

Industrial Technologies

1. PHOTON Design Corporation
2. Aspect Inc.
3. NejiLaw Inc
4. Metrol Co.,Ltd.
5. FS Technical Co.,Ltd.
6. Unipulse Corporation
7. SIJTechnology,Inc.
8. SOMA OPTICS, Ltd.
9. SHINKO SELLBIC Co., Ltd.
10. TECHNOS JAPAN Corp.
11. ATAGO Co., Ltd.
12. TAIYO TORYO CO.,LTD
13. ELIONIX INC.
14. MSI.TOKYO, Inc.
15. Nowla Engineering Co., Ltd.
16. GRAPAC JAPAN CO., INC.
17. TANOI MFG. Co., Ltd.
18. Security Japan Co., Ltd.
19. Tashiro Alloy Inc.
20. Tem-Tech Lab.
21. IGUCHI ISSEI CO.,LTD.
22. ON-ART Corp.
23. AMITEQ Co., Ltd.

SiC Semiconductor Inspection Tool 「SemiScope」

【Features】

The first inspection tool for SiC semiconductor using photoluminescence (PL) imaging method in the world.

- Visualizing crystal defects in SiC wafers
- Non-contact and non-destructive analysis
- PL Imaging method shortens inspection time revolutionary.

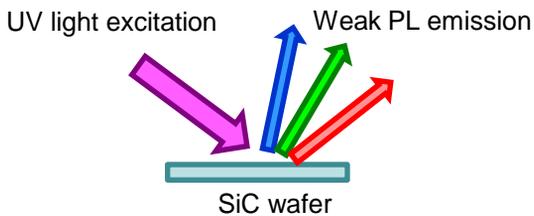
【Impact】

- Quality improvement and cost reduction of energy-saving SiC power devices
- Spread of SiC power devices reduces dramatically electric power consumption (equivalent to 8 - 9 nuclear power plants).

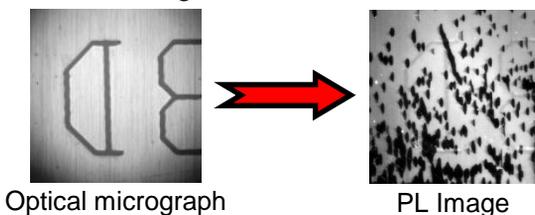


【PL Imaging Method Concept】

PL Imaging Method

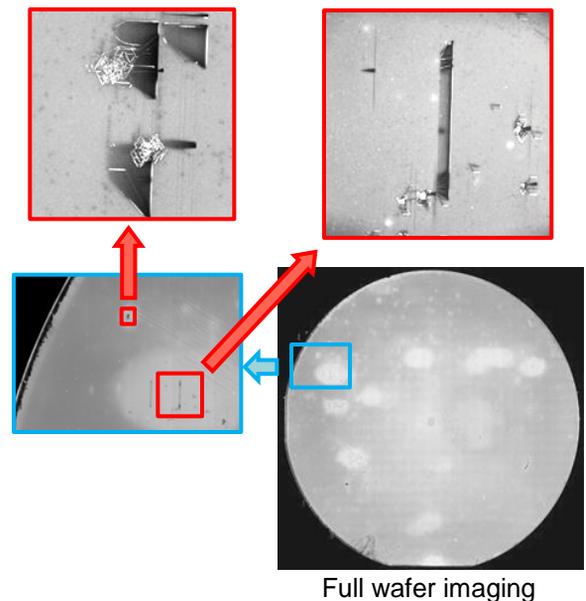


Comparison between optical micrograph (left) and PL image (right) on region around wafer ID.



【SiC Wafer Inspection Data】

Microscopic zoom-in on defect area





Corporate Profile

●Corporate Name	PHOTON Design Corporation
●Representative Director	Ryosuke Shimidzu
●Establishment (year)	1999
●Capital	10,000,000yen
●Number of Employees	10
●Head Office	17-1 Kamiya 2-chome, Kita-ku, Tokyo, 115-0043, Japan Tel. +81-3-5249-5705 Fax.+81-3-5249-5706
●e-mail	sales@photondesign.co.jp
●URL	http://www.photondesign.co.jp/

Business Overview

- Development and sales of PL Imaging Inspection tools
- Development and Sales of PL Spectrum Imaging Equipment
- Development and Sales of PL Spectrum Inspection tools
- Development and Sales of Raman Spectrometers



PL Spectrum Imaging
Equipment



PL Spectrum Inspection tool



Raman Spectrometer

Laser sintering platform "RaFaEl"

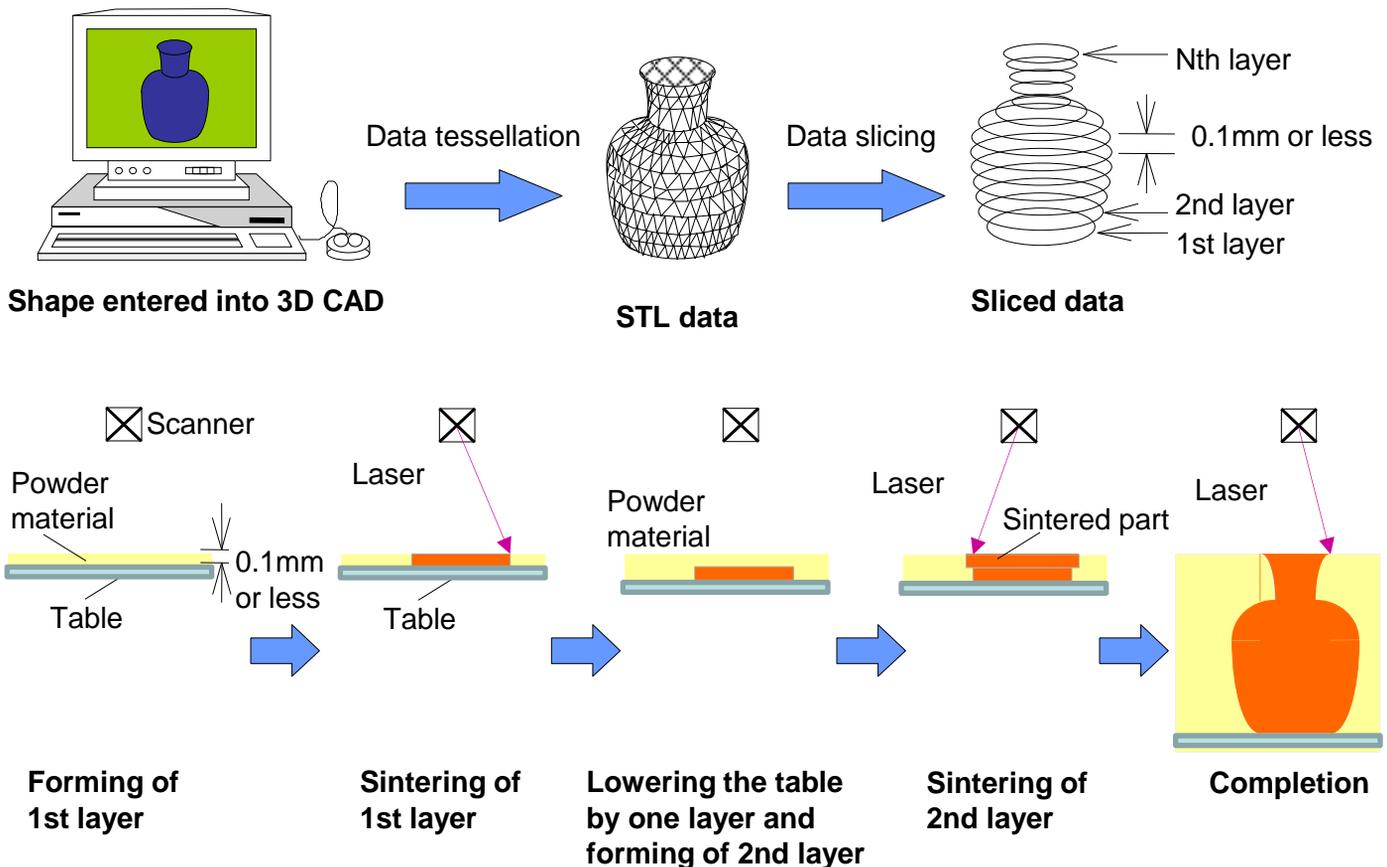
【Features】

- This high-speed additive manufacturing platform produces three-dimensional parts by selectively fusing powder materials (various polymers and metals) using a laser.
- Large work size (max. 55 × 55 × 50cm).
- Minimum wall thickness of 0.204mm with a fiber laser.

