

Create the future with

JSW AKTINA

日制钢机电商贸(上海)有限公司

公司介绍



以独特的构思和技术 开拓未来

Pioneering the future with unique ideas and technologies

我们的目标是凭借创新的“想象力”和迄今为止培养的“核心竞争力”，
为瞬息万变的行业发展做出贡献，创造辉煌灿烂的未来。

**JSW Aktina Syetem is contributing to development in a rapidly changing world
and creates a bright future by “ability to generate innovative ideas” and “core competencies”
that has been evolved over the years.**

我们的使命

1. 我们致力于技术创新和可持续发展，为解决客户的难题，始终贴近客户并努力成为最佳合作伙伴。
2. 我们尊重多样性，人与人之间的纽带，为实现真正富有和“激动人心的社会”做出贡献。

Our missions

1. JSW Aktina Syetem aims for continuous technological innovation and sustainable growth in order to be the best partner for all customers by always providing solutions to their challenges.
2. JSW Aktina Syetem will contribute to the realization of a truly affluent and motivated society by respecting diversity and connecting people with each other.

MESSAGE

在需要时，提供需要的产品

Delivering what's needed, when it's needed

JSW AKTINA SYSTEM株式会社是从株式会社日本制钢所（JSW）的平板显示器事业部门独立出来，于2021年10月1日成立的新公司，是电子器件制造设备的生产厂商。

从1995年到今天，我们作为准分子激光退火设备的先锋，一直引领行业，为世界高精细平板显示器的发展做出了贡献。在逾25年的经验和业绩基础上，为了实现更大的飞跃，我们乘着新船驶向新的领域。

在技术创新周期非常短的半导体/平板显示器市场，与客户的相遇和互动是我们的生命线。在这一重要的互动中，必须准确把握每个客户的需求，切实满足客户的需求。我们应该去做的事情就是创造“客户需要的产品”，并在“客户需要的时机”提供给客户。

我们将最大程度地灵活应用迄今为止积累的技术、技巧以及人才资源，今后将继续开发想象力和技术，为多样化、高度化的需求提供独特的解决方案。我们将朝着“成为关键时刻客户可以依赖的伙伴”这一目标，勇往直前。

请多多关照。

JSW Aktina System Co., Ltd. was established on October 1, 2021 as a provider of electronic device manufacturing equipment as a result of the spin-off of The Japan Steel Works, Ltd. (JSW)'s flat-panel display business division.

From 1995 up to today, we have led the industry as a pioneer of excimer laser annealing systems, and have continued to contribute to the development of high-definition flat-panel display products around the world. Based on our experience and achievements over the past 25 years, we have embarked on a voyage into a new realm to make a further leap forward.

In the semiconductor and flat-panel display markets, where the cycle of technological innovation is extremely short, our encounters and connections with customers serve as our lifeline. Through close communication with them, it is essential for us to accurately understand the needs of each and every customer and respond to them with confidence. We must create what the customer wants, and provide it at the right timing when the customer needs it.

We will make the most of our resources, including the technology, expertise, and human resources that we have cultivated over many years, and continue to hone our creativity and technology to offer unique solutions to increasingly diverse and sophisticated needs. In addition, we will continue to forge ahead toward our goal of becoming a partner that people can count on in times of need.

We look forward to your continued support and patronage.



董事长兼总经理

谷川贞夫

Sadao Tanigawa

Managing Director

我们以综合全面的解决方案来实现 【最先进的产品制造/价值创造】

We offer comprehensive solutions to support cutting-edge manufacturing and value creation.

销售 Sales



准确满足各个需求

We cater to the needs of our customers.

由常驻在国内外各分部的销售人员听取客户的需求、商业动向、以及针对设备和技术的请求，通过会议和试验等，提出符合要求的最佳解决方案。

Sales representatives stationed at each of our locations in Japan and abroad always pay attention to customer needs and business trends and what kinds of systems and technologies are desired. Then, through meetings and demonstration tests, we materialize customer's requests to propose optimum solutions.



Customer Service

客户支持



贴近客户，致力于解决问题

We work closely with our customers to solve their problems.

常驻国内外各分部的多位各国籍现场服务工程师，充分应用ICT/AI技术，可迅速响应客户需求并解决问题。

Experienced and highly skilled multinational field service engineers, stationed at each of our domestic and overseas locations, use ICT/AI technology to quickly respond to customers' requests and solve their problems.



