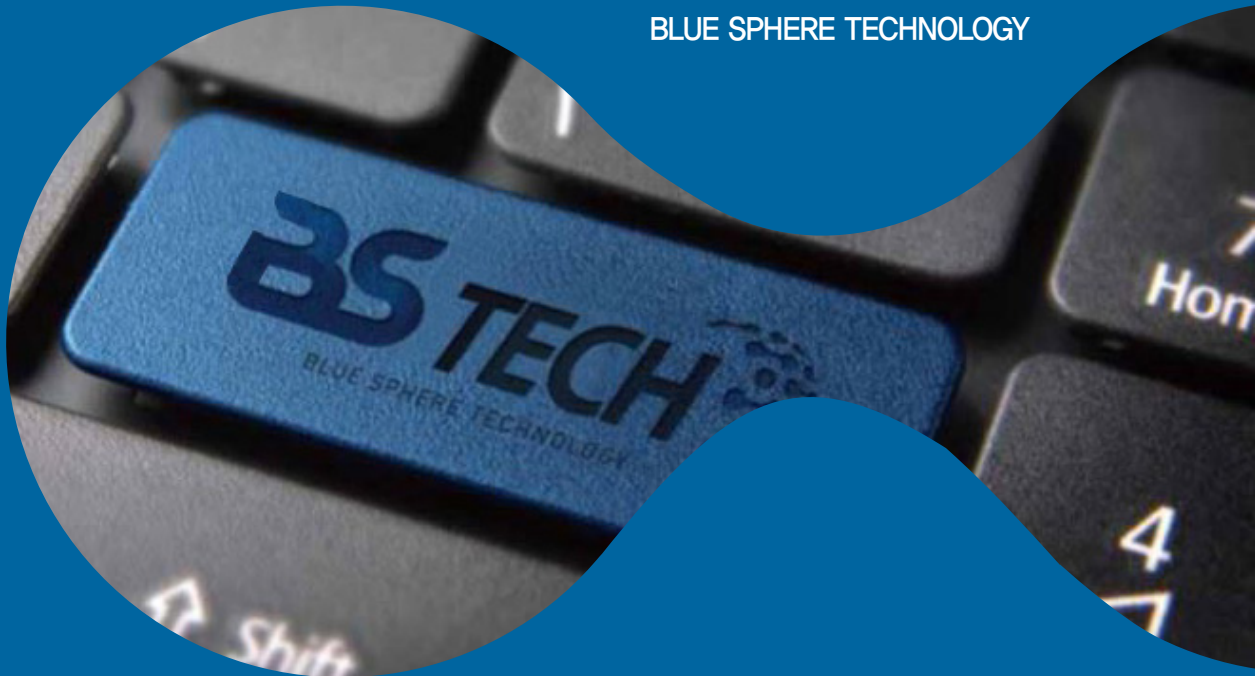


BLUE SPHERE TECHNOLOGY



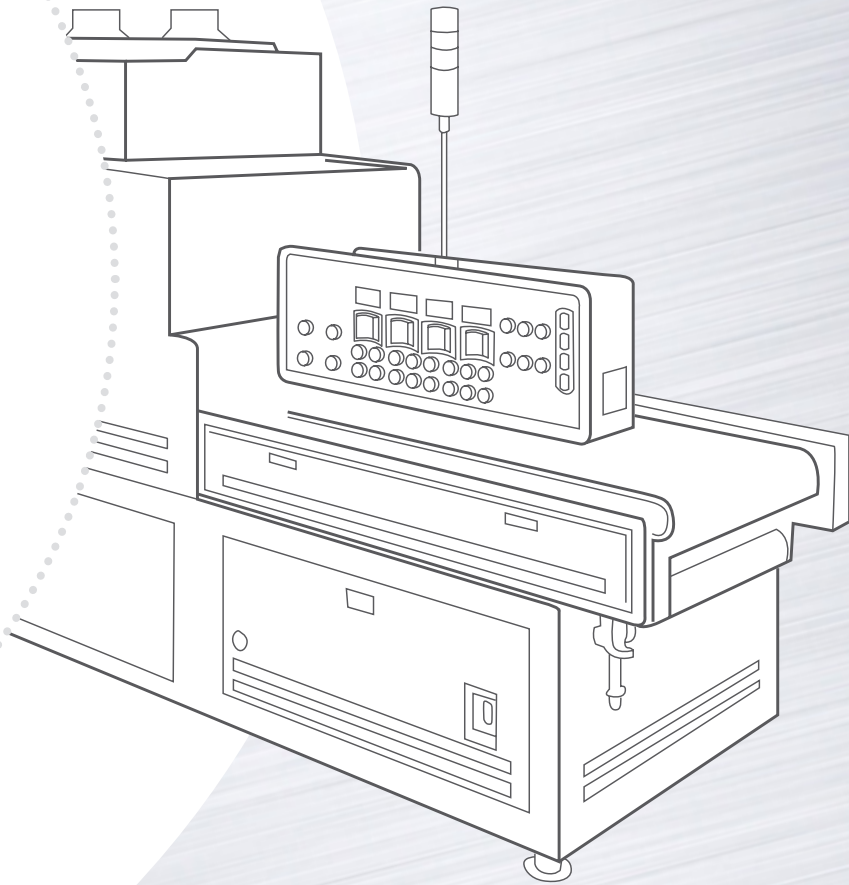
BSTECH specializes in manufacturing parts and materials for factory automation and **we are committed to providing advanced automation technology and developing products that meet optimal quality and reliability.**

BSTECH
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BLUE SPHERE TECHNOLOGY

Total Solution Provider



ABOUT, BSTECH

Welcome and thank you for visiting the website of BSTECH.

BSTECH specializes in manufacturing parts and materials for factory automation and engages in development and delivery of key parts and components for a variety of national strategic industries, including semiconductor, FPD (Flat Panel Display), solar cell, and secondary battery with the ultimate goal of customer satisfaction.

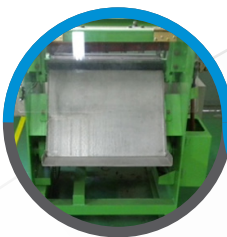
Under the brand name BSTECH, we have developed, manufactured, and delivered special-purpose vacuum pads for transportation of glasses based on the power transmission part, one of the key parts of factory automation assembly line, and the vacuum technology.

In addition, we have made joint industry-academy-research R&D efforts in developing the equipment and systems in vacuum and automation fields with continuous technological innovations with higher priorities on environment-friendly products, systems, and services that meet or exceed customer expectations. We are committed to securing competitive advantages in the areas of our expertise and to delivering the best customer value through sustainable innovations and improvement in return for unswerving confidence and patronage of our customers at home and abroad. Thank you.

Blue Sphere Technology

CEO Kim Hyosung

www.bstech21.com



Cutting Machine



Molding Machine



Automatic 4P
Press



Grinding
Machine



Thermal
Processing
Machine



Measuring
Instrument

VACUUM PAD Manufacturing Process Diagram



VACUUM PAD

Verification of reliability

Case study of joint industry–academy reliability verification

We are able to ensure the quality of our products through verification of product reliability through industry–academia–research joint R&D and qualitative/quantitative assessment of prototype products.