【Impact】

- No metallic mold is required, contributing to time and cost savings, because parts are directly produced using 3D data (suited for one-off item or small-lot production).
- Suited not only for modeling of prototype parts but also for manufacturing final product parts that are high value-added diversified parts produced in limited quantities. (e.g. F1 car parts, airplane parts, and skulls for surgical planning).
- The technology allows building of parts with complex shapes and/or complex internal geometries that are not able to be processed using conventional machining and molding technologies.

【Fundamentals of laser sintering】



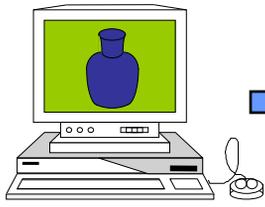
Corporate Profile

●Corporate Name	ASPECT Inc.
●Representative Director	Seiji Hayano
●Establishment (year)	1996
●Capital	30,000,000yen
●Number of Employees	41
●Head Office	3104-1-101 Higashi-naganuma, Inagi Tokyo, 206-0802 Japan Tel. +81-42-370-7900 Fax.+81-42-370-7901
●e-mail	rq@aspect.jpn.com
●URL	aspect.jpn.com

Business Overview

- Development and Sales of Laser Sintering Machines, Materials, and Software Applications
- Service Bureau of Sintering Models
- Support of Laser Sintering Machines
- Joint Research and Development on Laser Sintering Technology





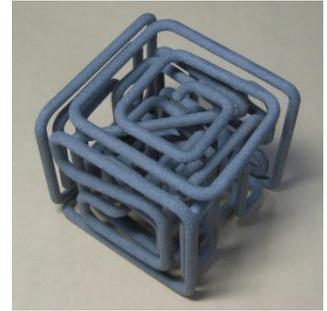
3D data



building durable parts for F1 and bike races



Building complex shapes

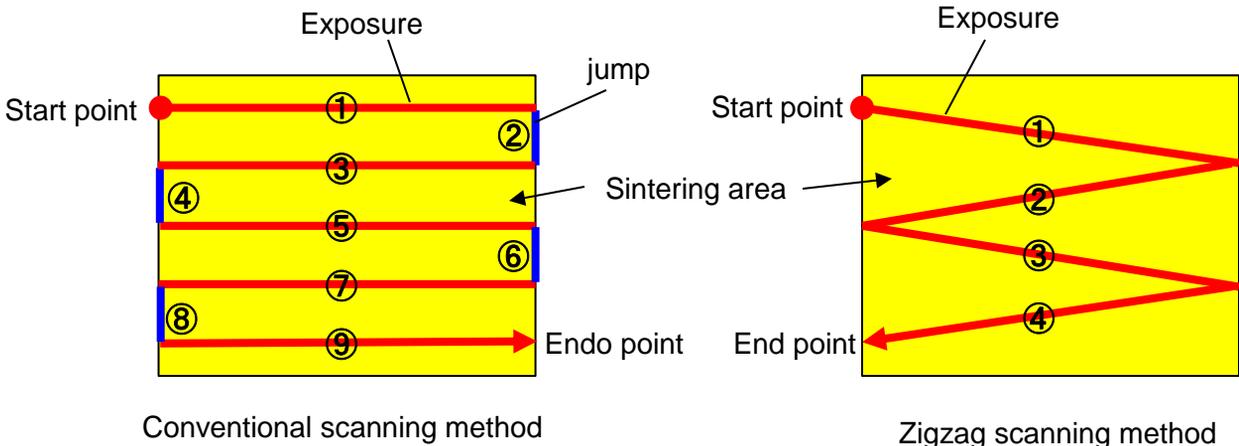


Ultimate custom-made parts such as dental crowns and artificial joints that are designed specifically for each patients

Courtesy of Dr. Yasuo Ueda of Hokkaido University

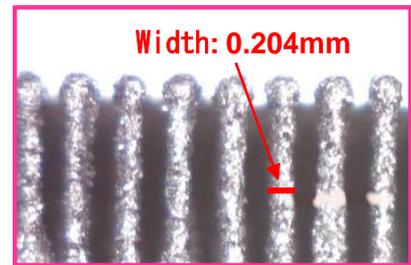
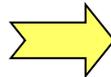
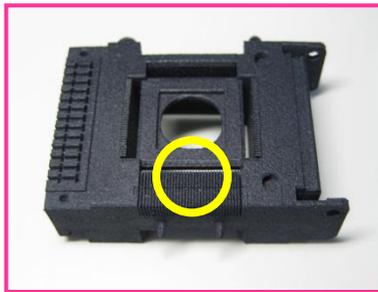
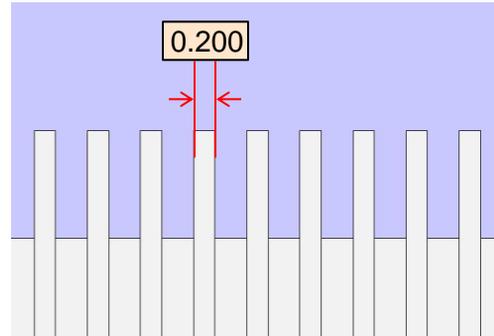
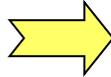
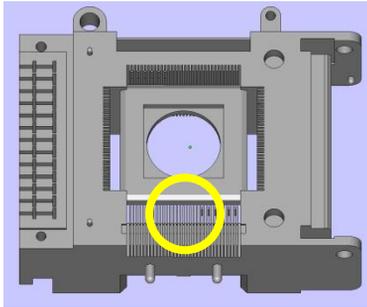
Doubled productivity compared to our previous machines

- High power CO₂ lasers ⇒ almost doubled power
- High speed digital galvanometer scanner ⇒ nearly one and a half times faster
- Zigzag scan ⇒ cut the number of vectors by almost half



Better quality, accuracy, fineness

- Extremely narrow laser beam diameters (optional fiber laser available)
- Multiple high-accuracy temperature sensors
- Base heaters
- Anti-fogging function on IR sensors



Direct metal laser sintering platform *Ra7aElV* series

- Under 10^{-3} Pa of vacuum atmosphere or argon purged
- High power QCW fiber laser
- Quartz heaters
- Digital galvanometer scanner
- Ability to process materials that difficult to work with due to oxidation and/or nitridation (e.g. titanium)

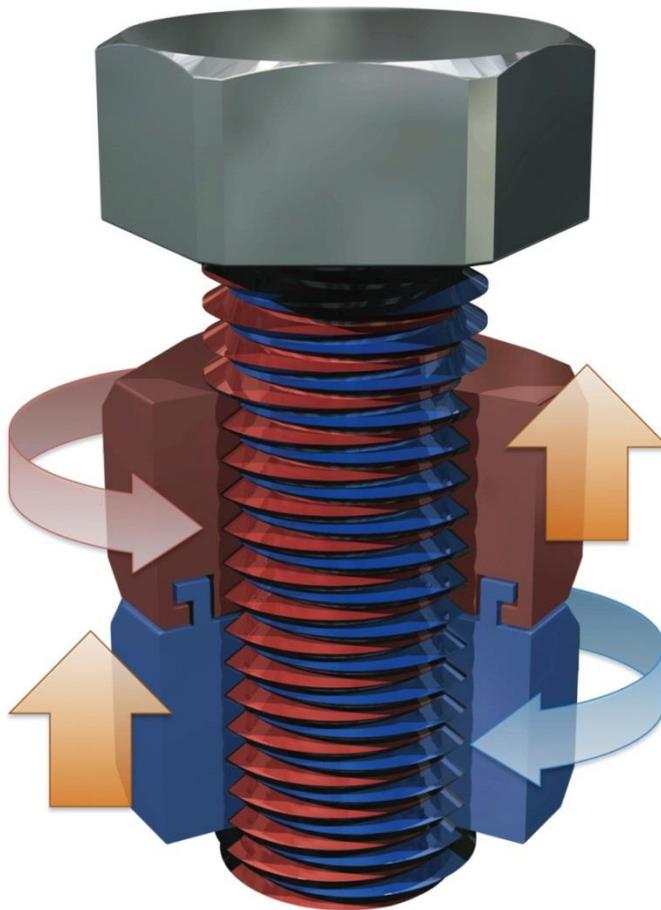


Water sinks into metal.