提供高可靠性的量产设备

We offer highly reliable mass-production systems.

在平板显示器及半导体用激光退火设备为主的电子制造设备开发/设计的领域，凭借以逾25年的知识和业绩，提供高性能且实现稳定运行的量产设备。

Based on our knowledge and experience of more than 25 years in the development and design of electronic device manufacturing equipment, including laser annealing systems for flat-panel displays (FPDs) and semiconductors, we provide mass-production systems that achieve high performance and stable operation.

Development and Design

开发设计

退火 (结晶化、活性化) Annealing (Crystallization, Activation)	Lift-off (剥离) Lift-off (Debonding)	Cutting (切割) Cutting	Drilling (打孔) Drilling (Piercing)
<p>半导体用μLA设备 μLA system for semiconductors</p> <p>半导体用LA设备 LA system for semiconductors</p> <p>FPD用LA设备 LA system for FPDs</p>	<p>FPD用LLO设备 LLO system for FPDs</p>	<p>FPD用FLC设备 FLC system for FPDs</p>	<p>激光微细孔加工设备 Laser micro-drilling system</p>

工艺精度 Process accuracy (μm)

1

10

100

Manufacturing

制造

快速满足各种各样的需求

We can quickly cater to a wide variety of customer requests.

我们公司位于首都地区的主要公共交通设施附近，交通便利。同时在公司内设有用于设备制造的无尘室设施，我们可以应对各种客户的需求。

We have a clean room facility for systems manufacturing, conveniently located close to major public transportation networks in the capital area, so we can easily respond to a wide variety of customer needs.





Products

面向以技术创新日新月异的平板显示器、半导体等为首的最尖端领域，
提供激光退火设备、激光剥离设备等高性能、
高可靠性的量产设备
及相应的技术支持。

**We provide high-performance, highly reliable mass production systems
such as laser annealing systems and laser lift-off systems,
along with trusted technical support,
for cutting-edge sectors including flat-panel displays and semiconductors,
where technological innovation is advancing day by day**

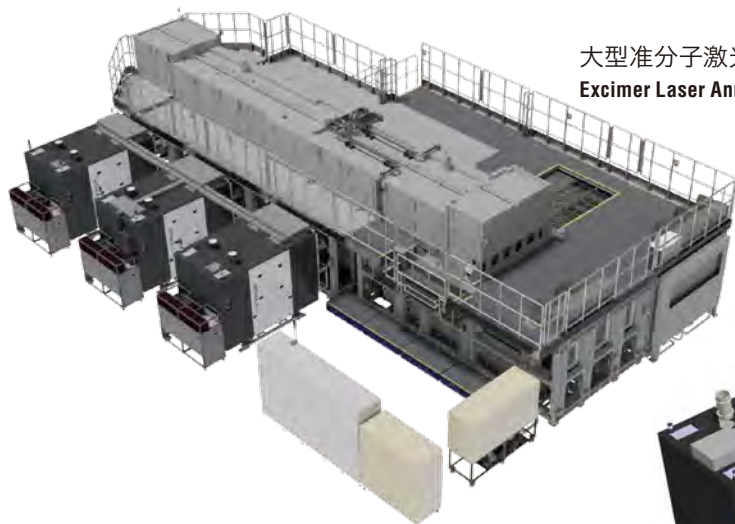
准分子激光退火装设备

Excimer Laser Annealing System

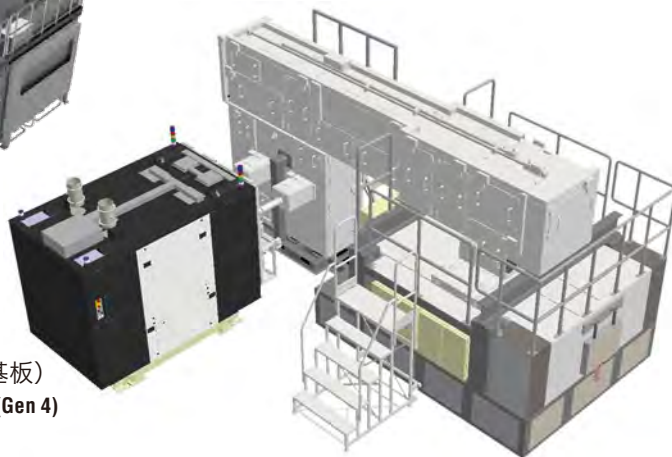
YIELDSCAN ELA

准分子激光退火 (ELA) 设备是将通过激光照射在玻璃基板上成膜的非晶硅膜改性为多晶硅的设备。TFT (薄膜晶体管) 作为高精细面板的驱动部, 广泛使用了低温多晶硅, 是智能手机、车载显示器、便携式游戏机等高精细面板的制造不可缺少的设备。

