



BUSINESS GUIDE S-TEC Co., Ltd.



Level S Technology and Quality is Introduced

Super Machining Technology for Aerospace Industry



CEO : Representative Director
Seiichi Suzuki

SOLA, where your hopes and dreams come true!

Ever-advancing technologies for the future

To break out of the status quo and to sustain growth, we believe it is essential to become involved with promising industries and to expand our new opportunities.

The aerospace industry is one of those industries. A tremendous demand for development of civilian or commercial aircrafts, as well as rockets and international space stations, is an example of a hopeful industry.

The aerospace industry always requires us to achieve cutting edge technology. To achieve this, S-TEC uses precision machining technology in difficult-to-cut materials and difficult-to-process shapes, which has been accumulated over a period of time, as one of the examples. S-TEC has an extensive management and training program in place to help employees develop into excellent technicians in order to offer products that satisfy our customers' needs.

President
Seiichi Suzuki

Major products

- ❶ Aircraft equipment parts
 - Engine strainers
 - Engine inlet caps
 - Engine hot bends, etc.
- ❷ Space-related parts
 - H-II rocket parts
 - ISS, HTV parts, etc.
- ❸ Hydraulic joints
 - Swivel joints for aircrafts
 - Various types of swivel joints
 - Various types of rotary joints
- ❹ Medical equipment parts
 - Titanium implants
 - Development of surgical robots, etc.

Machining materials

- ❶ Stainless steel
 - SUS304, SUS304L, 316L, 321, 347, etc.
- ❷ Precipitation hardening type stainless steel
 - 15-5PH, 17-4PH (SUS630)
- ❸ Titanium alloy
 - Ti-6Al-4V
- ❹ Nickel based alloy
 - Inconel ® : 625, 718, 825
 - Hastelloy ®
 - Waspaloy ®
- ❺ Aluminum
 - A7075, A2024, etc.
- ❻ CFRP (carbon fiber reinforced plastic)
- ❼ SiC (silicon carbide)
- ❽ Others : SKD, S45C, etc.



OUR STANDARD
for Aerospace Industry **02**

S-TEC quality based on more than 30 years of a proven and trusted track record in the aircraft industry

S-TEC is equipped with the world's highest technology in ultra-precision machining of hard-to-cut materials and hard-to-process shapes. Pride is taken in the quality assurance system with JIS Q 9100* and Nadcap accreditation program that clears difficult requests for quality and delivery time. Processing materials include titanium alloy, Inconel, Hastelloy and other hard-to-cut materials through CFRP. With our motto being "able to process anything within the limits of the machine", we continue to strive for more.

Innovation toward the new industrial field, unique engineering and new product development

On the other hand, S-TEC has developed new business in the medical equipment field and others by utilizing technical know-how acquired in handling difficult aircraft parts. S-TEC never gets tired of pushing forward with technical improvement in order to face any difficult challenges by Industry-University cooperation. S-TEC is always ready to serve you with ideal solutions.

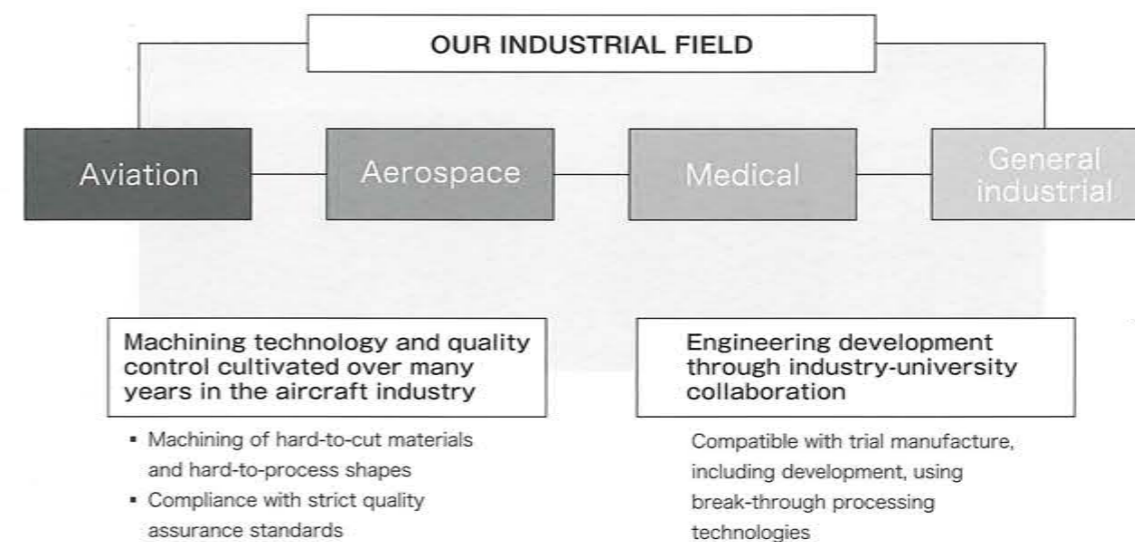
* Aerospace and defense industry quality management standard