L/R Neji

Features

- "L/R Neji" has a non-spiral structure with left- and right-hand internal screws.
- "L/R Neji" is never loosened by mechanically connecting a left-hand nut and a right-hand nut.
- "L/R Neji" allows to fix a nut or to repeatedly use a nut at any position, as well as to unidirectionally fasten a nut .



Effects

- Prevention of fatal accidents caused by the slack screws or the screw fall-off.
- Reduced maintenance activities such as re-tightening.
- High versatility such as a potential substitute of rivets or welding, beyond ordinary screws.

Corporate Profile

•Corporate Name	NejiLaw Inc.
•Representative Director	Hiroshi Michiwaki
•Establishment (year)	2009
•Capital	527,550,000yen
•Number of Employees	20
•Head Office	3-23-14-4F, Hongo, Bunkyo-ku, Tokyo, 113-0033 JAPAN Tel. +81-3-6712-8820 Fax.+81-3-6712-8821
•e-mail	info@nejilaw.com
•URL	http://www.nejilaw.com



Japan Ministry of Economy, Trade and Industry : Accepted Plan
Tokyo Metropolitan Technologies Award : Grand Prize
Good Design Award : Gold Award
Japan Innovators Award : Award of Excellence

Business Overview

1. Product design, development, production and sale of high-performance model conclusion material
2. Technical support and related IP licensing of high-performance model conclusion material



Perfect Control of Looseness

NejiLaw™

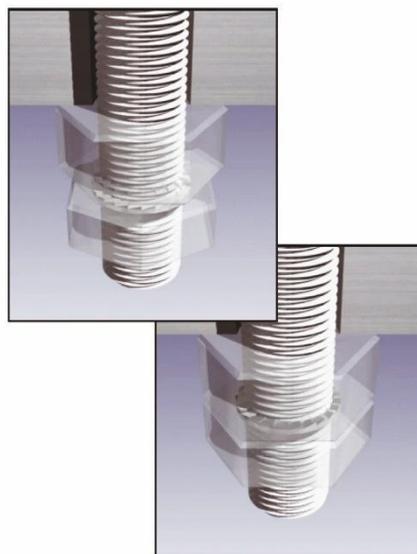
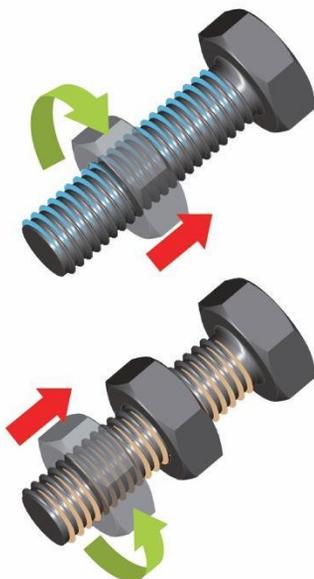
The Breakthrough Precision Innovation from Japan

【Principle Structure】

Non-Spiral Bolt Body

Mechanical Connection

Nut Combination



1

Hybrid Bolt with Right and Left spirals

2

Screw Structure with Right- and Left-hand nuts

3

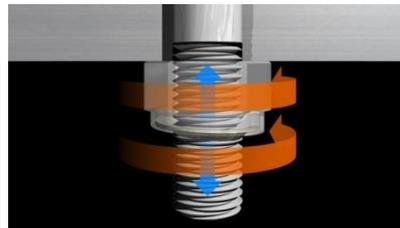
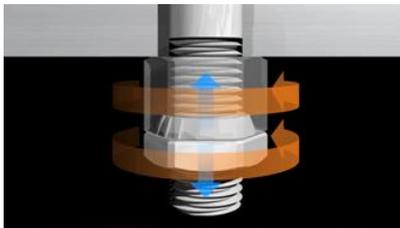
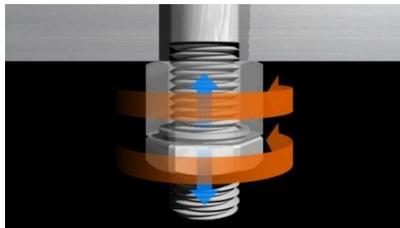
Mechanical Connection of Right- and Left-hand nuts

L/R Neji

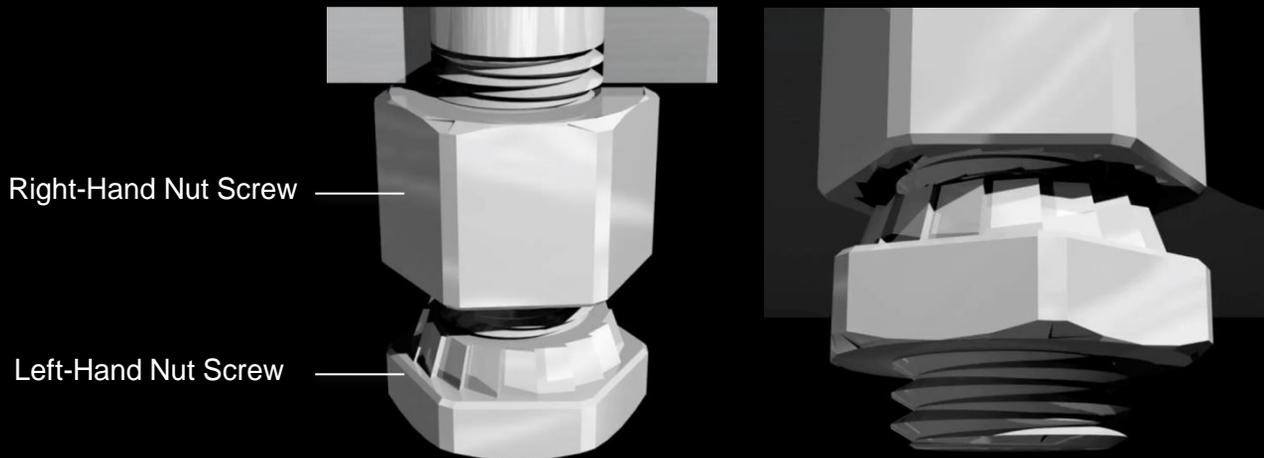
Removable lock type

Permanent lock type

One way lock type



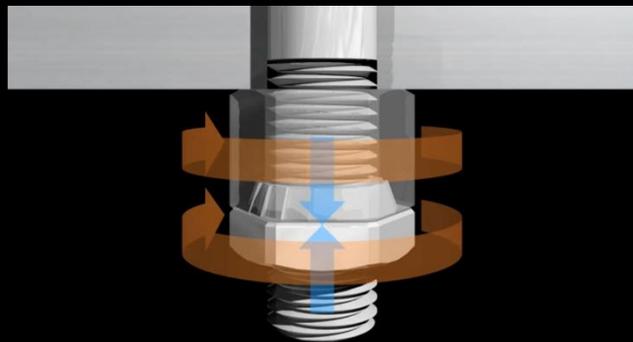
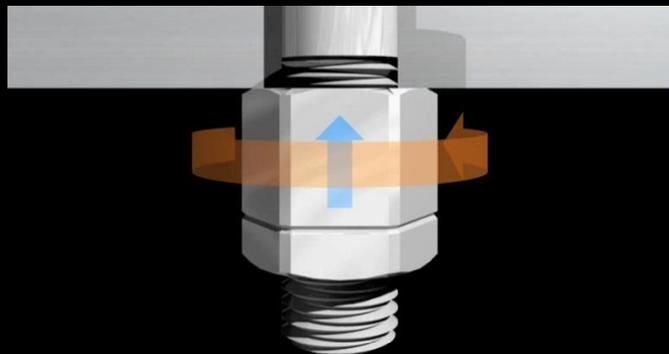
L/R Neji: Permanent Lock Type