	Hydrophobic Surface	Hydrophilic Surface
contact angle	high	low
adhesiveness	poor	good
wettability	poor	good
solid surface free energy	low	high

Adhesion test and reliability verification

Surface composition analysis of glass/Si board (XPS / EDS)

$$HV = 0.102 \frac{2F \sin \frac{136^\circ}{2}}{d^2}$$

Hardness test of adsorbent pad

Element	Wt%
O	46.5
Si	36.1
Na	3.8
K	1.5
Pd	1.8
Zn	0.1

EDS analysis

- Adhesive strength of vertical direction: ~1.78N (Fixable strength: Max 2.9N/m) (against Si wafer surface)
- Placement speed: 2.8mm/sec

Adhesive TEST

Durability evaluation Test (Based on 15,000water)

Comparison Data

- Vacuum Pad strength: 450mmHG = 6 N/cm²
- Adhesive strength per G–none pad: 1.78N (1.0cm diameter)
- Installed 3 pads on the blade: 5.34N (Same pad q'ty with vacuum or edge gripper)

Durability TEST

VACUUM PAD

Product Description

The vacuum pad is a versatile product that ensures a complete functionality for all handling works as it comes in a variety of materials, sizes, and shapes while being extensively applied to a wide variety of handling works. The vacuum pad that connects between the thin-film glass handling system and workpiece materials must meet various requirements and it is critically important to select a vacuum pad suitable to serve the intended purpose to ensure a safe operation of the vacuum system. BSTECH has the capacity to develop, manufacture, and deliver a wide range of vacuum pads in a variety of shapes, sizes, and materials depending on the usage.



Expansion of market presence, recognition of new material development technology and advancement into the global market thanks to quality assurance and technical competitiveness for precision vacuum lift and transport systems and roduct replacement among existing customers



Product Development Overview

- Requires various precision improvements, including large area, heat resistance and chemical resistance in line with the trend of manufacturing processes increasingly becoming enlarged with higher precision
- Replaces existing metal and non-metal vacuum lift modules
- Highly functional with the surface resistance controlled
- Possible to localize the vacuum lift module

FPD R&D, Design and manufacturing of mass-production automation

- RTR-oriented system based on the experience of developing film coatings for smart phone and FPD thin-film glasses
- Development of R&D equipment for film coatings drying condition
- Collaborative R&D efforts among industry, academia and research for specific technology of related systems through a systematic analysis of processes required for the application of mass production systems, including OLED materials and layer-based low-temperature and high-speed drying

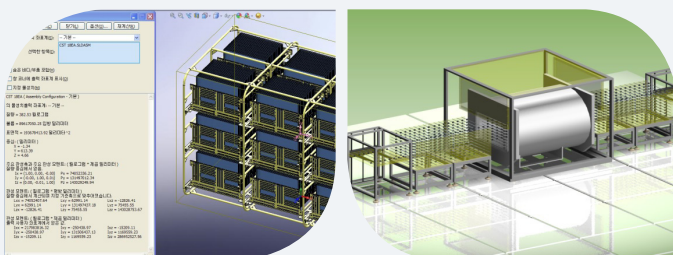
R&D equipment related to OLED film drying



Development equipment related to FPD



Design and R&D of equipment



Vacuum and Power Transfer Unit Parts Business

BSTECH delivers key parts and components for semiconductors, FPD vacuum and factory automation power transfer unit, with our best effort to sustain growth with our customers. In particular, we deliver parts and components for PANASONIC's servos and NABTESCO's decelerators, which are a part of the major power transfer product portfolio and have the capacity to offer competitive proposals for other prestigious Japanese makers as well. We are committed to providing you with quality semiconductor related parts and components, including KALREZ and SAKURA SEAL in a more cost effective manner.

POWER TRANSMISSION PARTS

		
SERVO MOTOR , AMP	HIGH PRECISION REDUCER	SERVO, GEARED MOTOR
		
TOSVERT INVERTER	MICRO DC,AC MOTOR	SERVO, GEARED MOTOR
		
HIGH SPEED DD MOTOR	VACUUM CIRCUIT BREAKER	BEARING UNIT ,BREAKER
		
PLANETARY REDUCER	POWER CYLINDER SCREW JACK /CHAIN	LINEAR CONVEYOR MODULE SCALAR ROBOT,CONTROLLER

PERFLUOR COMPONENTS

	
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*Please visit our website (www.bstech21.com) for more details on makers.