The Excimer Laser Annealing (ELA) system converts amorphous silicon film on a glass substrate into a polycrystalline silicon one. The low-temperature polycrystalline silicon is generally used in the TFT (Thin Flat Transistor) of the high-resolution panels. ELA System is essential for the production of high-resolution panels, such as smartphones, automobile monitor and portable gaming devices.



大型准分子激光退火设备 (支持六代线基板)
Excimer Laser Annealing System (Gen 6)



中型准分子激光退火设备 (支持四代线基板)
Excimer Laser Annealing System (Gen 4)

特性

- 应用本公司独有的基板搬送技术“StiFloat™”, 进一步提高了工艺性能
- 通过多循环搬送, 成功提高生产效率 (较本公司以往提高25%) 并降低CoO (较本公司以往降低25%)
- 通过用户生产支持系统 (iSCAN™), 实现设备状态的自我监测, 为提高成品率做出贡献
- 为了扩大工艺余量, 通过Pulse Extender, 成功改善MURA、实现缓解脉冲的波动
- 通过延长激光管寿命, 改善保养成本
- 通过振动分析实现耐抗振设计

业绩

自1995年销售以来, 已向中国、日本、韩国、台湾地区和新加坡的显示器制造商交付200多台设备。

Features

- Further increase process performance with our original substrate transport technology “StiFloat™”
- Improved production capacity (25% up) and CoO (25% down) with multiple cycle handling operation
- Self-monitoring of the system status with data integration and user production support system (iSCAN™) contributes yield improvement
- Expansion of process margin to improve nonuniformity (Mura) and mitigation of pulse fluctuation using a Pulse Extender
- Reduction of maintenance cost by extending a tube lifetime
- Anti-vibration design by vibration analysis

Sales Records

Since 1995, we have installed over 200 systems to display companies in China, Japan, South Korea, Taiwan and Singapore, as one of the top manufacturers of the ELA system.

规格 Specifications

	G4.5	G6	G8.5	G10.5
应用 Applications	Mobile, VR Automotive or In-Vehicle	Mobile, VR, Foldable Automotive or In-Vehicle	OLED Tablet & Foldable 8K TV & Monitor	8K TV
基板尺寸 Substrate size	730×920 mm	1,500×1,850 mm	2,200×2,500 mm	2,940×3,370 mm
TFT	LTPS	LTPS	LTPS	BG-LTPS
激光 Laser	Vyper	Twin-Vyper Tri-Vyper	Tri-Vyper	Tri-Vyper
光学系 Optical system	LB750.2	LB1000	LB1500	LB1500XL
工作台 Stage	StiFloat™ or Air bearing stage	StiFloat™ or Air bearing stage	StiFloat™	StiFloat™

StiFloat™

独创的基板搬运技术 Our original substrate transport technology

优点 Advantages

可支持大型基板 (~G10.5), 实现高性能且稳定的ELA工艺

通过独创的基板搬运技术, 提供最佳的ELA工艺。

通过提高基板搬运时的匀速来 实现稳定的激光照射工艺

通过非接触的无摩擦搬运可获得工作台的速度稳定性, 因此照射MURA会减少。

通过提高照射部基板平坦度 来扩大工艺余量

与VC*2方式相比, 由于搬运基板的构造, 只需将激光照射部的限定区域平坦化即可, 所以, 照射区域的平整度得到了提升。因此, 在激光照射时, 基板会在激光焦点范围内的固定高度上进行加工。