Locking Mechanism of Permanent Lock Type

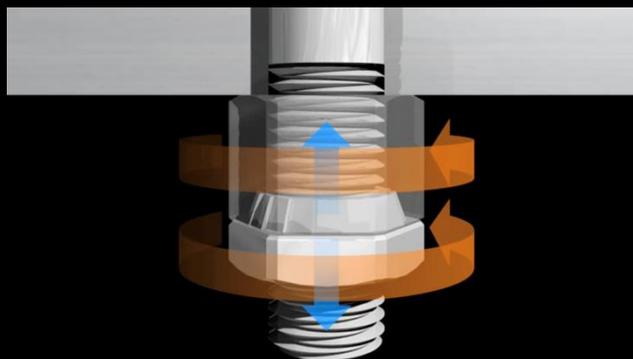
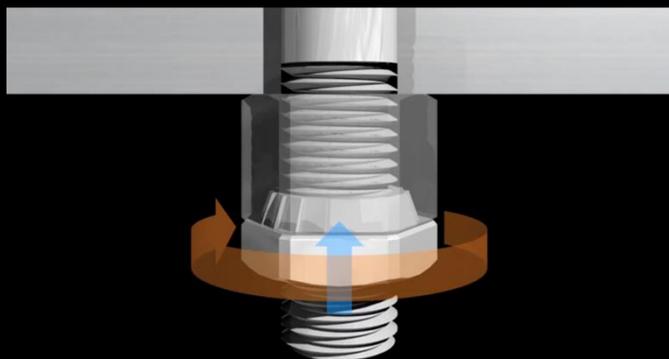
(1) As clockwise force acts to R-nut

(2) As counterclockwise force acts to R-nut



(3) As counterclockwise force acts to L-nut

(4) As clockwise force acts to L-nut



Air Micro Switch “DPA-A2”

【Features】



Applying the principle of air micrometers, adhesion and seating of detected objects can be confirmed without contact.

- * Sensor for detecting workpieces seating used in machine
- * Enable to detect gap with 2μ repeatability
- * Enable to be used in a harsh environment

【Impact】



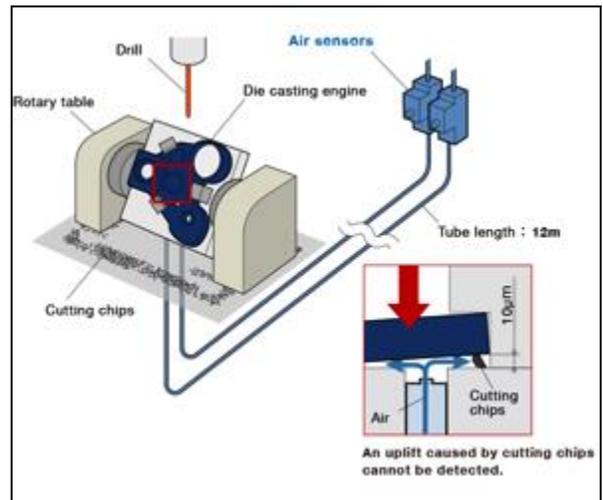
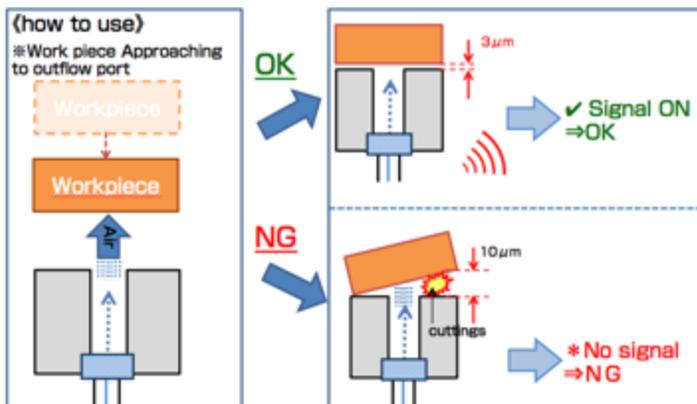
Two strength of Air Micro Switch

- $\pm 1\mu$ Repeatability
 - * to process very precisely
 - * to be reduction in defective workpieces
- IP67 Structure<Water proof>
 - * to apply inside of CNC machine that makes pipe length is shorten
 - * Response speed becomes faster to improve to improve productivity

【CASE STUDIES OF AIR MICRO SWITCH】

ex)When you want to detect the gap of 5μ m

■ Case study of “Die casting engine”



Corporate Profile

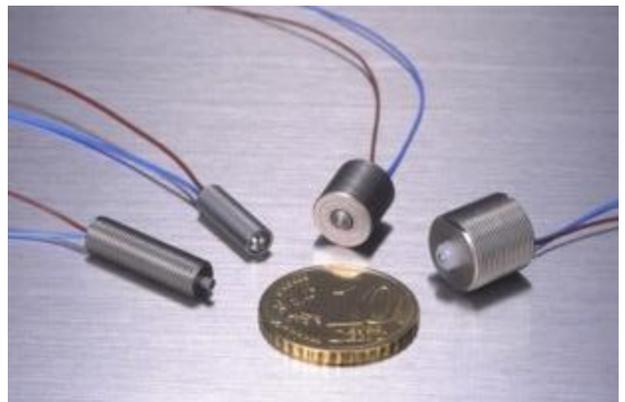
●Corporate Name	Metrol Co.,Ltd.
●Representative Director	Takuji Matsuhashi
●Establishment (year)	1976
●Capital	40,000,000yen
●Number of Employees	126
●Head Office	Tachihi Bldg.25 5F, 1-100 Takamatsu-cho, Tachikawa-shi, Tokyo, 190-0011, JAPAN Tel. +81-42-527-3278 Fax.+81-42-528-1442
●e-mail	touchsensor@metrol.co.jp
●URL	http://www.metrol.co.jp/en/ http://toolsensor.com/

Business Overview

METROL specialize in manufacturing Tool Setters & Precision Position Switches. We have been dedicated to contribute to manufacturers all over the world, by producing high-precision and durable products for Factory Automation.



▲ Tool Setter Series



▲ Precision Position Switch Series

【TOOL SETTERS for CNC Machining Centers】



Improve Machine Accuracy Of CNC Machining Center

Tool setter can be used for presetting the tool length automatically on machining center.

It can detect wear, tool breakage and also compensate the thermal growth.



Repeatability	0.001mm
Pretravel	0.5mm
Parallelism of contact	0.005/20
Contact force	2.5N-1N (Low contact force)
Contact life time	3million
Contact rating	DC24V 10mA (20mA MAX)
Protective structure	IP67

【Ultra Precision Compact TOUCH PROVE™ RC-K3E™】



Uninterrupted by NOISE, New Radio Transmission System

- Selects the optimal channel automatically by searching the radio wave frequency band at all times.
- Designed for highly-reliable, noise resistant radio transmission.
- Proven Metrol design: four-point support, mechanical structure. No correction of software "lobing". Achieves 1m (2σ) repeatability.

• Compared to Optical Probes, radio probes are more suitable for Large Turnmill Centers and 5-Axis Machines for Precise measurement.

【AIR GAP SENSORS for Precision Seating Confirmation】



±0.5μm Repeatability! Prevent machining defects.

Realize precision seating confirmation of the workpiece for ultra-precision machining.

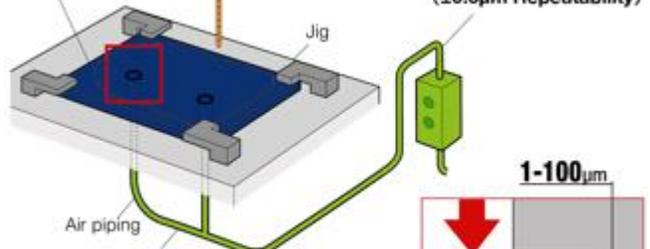
IP67: Able to work under harsh environment.

