamlining and improving the quality of construction work for an urban development that enables people to live in affluence.

KEY POINT

Current situation of the global "infrastructure" in numbers





Societal Challenge

Increasing demand for infrastructure and increasing intensity of natural disasters

Countermeasure

Automating the construction process

Future

Foothold for a good life and economic growth

Global infrastructure demand due to urban development and disaster control

It is said that around 1 billion people worldwide are missing out on healthcare, education and employment because they have no access to a bridge safe enough to cross (case study introduced on next page)*. In emerging countries, the maintenance of social infrastructure that supports the development of cities is required in accordance with the rapid increase in population and economic development. Meanwhile, demand is increasing for urban redevelopment and maintenance of antiquated roads and bridges in developed countries too. In addition, the fortification of infrastructure as a means for disaster control is required worldwide in response to recent climate changes. To build a social infrastructure that enables everyone to live with peace of mind, it is said that a total of 69 trillion dollars is necessary from 2017 to 2035**. However, sufficient construction investment that can respond to the escalating demand for infrastructure cannot be secured, and skilled construction engineers are in shortage.

Resolve shortage of labor and improve productivity by unified management of the construction workflow

To respond to the globally rising demand for infrastructure amidst this investment and labor shortage, construction work productivity must be improved even more. Construction work depends highly on the expertise of skilled workers, while digitization and automation have been slow to come. Topcon aims to resolve this labor shortage and improve productivity by optimizing the construction workflow of measurement, design, construction and inspection through digitization and automation. Specifically, by using 3D measurement devices to create 3D digital data of the entire construction site and combining the IT construction that robotizes construction machinery and the system that manages data on the cloud, we believe that it is necessary to "automate the construction work" which leads to the improvement of productivity and quality.

A social infrastructure in which everyone can live in affluence with peace of mind

Through the "automation of construction work," the social infrastructure. It will be maintained and will contribute to the development of a city that is resilient to disasters, where people can live with peace of mind. By maintaining a stable social infrastructure, people will have better access to healthcare, education and employment, which will invigorate the industry and lead to the economic growth of the country and the region. In addition, the IT construction system can reduce the operating hours of construction machinery by approximately 30%, contributing to the reduction of CO_2 as well. Topcon aims for a future in which everyone can live in affluence with peace of mind by contributing to sustainable urban development through the environmentally conscious "automation of construction work."

* Estimates from Bridges to Prosperity
** IHS Global Insight; ITF; GWI, National Statistics; McKinsey Global Institute analysis

Digital (DX) solutions to solve societal challenges

Contributing to improved productivity and resolving labor shortages through "automation of construction work"

learn more

DX solution offered by Topcon

We are identifying work progress, operation status of construction machinery and material control on a real-time basis by connecting data from the IT construction system and 3D measurement devices to the office. Unifying management of the construction workflow of measurement, design, construction and inspection contributes to improving productivity and resolving labor shortages.

Automation of the Construction Process

Survey ▶ Design ▶ Construction ▶ Inspection

Unification of construction work flow

Solution technology offered by Topcon

Proprietary technology that enables a social infrastructure in which people can live with peace of mind

Combining high-precision 3D position measurement technology and precision hydraulic control technology enables an IT construction system that automatically controls construction machinery based on 3D design data. In addition, with the real-time construction management system, the construction site and the office are connected via the network, and the digital data is uniformly managed to streamline construction work.


3D Measurement Equipment


IT Construction


Real-time Construction Management System

Report

Case Study Report of Issue Solving

in Rwanda

Completed Pedestrian bridge and 3D measurement equipment provided by Topcon

Contributing to creating access to healthcare, education and employment by building bridges for communities that risk isolation

To improve the lives of people in areas where access to healthcare, education and employment is insufficient due to a lack of bridges, Topcon has provided measurement devices and software to a U.S.-based NPO with the aim of "eradicating poverty caused by isolation by connecting communities with bridges worldwide." By sharing on-site measurement data with the engineering team in a remote location, the construction process can be made more efficient, productivity and quality can be improved, and bridge construction in emerging countries can be supported. Topcon will continue to support this project and contribute to the bridging of communities.

Creating new values through combining technologies

Since the company's foundation, Topcon's core technologies are optics and sensing technology. Topcon has continually evolved its unique core technologies by aggressively incorporating peripheral and applied technology according to the time and needs. Furthermore, we have acquired high-end technology through M&A and Alliances of more than 35 tech ventures. By combining them with our core technology, unique products and solutions that no one ever imagined have been created. This is how the company has stimulated potential customer demand and opened up the blue ocean market.
In addition to R&D and product development, we have worked on strengthening intellectual property, production and manufacturing technology, and technology management systems, establishing the solutions that can offer and respond to future global needs.
In order to solve societal challenges in "healthcare, agriculture and infrastructure," we will continue to work on developing solutions through digital transformation with a human touch.

医 Healthcare

Technology contributing to the field of "healthcare"

Creating a system for eye disease screening

Helping people live a healthy, comfortable life

By applying our original optical design and interference measurement, the 3D structure of the posterior part of the eye is visualized in vivo. In addition, by combining the profound knowledge of ophthalmological optics and real-time image processing technology, the complicated fundus imaging process can be fully automated, enabling a simple and unified fundus measurement.