减少照射MURA

在以往的系统中, 因N₂流动或VC引起的MURA问题可以得到控制

• 流动MURA

利用气浮式结构, 充分运用气流控制技术, 对激光照射部N₂气流进行了优化设计。

• VC引发的MURA

由于不与VC接触, 因此不受VC的槽等引起的基板背面的影响, 不会发生VC引起的照射MURA。

抑制ESD*3的产生

由于在FELA系统内以几乎非接触的状态搬运基板, 因此不会因接触而产生静电。

另外, 在进行基板夹持等接触/剥离动作的部位, 针对静电问题也进行了部件选定和结构设计。

Particle的抑制

FELA系统中, 只有基板在非接触状态下搬运, 所以与现有类型相比, Particle的飞散、附着极少。

Capable of handling large substrates (up to G10.5), achieving a high-performance, stable ELA process

Our original substrate-transfer technology provides the most optimal ELA process.

Stable laser irradiation process by improving velocity stability during substrate transport

Non-contact frictionless transport provides speed stability for the stage, reducing uneven irradiation.

Expanding process margin by increasing flatness of substrates in irradiation area

The JSW-FLEA system structurally transports only a substrate and increases the flatness of substrates in irradiation area compared with the VC*2 method since only a limited irradiation area needs to be planarized. Therefore, during laser irradiation, the substrates are processed at a constant height within the focal range of the laser beam.

Reduction of irradiation Mura

N₂ flow Mura and Mura caused by VCs, which have been issues with conventional ELA systems, are reduced.

• Airflow Mura

The N₂ airflow in the laser irradiation area is optimally designed using airflow control technology, taking advantage of the float-type structure.

• Mura caused by VCs

Due to the lack of contact with VCs, the backside of the substrate is not affected by VC grooves, etc., and irradiation Mura caused by VCs does not occur.

Reduction of ESD*3

Since the substrate is transported in an almost non-contact state in the JSW-FELA system, static electricity caused by contact is not generated. In addition, components in contact with substrates such as substrate-gripping parts are made of materials that prevent ESD generation.

Reduction of particle

In the JSW-FELA system, only substrates are transported in a state of non-contact, so particles spread and adhered to the substrate are extremely small compared to conventional systems.

*1 FELA: 气浮式ELA设备

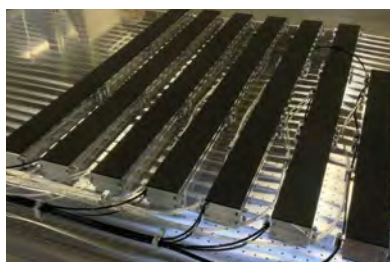
*2 VC: 真空吸附式基板保持台

*3 ESD: 静电放电

*1 FELA: Float-type ELA system

*2 VC: Substrate holding stage of vacuum-suction type

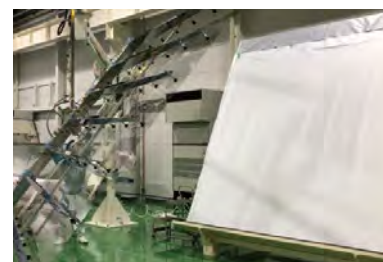
*3 ESD: Electro-Static Discharge



气浮式工作台
Float-type stage



大型基板用气浮式工作台
Float-type stage for large substrates



大型基板的搬运 (公司内设备)
Large substrate handling equipment (in-house equipment)

采用气浮式工作台的JSW-FELA*1系统的特性
通过利用空气使基板浮起, 将基板背面的接触限定在最小限度的区域, 实现了几乎非接触的搬送。

Features of the JSW-FELA*1 system with a float-type stage

The glass substrate (substrate) is transported with almost no contact, since the contact on the back of the substrate is limited to the minimum by floating the substrate with airflow.

关键技术 Key Technologies

激光照射部位基板高度变动的控制结构

在FELA系统中最重要部分的激光照射部的浮板上, 通过独创的浮起量控制技术巧妙地赋予约束力, 使基板保持平坦且保持一定的悬浮高度。

Suppression mechanism of substrate height variation in the laser irradiation area

The float plates at the laser irradiation area, which are the most important parts of the JSW-FELA system, are designed to provide a restraining force so that the substrates are kept flat and the float height is constant, using our original floating control technology.