Application

Reliably detects 10μm gap caused by cutting chips put between the jig and the workpiece with its ±0.5μm repeatability.

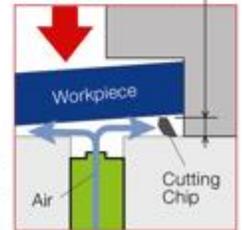
e.g.) Precise seating confirmation in processing computer components

Air Gap Sensor (DPA-SR1)
Short range detection type
(±0.5μm Repeatability)



An installation inside the machine can shorten the air piping and improve response speed.

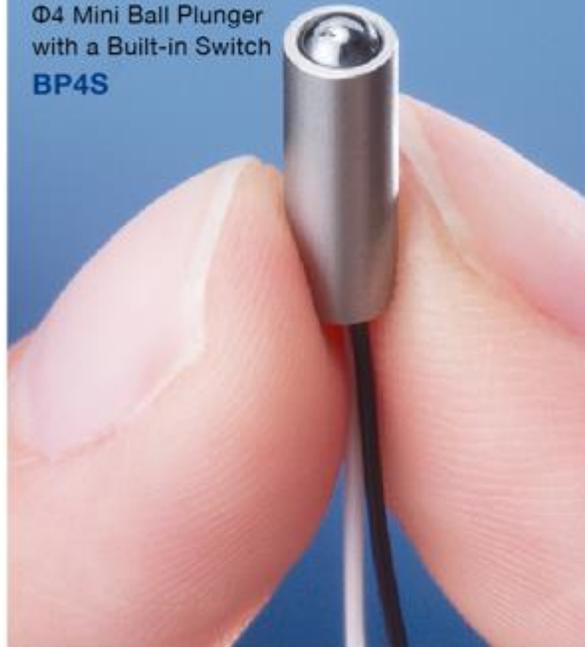
	Metrol's Air Gap Sensor	Conventional Gap sensor
Tube length	1.5m	12m
Response speed	0.8 seconds	5 seconds



【Ultra-Precision Position Switches】

NEW!!

Φ4 Mini Ball Plunger with a Built-in Switch
BP4S



Co-invented with TOYOTA in 1976!!

Metrol Switch was developed as ultra-precision switches to work in harsh environment such as automobile manufacturing lines where coolant and metal cutting chips exist.



The World's Smallest!!
M5x17mm, 1μm Repeatability
PT-Touch Switch



0.0005mm of Repeatability!!
IP67 protective structure
MT-Touch Switch



The Best-seller!!
M5 Compact design
CS-Touch Switch



2 tasks with 1 device!!
Stopper Bolt with a Built-in Switch

FS Column Method

【Features】

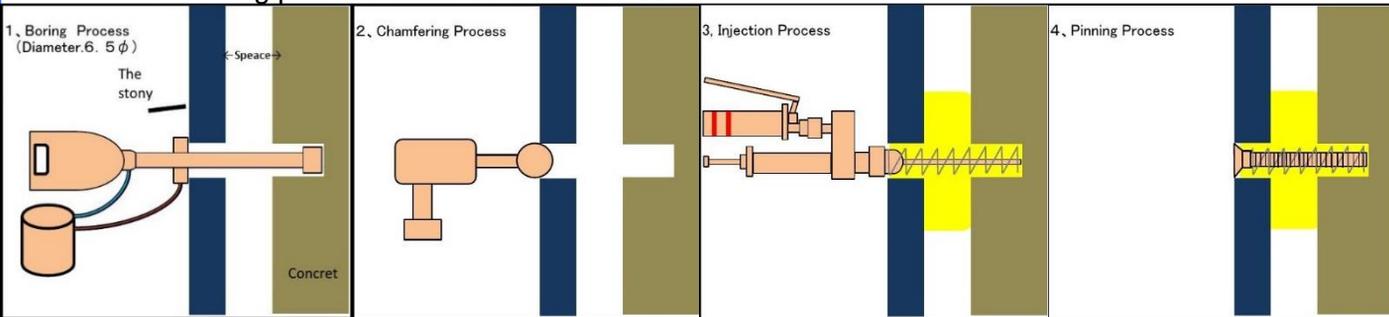
- New technique to fix stony slab used at interior and exterior wall.
- The technique to fix by making the column of resin with spring and stainless steel anchor-pin in vacant space.
- The method has a enough fixation strength and can fix the stony slab with 10cm vacant space inside the wall.
- The method is superior to conventional one in design by coating a head of the anchor-pin with same color as the slab.

【Impact】

- The method can cut down the construction cost to 1/3 in comparison with conventional one.
- The method can construct in consideration for environment by using the specified drill that is low noise ,less vibration and no mine dust type .

【Principles,Structure, Comparison,etc】

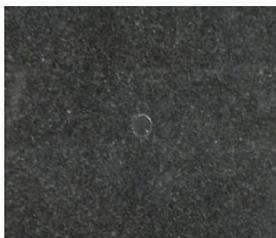
- The working process of FS Column Method



- Photograph of FS Column built by resin and anchor-pin in the vacant space inside a wall



- Comparison photographs with the conventional method



FS Column Method



Conventional Method



FS Technical Co.,Ltd.

Corporate Profile

●Corporate Name	FS Technical Co.,Ltd.
●Representative Director	Shogo Fujita
●Establishment (year)	2003
●Capital	30 million yen
●Number of Employees	20
●Head Office	1-22-15 Takasago, Katusika-ku, Tokyo, 125-0054, Japan Tel. +81-3-5671-3134 Fax.+81-3-5671-3090
●e-mail	office@fs-tec.co.jp
●URL	http://www.fs-tec.co.jp

Business Overview

- Production and Lease of the low noise drill
- Management of FST Method
- Management of FS Column Method
- Sales agent of NQ Method
- Production and Sales of post-installer anchor

【 Product introduction 】

- The post-installed anchor on a new concept : DG anchor (For buildings and facilities)

DG ANCHOR

FS Technical Co., Ltd.

Double Grip Undercut Anchor

Special Feature

- Simple operation by an impact driver.
- Even if anyone works, a difference on an effect does not rise.
- Tensile strength of Anchor: M-10 more than 2t., M-12 more than 3t.
- M-10 Anchor's working times for undercut: only 10 seconds (M-12, 12 seconds).
- The expanded width of undercut is measurable.

FST

※using millimeters male screw



DG Anchor



Specified drill body for use of DG Anchor



Specified drill bit for use of DG Anchor

	M-10	M-12
Perforating diameter	14.5 mm	18.5 mm
Perforating depth	55 mm	70 mm
Materials	Sus. 304	Sus. 304
Tensile strength	More than 2t	More than 3t
Working drill	More than 18 V	

Construction process

1. Drilling work	<ul style="list-style-type: none"> • Drilling by vibration drill 	<ul style="list-style-type: none"> • M-10 Perforation diameter 14.5 mm Perforation depth 55 mm • M-12 Perforation diameter 18.5 mm Perforation depth 70 mm
2. Undercut work	<ul style="list-style-type: none"> • Drilling time for M-10 anchor After drilling for 5 seconds, absorb the powder dust. Once again, repeat the same work. • Drilling time for M-12 anchor Doing the above-mentioned work at drilling for 6 seconds. 	<ul style="list-style-type: none"> • Set a rotary dial of drill to 5 level ※4 or less levels are prohibition of use
3. Confirmation of the expanded width	<ul style="list-style-type: none"> • measuring by measuring instrument every ten drilling holes 	
4. Fixing the anchor	<ul style="list-style-type: none"> • Setting the anchor to the bottom of drilling hole. • Fixing the anchor by impact driver. 	<ul style="list-style-type: none"> • Using the impact driver of 18 volt-ampere or more. • Using battery which was charged enough.
5. Confirmation of the construction situation	<ul style="list-style-type: none"> • Confirming the expanded width by inserting a specified measuring instrument from the opening into a drilling hole. <p>※Caution</p> <ul style="list-style-type: none"> • If you find a non-acceptance line, please change a drill bit because this is the drilling failure. 	<ul style="list-style-type: none"> • Measuring instrument showing a non-acceptance line, the expanded width is less than 2mm. • If not showing this line, the expanded width is more than 2mm.