The internationally acknowledged machining technology with the highest standards for hard-to-cut materials and hard-to-process shapes

More than 30 years of experience in manufacturing aircraft engine parts, continued technical innovation in machining from hard-to-cut materials to composites CFRP, utilizing advanced machining technology, through education for raising technical craftsmen and introduction of cutting-edge facilities.

Based on the quality assurance system with JIS Q 9100* and Nadcap accreditation, S-TEC offers quality products in response to a variety of needs.

* Aerospace and defense industry quality management standard



Aerospace standards are S-TEC standards

Use of the most advanced facilities in the cutting-edge plant to merge craftsmanship into it

S-TEC, a leader in ever advancing and diversifying hard-to-cut machining technology

In the aeronautics industry, advances are being made particularly in structure reinforcement and weight savings by using difficult-to-cut materials such as SUS, titanium alloys and Inconel. In addition, this field involves many parts with special and complex shapes, and therefore requires a high level of manufacturing. At S-TEC, in order to machine hard-to-cut materials and hard-to-process shapes, we design and manufacture tools in-house to develop our own unique machining technology. By combining our craftsmanship with state-of-the-art

production facilities, we are not only able to achieve a high precision and quality, improved productivity, and cost reduction, but also able to continually improve our technology level every day. Furthermore, under the strict quality assurance system which is backed up by high technological strength and certified by JIS Q 9100*, we have established a production system to satisfy the requirements of the aerospace industry. S-TEC has been developing a great deal of trust in the aerospace, medical and many other industries.