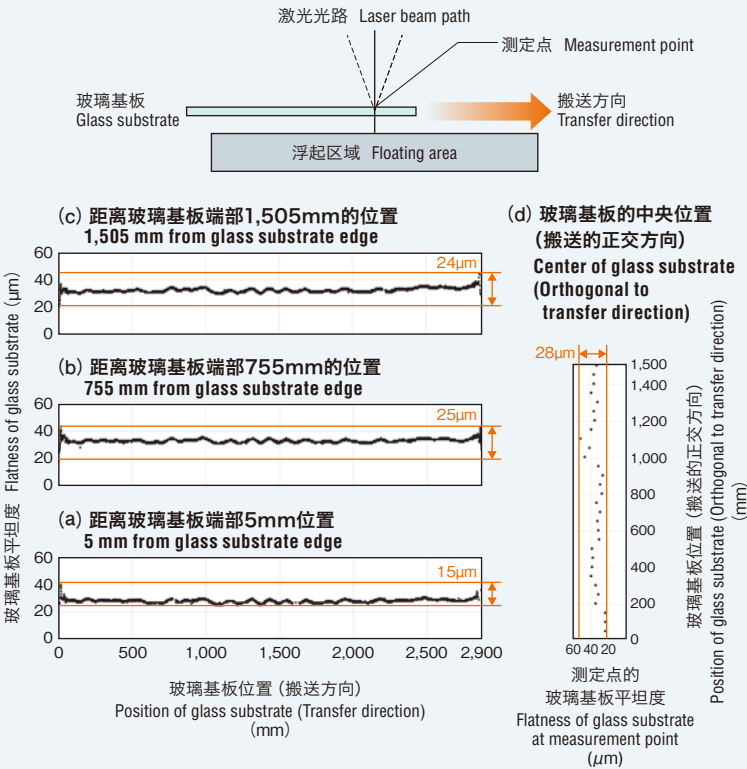
布局设计技术

通过浮板的布局设计技术克服大型基板用的浮式工作台的原理性问题, 即基板中央部鼓起成圆顶状, 基板角部的浮起高度降低的现象, 同时能够控制基板的浮起量。
也可以在工作台上进行基板的旋转或纵横2个方向的搬送。
通过精心设计的工作台布局能够缩短基板的搬出/搬入时间。
与传统型ELA设备相比, 能够缩短运行时间, 减少激光器的消耗。

Layout design technology

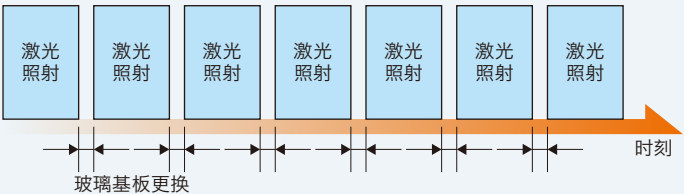
The layout design technology of the float plates overcomes the phenomenon that the center of the substrate expands into a dome shape and the float height of the corner of the substrate decreases, which is the issue of the principle of the float-type stage for large substrates, and the float amount of the substrate can be controlled. It is also possible to rotate the substrate on the stage and transport it in two directions, horizontally and vertically.
The ingenious stage layout reduces the time required for loading and unloading of substrates. Takt time and laser consumption can be minimized compared to conventional ELA systems.

■激光照射位置的玻璃基板浮起量的剖面图
Cross-sectional plotting of levitation amount of glass substrate at laser irradiation position

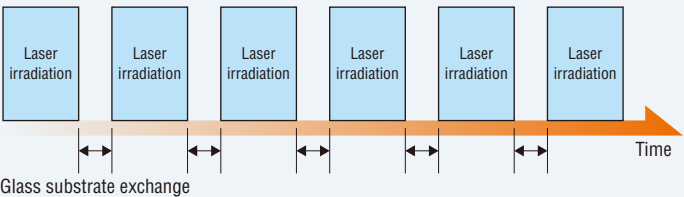


■F-ELA工艺与传统型ELA工艺的运行时间示意图比较
Image of tact time comparison between FELA process and conventional ELA process

F-ELA工艺 FELA process



传统型ELA工艺 Conventional ELA process



激光剥离设备

Laser Lift-Off System

YIELDSCAN LLO

柔性显示屏具有薄而轻, 可弯曲且不破裂的出色优点。激光剥离 (LLO) 设备是通过激光照射无应力地剥离已形成为载体玻璃状的柔性显示屏的设备。使用波长短的紫外光激光, 仅被剥离用的树脂层的表层吸收, 因此能够防止对器件的损伤。

Flexible displays have excellent advantages as thin and light, bendable and unbreakable. The Laser Lift-Off (LLO) system detaches a flexible display from a carrier glass substrate without applying stress to it. We select a UV laser of short wavelength that can be absorbed at the only surface of debonding layer, so that laser irradiation cannot affect flexible display.