食 Agriculture

Technology contributing to the field of "agriculture"

Automation of farm operations

Helping feed a growing world

By applying the laser spectrometry technology and the auto-steering system of agricultural machinery using GNSS (global navigation satellite system) antenna technology, a non-contact sensor that measures the growth status of crops has been developed. Then, agricultural data can be easily managed by combining these solutions, enabling the maximization of yield and product quality improvement.

住 Infrastructure

Technology contributing to the field of "infrastructure"

Automation of construction process

Helping build a strong, sustainable future

By combining 3D position measurement technology with IMU (inertial measurement unit) and hydraulic control technology, a high speed and high accurate automated construction system has been established in IT construction. In addition, by using the remote monitoring system with IoT devices, it enables streamlined work at the construction site, improving the efficiency and management of daily processes at the remote office.

Applied technology

- Image Processing: Point-cloud processing, 3D Modelling, 3D imaging measurement, Object tracking
- Machine Learning: Object recognition, High-precision sensing, Diagnosis support, Optimization

Applied technology

- Automation: IMU, Hydraulic control, Motor・Actuator control, Auto-Steering
- Remote Operation: Edge computing, IoT, Wireless network, Cloud computing

Advanced technology

M&A・Technology fusion

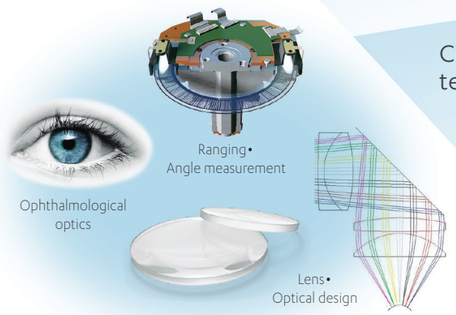
Core technology

Sensing technology

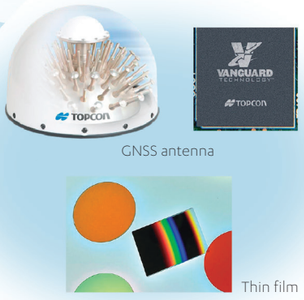
- Interferometric measurement
- Ranging・Angle measurement
- GNSS antenna
- Optical sensor

Optical technology

- Ophthalmological optics
- Laser technology
- Thin film
- Color optics
- Lens・Optical design



Core technology



GNSS antenna

Thin film

Topcon's Sustainability

The Topcon Group, as a corporate group that provides products to the global market, aims to contribute to the achievement of the SDGs (Sustainable Development Goals) and sustainable growth by adhering to the management philosophy of "Topcon contributes to enrich human life by solving the societal challenges within healthcare, agriculture and infrastructure."
In pursuit of this realization, Topcon group has established management visions for each of the E (Environment), S (Social), and G (Governance) aspects, targeting the year 2030. Through the practice of ESG management, Topcon seek to enhance our corporate value further.

Topcon's Materiality and SDGs

To implement ESG management, Topcon group has identified six materialities as particularly significant focus areas for our contributions and progress. Starting from the fiscal year 2023, Topcon group is working on addressing these materialities.

Topcon Group ESG Vision

Topcon Group
Environmental Vision 2030

learn more

Topcon Group
Social Vision 2030

learn more

Topcon Group
Governance Vision 2030

learn more

Environmental initiative

The Topcon Group regards environmental initiatives as one of its most important management issues and address two issues: reducing environmental impact through products and responding to climate change. Reducing environmental impact through products promotes energy and resource conservation throughout society by providing and using environmentally friendly products, technologies and services. In addition, most waste generated from corporate activities, including product development and manufacturing, is recycled for efficient use. In responding to climate change, we will strive to increase the use of renewable energy power and aim to reduce greenhouse gas emissions from our business activities in Japan by 40% from the fiscal year 2013 to the end of fiscal year 2030.

Contribution to CO_2 emission reduction

By improving the efficiency of field operations through automated systems for construction and agricultural equipment, CO_2 emissions can be reduced, and fuel savings can be increased. We can expect to reduce more CO_2 emissions by spreading the use of automated systems.

IT Construction

The automation of construction machinery reduces operating time by approximately 30%

Global
600,000
t-CO_2/ year

Reduction in CO_2 Global emission from our products (Topcon's estimation)

IT Agriculture

By using an Auto Steering System for agricultural machinery, operating time is reduced by approximately 20%

Global
500,000
t-CO_2/ year

Reduction in CO_2 Global emission from our products (Topcon's estimation)

Development of environmentally conscious products

We have been developing environmentally conscious products since 2001 to reduce the environmental impact of our production and sales process, and recycle the waste generated by the process for effective use.

Environmentally conscious products: All products whose life cycle, including product planning, material research, manufacturing, distribution, use, disposal and recycling are environmentally conscious.

Our corporate website highlights our various sustainability initiatives.
https://global.topcon.com/sustainability/