【 Product introduction 】

- Super strength undercut anchor : SS anchor (For public works)

SS ANCHOR

FS Technical Co., Ltd.

Super Strength Undercut Anchor

Special Feature

FST

- Gripping a large area of conical ditch formed in the bottom of drilling hole. Because this ditch is drilled by three movable bits, its shape is conical, gradually sloping outside to the bottom of drilling hole
- Producing the strong mechanical fixing effect by frictional resistance of concrete.
- Being easily fixable with a 1.3~2.2 kg hammer. Therefore the difference on an effect does not rise if the worker has even standard power.



Specified Drill bit



SS anchor



Specified wet drill



Vacuum

○Kinds of the anchor

※using millimeters female crew

Number	Size	Perforation diameter	Perforation depth	Entire length
SS-10	M10	14 φ		75mm
SS-12	M12	17 φ		108mm
SS-16	M16	23 φ	80mm	155mm
SS-20	M20	29 φ	103mm	190mm
SS-22	M22	31 φ	119mm	230mm
SS-24	M24	33 φ	140mm	270mm

Construction process

1. Drilling	• Drilling by vibration drill	
2. Cleaning	• Cleaning of the powder dust by vacuum	
3. Undercut	• Repeating drilling for 15 seconds twice.	• Set a rotary dial of drill to 5 level.
4. Confirmation of the expanded width	• Measuring by measuring instrument every ten drilling holes	
5. Fixation of SS anchor	• Setting the anchor to the bottom of hole. • Fixation of the anchor with the driving rod	• M10~M12 : using 1.1kg. hammer • M16~M20 : using 1.5 kg. hammer • M22~M24 : using 2.2 kg. hammer



Drilling by three movable bits



Situation of the undercut



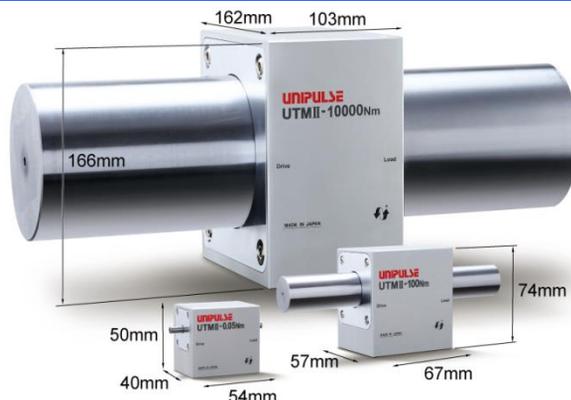
Driven SS anchor

Slip-ring-less rotating torque meter.

“UTM II Series”

【 Features 】

- By mounting electric circuits on the shaft, contact-less (no slip rings) structure was achieved.
- Non-contact structure enables high-accuracy and continuous torque measurement.
- Available in wide measurement range from 0.05 Nm to 10,000 Nm.



【 Advantages 】

- Compact and light body is ideal for installation into limited space.
- By enabling the high-accuracy measurement with low friction, it contributes to technological innovation in energy saving and efficiency improvement of engines, motors, and generators.

【 Dedicated torque monitor 】

TM500

Torque waveform monitor



Torque & angle (or length) measurement!
Ideal for UTM II with rotary encoder

TM301

Torque monitor



Standard model!
Easy-to-use system

TM201

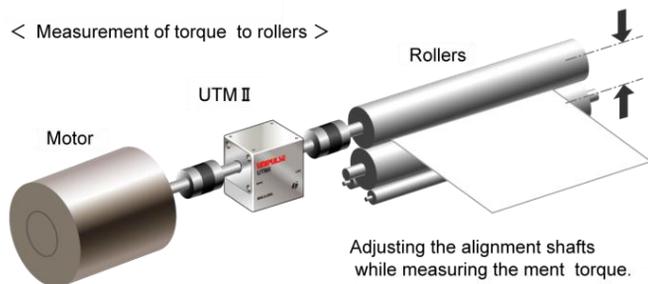
USB interfacing unit



Ideal for R&D and laboratory testing
Save data on PC easily

【 Use case 】

< Measurement of torque to rollers >



【 Customers 】

- Automotive parts manufactures, office appliance manufactures, printer manufactures, chemical manufactures etc.

Corporate Profile

●Corporate Name	Unipulse Corporation
●Representative Director	Takami Yoshimoto
●Establishment (year)	1970
●Capital	95,000,000yen
●Number of Employees	150
●Head Office	9-11 Nihonbashi Hisamatsucho, Chuo-ku, Tokyo, 103-0005, Japan Tel. +81-3-3639-6120 Fax. +81-3-3639-6130
●e-mail	sales@unipulse.com
●URL	http://www.unipulse.com/en/

Business Overview

Unipulse was established in 1970 by several young engineers to create unique products using our preeminent pulse circuit technology.

As research proceeds, we discovered that an unconventional way of using a transistor amplification circuit could drastically improve the stability and noise immunity. Based on the discovery, we started producing loadcell amplifiers, which are still one of the most fundamental components of our products to this date.

Since then, many products have been developed from load cell amplifiers. For example, the world's first weighing controller integrates load cell amplifiers and program for weighing liquid and powder quickly. Also, intelligent indicators are developed to monitor fast fluctuation of force in waveform for OK/Not OK evaluation of assembled products, and those are our main products nowadays.

Recently, we have developed a high-accuracy, compact, high-speed, and non-contact rotary torque meter (sensor/transducer). This sensor measures torque applied to continuously rotating shafts. Slip-rings (contacting electrodes) are used for conventional torque sensors to transmit signals. However, accuracy, durability, and maximum rotating speed were limited by those contacting parts, and this type of sensors had limited use. Thus, we developed UTM II to break through those limits.

UTM II is a "unique" product developed with the integration of our technologies such as strain gauge, analog circuit, power supply system, and mechanical engineering. Thus, this product meets many customers' needs and has increased the market share.

We will continue to give the highest priority on R&D to offer world-class products like UTM II to our customers worldwide.

Our fundamental technologies

Throughout our around 50-years history of R&D, we acquired diverse technologies such as strain gauge, precision machining, low-noise analog circuit, high-speed digital circuit, human machine interface, wireless communication, power electronics, nanometer measurement circuit, ultra-precision positioning technology, optical image evaluation technology, and many more. Based on these fundamental technologies, we will continue developing new products.

Torque meters (sensor/transducer)



Load cells

Grip force meter

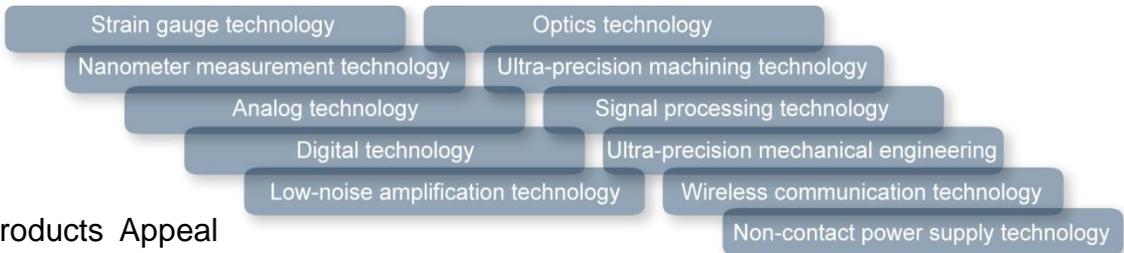


Force measurement

Weighing measurement



Displacement sensors



Our Products Appeal

FS2000

High-response digital indicator



- The best solution for OK/NOK judgment of press fitting and caulking application!
- 25kHz fast response!
- A fluctuation of force is shown as a waveform!

Super Cell

"Virtually unbreakable!" loadcell with an innovative concept!