特性

- 通过自主开发的基板搬送工作台, 实现高生产效率 (较本公司以往提高50%^{*1})
- 可选择搭载激光的波长:
准分子激光 (308nm) 或固体激光 (343nm)
- 搭载工艺监控功能 (剥离判定)
- 搭载转向键功能 (AI的自动条件提出功能^{*2})
- 减少空间面积 (较本公司以往减少40%^{*3})

*1 取决于客户使用的线状光束的重叠率。
*2 通过深度学习进行判定, 因此需要在客户协助下, 取得多张剥离结果图像。
*3 支持柔性显示屏 (G6.5 Half Size)

业绩

作为量产用设备, 向日本、韩国、中国等国家的显示器制造商交货。

规格 Specifications

	准分子激光器 Excimer Laser	固体激光器 DPSS Laser
基板尺寸 Substrate size	1,500×925 mm	1,500×925 mm
激光波长 Laser wavelength	308 nm	343 nm
输出 Power	600 W	800 W
光束尺寸 Beam size / LA × SA	750×0.35 mm	750×0.03 mm

Features

- Our original substrate transport stage technology brings high production capacity. (50% up^{*1})
- Available Excimer laser (308 nm) and DPSS laser (343 nm)
- Process monitoring function (Judgment to detach or not)
- Turnkey operation (Automatic irradiation condition setting by AI^{*2})
- Small footprint (40% reduction^{*3})

*1 Depends on the overlap rate of the line beam used by the customer.
*2 Process judgment is made with deep learning, so the customer is required to provide the pictures of their panel after LLO.
*3 Compatible with flexible panels (G6 half size).

Sales Records

Delivered to display companies in Japan, South Korea and China, etc. for mass-production system.

薄膜激光切割设备

Film Laser Cutting System

YIELDEdge FLC

薄膜激光切割设备用于柔性显示器的制造工序, 可以进行薄膜或片材的切割、剥离、清洗等多个工序的处理。搭载两种激光器, 用CO₂激光器进行切割薄膜的全切割, 以及只切割多层中的上层的半切割, 用UV激光器可以实现高精度的切割工艺。另外, 也可以加工大型尺寸的基板, 最适合作为量产设备。

The Film Laser Cutting system handles multiple processes of cutting, peeling, and cleaning of a film or sheet. With two types of laser, it processes full-cutting to cut films and half-cutting to cut only upper layers from the multiple layers of films with CO₂ laser and higher accuracy cutting process with UV laser. Available for large-size substrates, this system can meet the mass-production needs.



特性

- 通过本公司设计的光学系统和工作台的同步控制实现精密加工
- 支持从薄膜切割到剥离、边缘清洗的流水线工艺
- 也支持大型基板 (TV尺寸) 的切割
- 可加工多种基板厚度 (也可以是带玻璃的薄膜)

Features

- Precision machining by synchronized control of the optical system and stage designed in-house
- Inline process including film cutting, peeling and edge cleaning
- Available for cutting large panel sizes (TV)
- Cutting various types of works (available for film on glass)

业绩

用于柔性有机EL显示器的制造。

Sales Records

It is used to manufacture flexible OLED displays.

规格 Specifications

支持工艺 Process	激光切割 (Full /Half /Pad Cuts) Laser cut (Full/Half/Pad cuts) 剥离 Peeling 等离子清洗 Plasma cleaning 外观检查 Visual inspection
激光器种类 Laser type	CO ₂ Laser, UV Laser
切割精度 Cutting accuracy	≤ ±50 μm

加工事例 Process examples



反射型显微镜图像
Reflective microscope image



透射型显微镜图像
Transmission microscope image

热影响宽度单侧 160μm (CO₂激光器)
HAZ (one side) 160 μm (CO₂ Laser)

光仅透过消失的部位
Light can pass through at disappearance area only

扩大
Enlarged



消失宽度 12μm (CO₂レーザー)
Disappearance width 12 μm (CO₂ Laser)