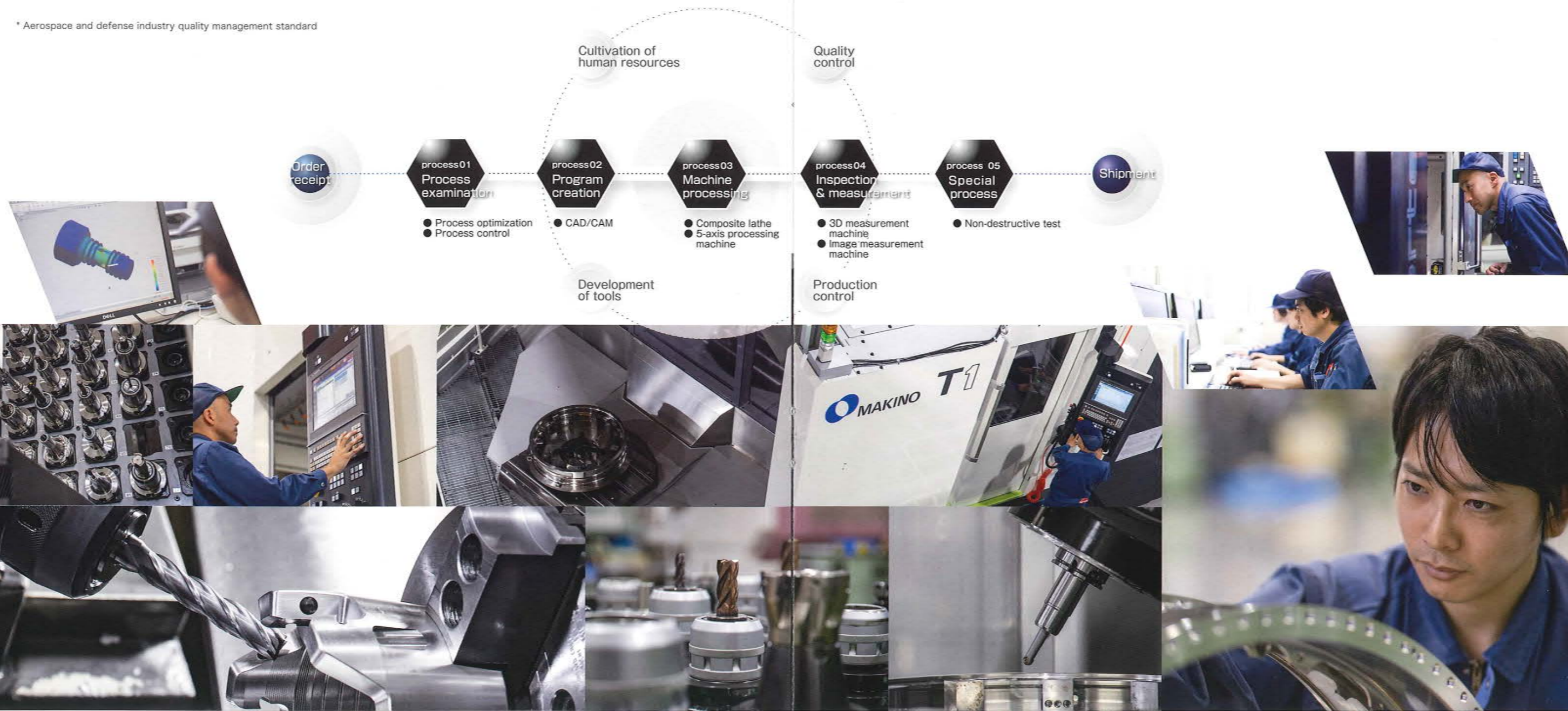
* Aerospace and defense industry quality management standard

Machining of a wide range of materials from hard-to-cut materials and hard-to-process shapes including titanium, inconel and CFRP

Through our efforts not only to collect information in collaboration with tool makers but also to constantly compare and analyze machining data for each machine and tool, we are tackling the establishment of optimum cutting conditions and extended tool life. We have been trying the machining of new materials such as CFRP from early days and progressing toward higher accuracy and higher quality machining technologies. S-TEC takes on products that are too hard to be handled by competitors by fully covering hard-to-cut materials and hard-to-process shapes.

A group of craftsmen with skills acquired from thorough training

S-TEC has been focusing its energies and strength on training the engineering staff capable of reading drawings, programming, cutting through measuring, manufacturing own tools, etc. to be familiar with the entire production processes. It has organized a system for the entire personnel familiarized with 5-axis CAD/CAM programming, product inspection using 3D measurement equipment backed up by high-quality production and management capabilities. A group of "master engineers" with advanced skills is the power of S-TEC to acquire reliability.