- High rigidity
- High responsiveness
- Safe overload of 500%
- Easy replacement
- Equipped with Robot Cable

ULE-50

Contact type linear encoder



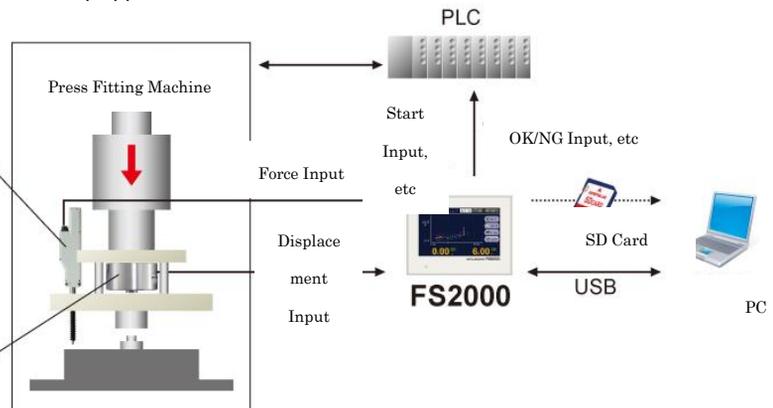
- High accuracy & wide range
- Wide range of measurement : 50mm
- Minimum Resolution : 2.5 μm

Application Example :
Measurement of force & displacement during press-fitting

Strict quality control can be made with inputs from force and displacement

ULE-50

Super Cell



Rotating Torque Meter UTM II

A Slip-ring-less Torque Meter
Crammed outstanding specs into a tiny body



- High response speed with cut-off frequency of 1kHz(sampling frequency of 6kHz).
This series can be used for not only fast process monitoring but also torque feedback control.
- Safe overload of 500%
- 1,2 and 5-line capacities are standardized from 0.05Nm to 10000Nm.
- A rotational pulse generating circuit(4 pulses/revolution)is built in as standard.
Lower rotational speed can be measured accurately.
- Improved noise immunity with insulated powering and signaling system.
- 1/10000 resolution
- Outstanding zero-point stability
- Max. rotational speed: 25,000 rpm (up to 10Nm)
- Low frictional rotating torque

Specification

Range Nm	0.05	0.1	0.2	0.5	1	2	5	10	20	50	100	200	500	1000	2000	5000	10000	
Max. speed rpm	25000						20000		15000	12000	10000	7000	6000	5000	4000			
Main frame dimension W × H × D mm	54 × 50 × 40			57 × 55 × 40		70 × 68 × 51		67 × 74 × 57	67 × 79 × 62	67 × 79 × 72	86 × 103 × 98	86 × 119 × 111	97 × 141 × 137	103 × 166 × 162				
Length mm	74	84		97		150	170	177	187	217	286	306	387	447				
Shaft dia. mm	φ 5	φ 8		φ 12		φ 20		φ 25	φ 30	φ 40	φ 60	φ 70	φ 90	φ 110				
Approx. Weight g	160	180		270		700		1100	1500	2600	7300	10500	21400	36000				

Application examples

Servo motor with torque output

Mixer with torque meter

Measurement of torque required to rotate feed rollers

Physical sensory test

Screw driver with torque monitoring

Super Inkjet Printer

【Features】

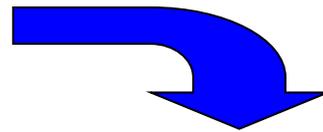
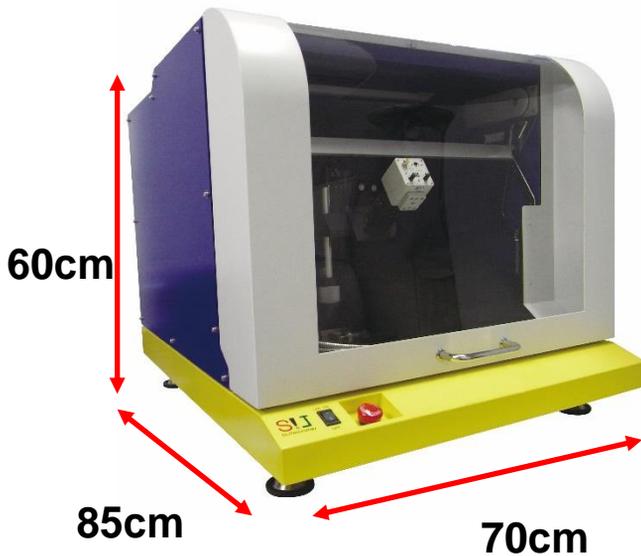
- Ejected droplet size of volume is achieved at a level of 1/1000 or less compared with existing inkjets.
- Super fine electronic components can be created by the printing process (e.g. electronic devices).

【Impact】

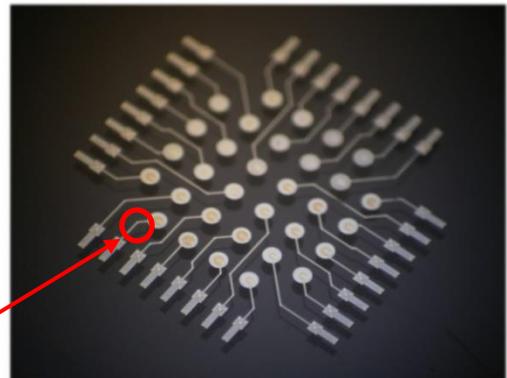
- SIJ products contribute to the manufacturing of a wide variety of products in small quantities.
- Various materials such as metal nano-particles and organic semiconductors can be used as ink material.
- Suitable for a wide range of applications even for security printing and bio-sensors.

【Appearance of Product and Printed Sample】

<Appearance of SIJ machine>



<Printed electronic circuit pattern>



10 micrometers of less of line width

Circuit is created by the printing process (printed electronics)

Corporate Profile

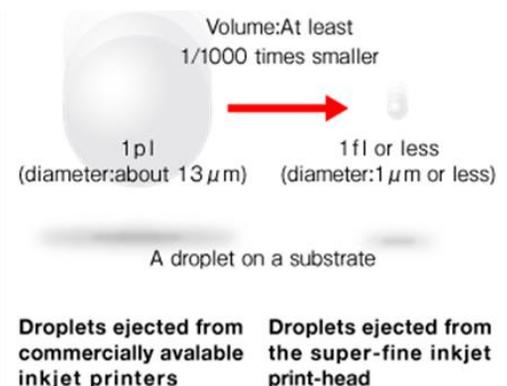
●Corporate Name	SIJTechnology, Inc.
●Representative Director	Kazuhiro Murata
●Establishment (year)	2005
●Capital	25,000,000yen
●Number of Employees	13
●Head Office	5-9-5 Tokodai, Tsukuba, Ibaraki, 300-2635, Japan Tel. +81-29-896-5110 Fax.+81-29-896-5111
●e-mail	info@sijtechnology.com
●URL	http://www.sijtechnology.com/

Business Overview

SIJTechnology, Inc. is engaged in the research and development of super-fine inkjet technology based on the research results developed by the National Institute of Advanced Industrial Science and Technology (AIST).

The super-fine inkjet technology has a wide range of applications including fields to which super-fine inkjet control on a femto-liter level can be applied. Through customer services, joint development and R&D machine sales, we are keen to establish new relationships with companies after confirming the features of our technology.

The super-fine inkjet technology developed by the Nanotechnology Research Institute of AIST allows the ejection of super-fine droplets much smaller than the conventional droplets ejected by a conventional inkjet printer—at least 1/10 smaller in size and 1/1000 smaller in volume.



Super Inkjet printer (SIJ-S050)

- ◇ Super fine patterning
Droplet volume: 0.1fl(femtoliter) ~ 10pl(picoliter)
- ◇ Wide range of viscosity
Viscosity range: 0.5 ~ 10,000cps(non-heated)
- ◇ Large variety of usable fluids

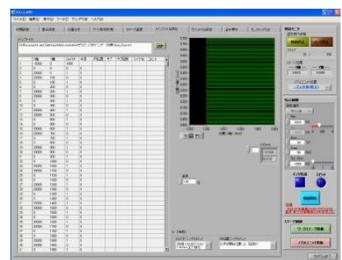


Technical summary

- Super Inkjet technology developed by the National Institute of Advanced Industrial Science and Technology (AIST) allows the ejection of super-fine droplets much smaller than the droplets ejected by a conventional inkjet printer - 1/10 smaller in size and 1/1000 smaller in volume.
- Super Inkjet printer is compact and can be placed on a desktop. The printer allows single micron scale patterns comparable to the photolithographic methods to be drawn directly under normal temperature and normal atmospheric pressure.