半导体用激光退火设备

Laser Annealing System for Semiconductors

YIELDSCAN SLA

近年来, 半导体器件的结构高度集成化, 在制造工序中, 需要仅提高表面局部温度的热处理工艺。本公司开发的固体激光退火设备就可以满足这样的需求, 主要在高性能图像传感器领域作为量产设备使用。另外, 我们也朝着将其应用于其他领域的目标开展研发活动。

Due to the increasing high integration of semiconductor device structures, there is a growing demand for heat-treatment processes that target the local surface layer of the device. Our Laser Annealing system meets such demands, which are now mainly used for the mass production of high-performance image sensors. We are also engaging in R&D activities in order to expand the application of our system.

特性

- 通过脉冲控制可以调整加热时间
- 深层区域的活性化
- 浅层区域的活性化
- 最多可支持12英寸晶片尺寸

业绩

凭借活性化工艺用途, 被半导体制造商采用。

Features

- The heating time can be adjusted by pulse control
- Deep area activation
- Shallow area activation
- Work size: up to 12-inch wafers

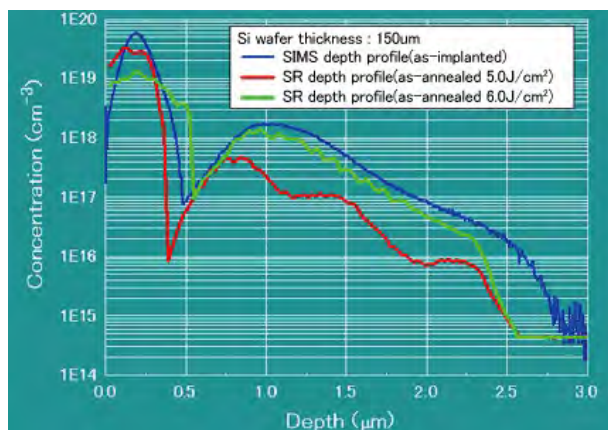
Sales Records

We have sold the system used for an activation process to a semiconductor manufacturing company.

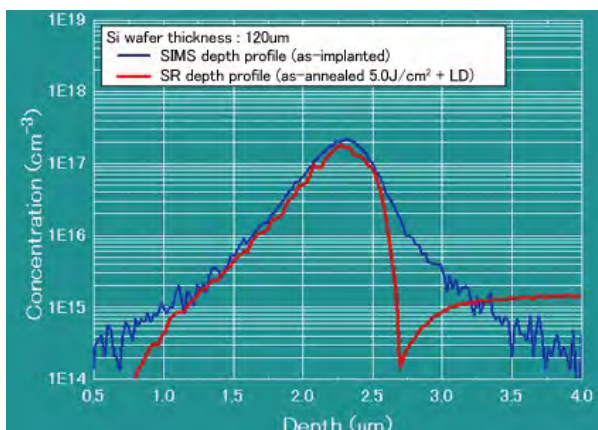


■ 活性化试验结果案例 Activation test results example

基于SIMS和STR的B和P的深度方向的浓度分布
Distribution of B and P concentrations in the depth direction by SIMS and STR



浅层区域和深层区域的同时活性化 (离子注入条件: P/750keV、B/40keV)
Simultaneous shallow and deep areas activation (Ion implantation condition: P/750 keV, B/40 keV)



仅深层区域的活性化 (离子注入条件: P/3MeV)
Only deep-area activation (Ion implantation condition: P/3 MeV)

微型激光退火设备

Micro Laser Annealing System

YIELDSCAN MLA

微型激光退火 (μ LA) 设备将由Mask pattern 图案控制的微小光束照射到基板上的特定位置。通过 μ LA设备,可以在不使基底基板达到高温的情况下,在微米要求下,对微小区域的薄膜进行结晶化,活性化,高介电化等改性。

The Micro Laser Annealing (μ LA) system irradiates a microbeam controlled area by a mask pattern to a specific position on the substrate. With the μ LA system, thin films of minute area in the micro-meter order can be crystallized, activated, made highly dielectric, etc. without affecting the base substrate with heat.