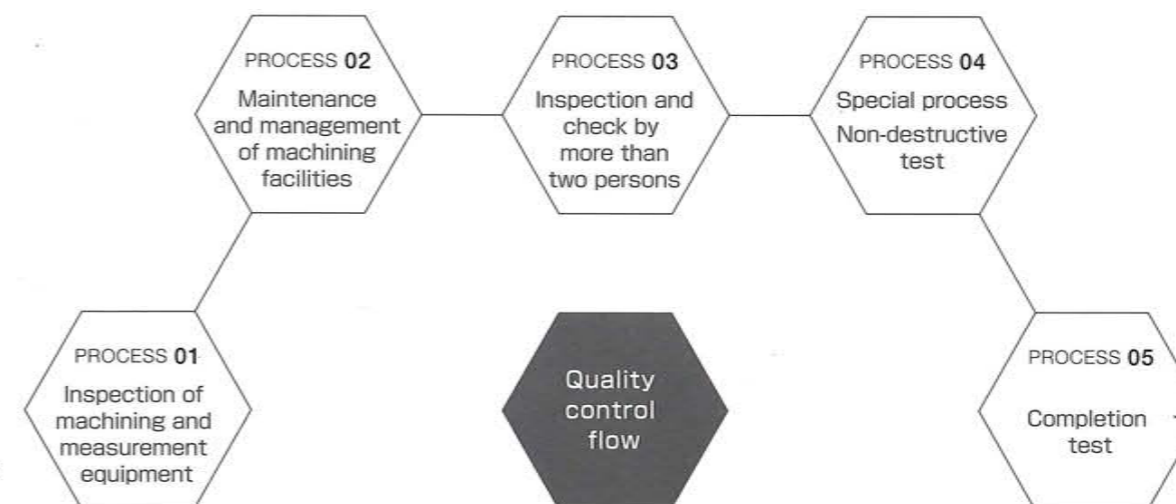




Quality, production and information.

In the aerospace equipment field, precise quality control and quality assurance are required. S-TEC has acquired JIS Q 9100* which is a higher-order standard than ISO9001. Based on this standard, each staff member keeps quality control high in handling a large volume of products, executing thorough production and quality control, including individual responsibility, record keeping, etc., thus building the aerospace quality into the products through the entire process. In addition, taking into consideration the fact that such products do not tolerate even a minute defect, we continue to improve the quality management system by evaluating, analyzing and preventing any incompatibility in advance. At S-TEC, we have amassed more than 30 years of achievements in the field of aircraft equipment parts. We ensure product quality and precision, and have received high praise for our quality assurance system.

* Aerospace and defense industry quality management standard



World-highest quality assurance system proven by JIS Q 9100

Inspection of machining and measurement equipment	Cutting oil concentration check	Program check	Primary inspection	Secondary inspection	In-process inspection	Non-destructive test	Non-destructive test	Completion test	Completion test
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Product development

Oriented towards original technology and development based on the accumulated know-how

S-TEC is developing a new business, utilizing technical know-how cultivated from experience. In the medical equipment field, for example, we started a medical robot development project on the industry-university collaboration basis, while developing surgical equipment. For aircrafts, we have released swivel joints, which have been designed, developed and manufactured in-house, while emphasizing the original technology.

Robots for ultrasonic diagnosis and medical treatment aid *1

S-TEC aims at reduction of a burden on doctors by robotizing the probe holding in ultrasonic diagnosis and light weight of the shell by introducing composite materials, thus saving energy and improving safety.

* 1. Adopted by the Strategic Basic Technology Upgrading Support Program (Supporting Industry Program) in fiscal 2011 and 2012.

Swivel joints for aircrafts *2

S-TEC is the first manufacturer in Japan which has achieved the use of products on actual equipment. AMS materials have been introduced, and screws and hydraulic oil are MIL-compliant. It also conforms to the quality assurance through non-destructive testing.

* 2. Adopted by the Strategic Basic Technology Upgrading Support Program (Supporting Industry Program) in fiscal 2015, 2016 and 2017.

05 ORIGINAL PRODUCTS for New Frontier



Quality assured swivel joint with non-destructive test. **First in Japan**

R E S E A R C H & D E V E L O P M E N T

A D V A N C E D I N S P E C T I O N S Y S T E M



Special process

Non-destructive test: Upgraded quality assurance by penetrant test

S-TEC has been focusing on further improvement of reliability and expansion of business area by acquiring Nadcap certification (non-destructive test: dye penetrant test). It has already introduced equipment for the dye penetrant test and the magnetic particle test and has staff members with Responsible Level 3.

Penetrant test: Minute flaws that cannot be visually checked are now located to eliminate the cause of fatigue fracture.

This test covers manufactured components or used components. Using products with minute flaws on the surface continuously will lead to fatigue breakdown from the defective opening. In this test, fluorescent liquid is infiltrated into a flaw to expand a flaw by absorbing the liquid to the surface through a developer in order to locate a minute flaw that cannot be visually checked. After moving to a new plant in 2018, a series of operations from machining to non-destructive test is possible in one plant.