Usability

- Software: Easily programmable for printing
- Nozzle: Disposable, Low cost, easily-exchangeable
- Camera: Real-time observation, You can see what's going on the substrate !



Specification

Type	SIJ-S050 (desktop system) ※includes PC, monitor and software
Data format	Vector form data
Patterning design	Arbitrary shape (dot, line, circle, polygonal shape)
Patterning area	50 × 50mm
Number of nozzles	Single nozzle
Repeatability of work stage	±0.2μm
Fiducial camera	Real-time observation camera × 1, Alignment camera × 1
Power	AC100-120V 50/60Hz ※A transformer is necessary by some areas.
Body size	620(W) × 880(D) × 690(H) mm
Weight	Approximately 64Kg
Customization	On your request.

Super Inkjet printer (SIJ-S050)

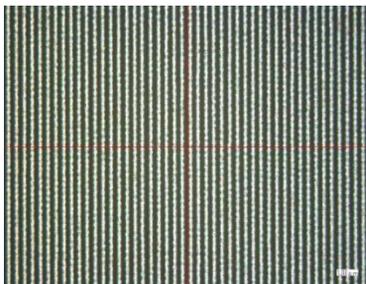
Example of Application

- Advanced technology ·Printable electronics ·Solar-cells ·Touch panels ·LEDs
- Alternative technology ·Partial platings ·Resists coating ·Bumps forming ·Dispenser devices
- Optics technology ·Photomasks ·Microlenses ·Microfilters
- Biotechnology ·Pipetting device of protein material ·Cell scaffolds ·Microarrays

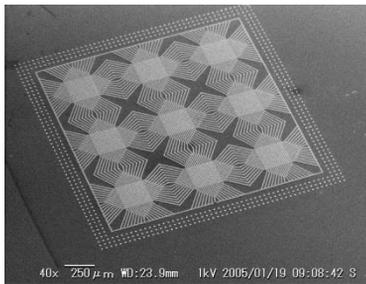
Features

- Droplet volume: 0.1fl (femtoliter)~10pl (picoliter), Line width 0.5 μ m ~ several dozen μ m
Smallest droplet volume !
- Viscosity range : 0.5~10,000cps (non-heated) **Wide range of viscosity !**
- Large variety of usable fluids: Conductive ink, Insulating ink, Resist ink, UV ink, Solvent ink, Protein material, etc **No special ink !**

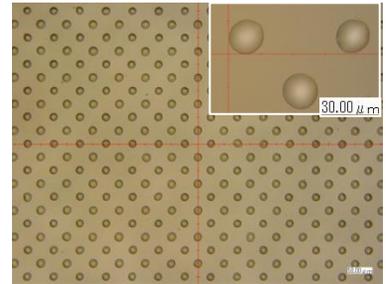
Patterning Example



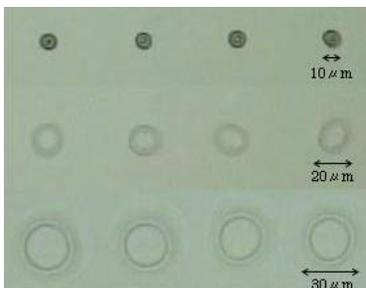
Silver ink, L/S=1 μ m



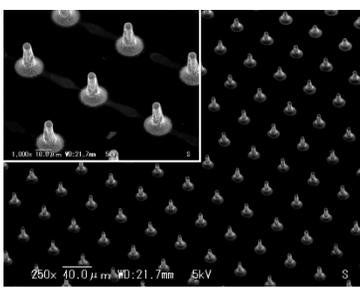
Circuit pattern



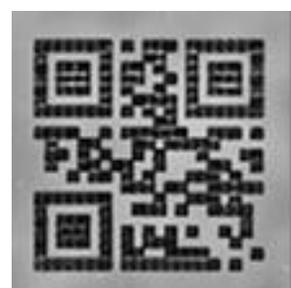
Microlens (resin ink)



Protein material (albumin)



Microbump
Diameter=5 μ m,
Height=20 μ m



Micro QRcode
(750 μ m x 750 μ m)

Sun Spectroradiometer “Hidamari mini”

【Features】

- Measures the spectral power distributions of an artificial sun used for testing solar batteries.
- Applies the unique technology to achieve smaller size and lower price while measuring a wider range of wavelengths than conventional products.

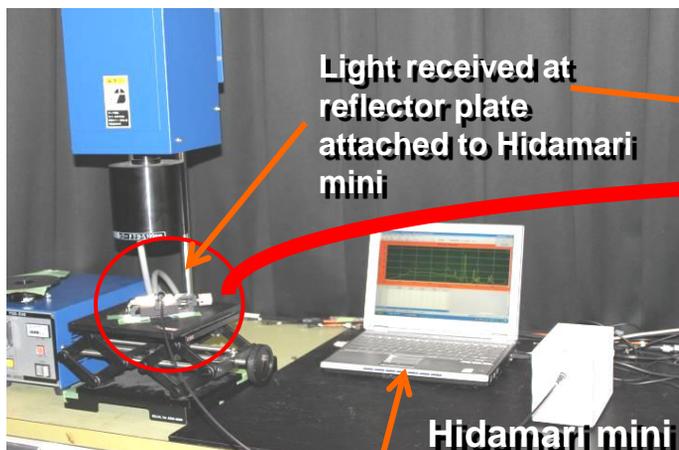


“Hidamari mini”
a palm-size sun spectroradiometer

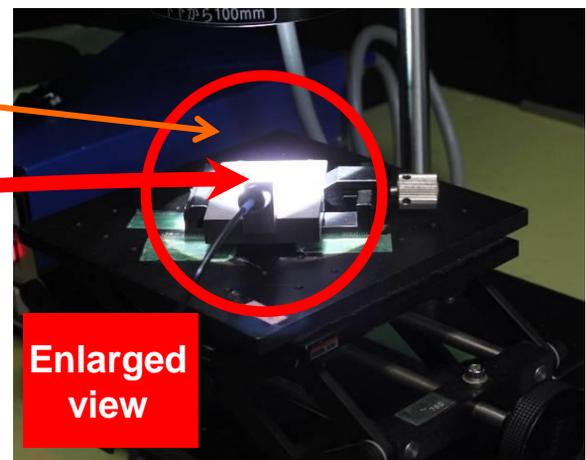
【Impact】

- The same unit can test various light sources for silicon, organic, and other solar battery types.
- Strong potential for use in plant factories.
- Small and light enough for use on manufacturing lines.
- Targeting Taiwan, China, other Asian markets.

	Hidamari mini	Conventional products (other firms)
Wavelength range	300~1100nm	350~1100nm
Size and weight	W90 × H110 × D170(mm) 1kg	W50 × H150 × D250(mm) 1.8kg
Price	880,000 yen	2,000,000 yen



Results checked on PC at the site



Taking measurements (using artificial solar light source)



SOMA OPTICS, Ltd.

Corporate Profile

●Corporate Name	SOMA OPTICS, Ltd.
●Representative Director	Nobuo Ura
●Establishment (year)	1976
●Capital	10,000,000yen
●Number of Employees	28
●Head Office	23-6 Hirai, Hinode-machi, Nishitama-gun, Tokyo, 190-0182, Japan Tel. +81-42-597-3256 Fax.+81-42-597-3208
●e-mail	sales@somaopt.co.jp
●URL	http://www.somaopt.co.jp

Business Overview

We produce the evaluation devices of the solar cell, such as spectroradiometers for spectral sensitivity experiments.

We also produce high-speed liquid chromatograph and NIR-related product based on our leading-edge spectrometric technology.