SPECIAL PROCESS
by Nadcap Certification

06

Aerospace-related field

S-TEC is engaged in manufacture of a large variety of space equipment including aircraft parts for Boeing 787 and MRJ, H-II A/B rockets, ISS, planetary probe Hayabusa, etc. Utilizing technologies for precision cutting of intricate parts made of hard-to-cut materials such as highly needed titanium alloy and Inconel, we offer high quality and precision products and take pride in our track record of manufacture supported by participation in international aircraft development.

More than 30 years of experience in advanced cutting technology and complete quality assurance



- Selected one of the "Vibrant HABATAKU Small and Medium Enterprises 300" by the Small and Medium Enterprise Agency thanks to the original development of swivel joints for aircrafts
- Created a dramatically light-weight swivel joint for the latest aircrafts, which is only 1/3 in weight compared to S-TEC conventional models

Medical equipment-related field

The manufacturing and management technologies accumulated in handling aerospace-related products are applied to the medical equipment field where hard-to-process shaped products are highly needed. We offer titanium implants with high strength and durability which are harmless to humans, and other products. In addition, we have been involved in development of unprecedented products and machining technologies through industry-university collaboration in the course of development and trial manufacturing.

From manufacturing of titanium alloy implants through trial manufacturing and development



- Participated in various international joint engine development programs such as V2500, PW-1100G, CF34-10, etc.
- Selected as one of the "The Driving Company for the Regional Future" by The Ministry of Economy, Trade and Industry and as a "Special Zone to Create Asia No. 1 Aerospace Industrial Cluster" by the Cabinet Office

Hydraulic joint

S-TEC is one of the few manufacturers of swivel joints for aircrafts in the world and the only manufacturer of the same products in Japan. Under the strict quality control system based on JIS Q 9100* and the Nadcap accreditation program, S-TEC introduced structural analysis and integrated production from design through inspection in order to offer the world's highest level product in quality and durability to a variety of industrial scenes through a consistently integrated production system, from design to testing.

* Aerospace and defense industry quality management standard

Only manufacturer of swivel joints for aircrafts



Responding to versatile needs for hard-to-cut materials and hard-to-process shapes
Development of original products

ADVANCED FACTORY 08

from Country of Mt. Fuji



OUTLINE

Company name	S-TEC Co., Ltd.
President	Seiichi Suzuki
Founded	April 1971
Location	181-1 Kumaiden, Shimizu-cho, Sunto-gun, Shizuoka-ken, 411-0911 Japan
Employees	26 million yen
Factory size	approx. 11000m ²
Major products	<ul style="list-style-type: none"> ● Aerospace equipment parts ● Hydraulic joints ● Medical equipment parts
Standards acquired	JIS Q 9100* Nadcap

* Aerospace and defense industry quality management standard

HISTORY

1971.04	Established Suzuki Tekkojo located at 61-4 Takehara, Nagaizumi-cho, Sunto-gun, Shizuoka-ken.
1979.07	Set up Suzuki Tekkojo Ltd. at the same location (with 1 million yen in capital).
1989.09	Relocate the head office and main plant to 626 Honjuku, Nagaizumi-cho in order to expand factory equipment and facilities.
1991.04	Increased capital to 3 million yen.
1993.12	Increased capital to 10 million yen to expand operations. Changed corporate name to S-TEC Co., Ltd.
2002.05	Purchased own factory and relocated to 385-2 Fushimi, Shimizu-cho, Sunto-gun, Shizuoka-ken, in order to expand operations.
2015.08	Established second factory at Fushimi, Shimizu-sho, Sunto-gun, Shizuoka-ken, in order to expand operations.
2018.09	Established a brand new factory at Kumaiden, Shimizu-sho, Sunto-gun, Shizuoka-ken, in order to expand operations.
2018.10	Increased capital to 26 million yen.



From the cutting-edge plant at the foot of Mt. Fuji
toward the open sky, the technology of S-TEC flies to the world.



A leader in precision machining technology in
difficult-to-cut materials and difficult-to-process shapes

S-TEC Co., Ltd.

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