特性

- 以 $\pm 5\mu\text{m}$ 的位置精度向晶片的特定位置照射
- 作为量产设备正在运行
- 晶片搬送
- Top Flat光束
- Mask投影光学系统

业绩

在半导体量产工厂使用。



规格 Specifications

工件尺寸 Workpiece size	6 inch, 8 inch	
定位精度 Positioning accuracy	$\pm 5\mu\text{m}$	
激光 Laser	波长 Wavelength	248 nm
	脉冲宽度 Pulse width	20 ns
	输出 Power	30 W
工艺用时 Process throughput	3 min/wafer (6 inch)	
照射 Irradiation	Mask Projection, Top flat beam, Min Sq 10 μm /Max Sq 2.4 mm, Several pattern on 9 inch Mask	
设备尺寸 System dimensions	W 3200×D 4000×H 2500mm (With automatic wafer handling)	

Features

- A device that irradiates a specific position on a wafer with an accuracy of $\pm 5\mu\text{m}$
- In operation as a mass-production system
- Wafer auto handling
- Top Flat beam
- Mask projection optical system

Sales Records

It is used in semiconductor mass-production factories.

激光微细孔加工设备

Laser Micro Drilling System

YIELDvia ELD

激光微细孔加工设备能够对聚酰亚胺胶带、玻璃等各种材料形成以微米为单位的微细孔。因为是利用激光进行加工,所以能够进行局部的热处理,因而也被应用于电子器件的制造。本公司开发了最适合本设备的光学系统、照射位置控制系统,不断积累可满足产业界要求的技术。

The Laser Micro Drilling system forms fine holes in the unit of a micrometer for various materials such as polyimide tape, glass and others. This process is using the laser annealing technic on local position and is adopted in mass production for electronic devices. We have been developing optics systems and irradiation position control systems for laser process and accumulate technology to meet industrial request.



特性

- 直径 $4\mu\text{m}$ 的微细打孔加工
- 槽加工、图案化
- 退火

Features

- Micro drilling as small as $4\mu\text{m}$
- Laser scribing and patterning
- Laser annealing

Sales Records

We have sold the system for medical and beauty equipment.

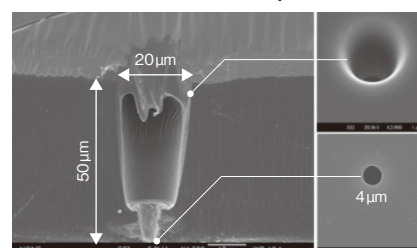
业绩

用于医疗、美容设备的制造。

规格 Specifications

激光器种类 Laser type	准分子激光器 Excimer Laser
激光波长 Laser wavelength	248 nm
光束尺寸 Beam size	4×2 mm
最大能量密度 Maximum energy density	1.6 J/cm ²
光束扫描 Beam scan	XY Stage

加工事例 Process example



用LMD设备制作的2阶段加工事例
Example of two-step machining made with the LMD system

JSW Aktina System株式会社凭借”高效运行设备“使客户放心。 JSW Aktina System is assuring a high productivity system for customers.

After-sales Service

Field Support

- 定期维护
- 修理
- 故障诊断
- Periodic maintenance
- Repair
- Troubleshooting



受过培训的服务工程师，从定期的配件更换到紧急情况的应对都能提供精准的支持服务。
在紧急情况下，工程师会根据积累的数据库迅速做出响应。

Well-trained service engineers support the smooth operation of systems from periodic parts replacement to emergencies.
In an emergency, our engineers provide rapid support based on our accumulated knowledge, various experiences and proper solutions stored in our database.

遍布亚洲的服务分部 Service locations in Asia

各分部配备了经验丰富的工程师，以安心、安全为宗旨提供服务。
Experienced engineers in each location support systems safely.



日制钢机电商贸（上海）有限公司
JSW Electromechanical Trading (Shanghai) Co., Ltd.



JSW AKTINA SYSTEM株式会社
JSW Aktina System Co., Ltd.



- | | |
|----------------|--|
| ● 本地服务分部 | Local service location |
| ● 销售/服务分部 | Sales & service location |
| ● 服务部件仓库（保税仓库） | Service parts warehouse (Bonded warehouse) |

在售后服务方面, 提供包括激光退火设备在内量产设备的修理、移设、部件销售及保养服务。
销售、开发/设计、制造、服务四位一体, 致力于更高精端设备的问题解决和改造。

We offer repair, relocation, parts sales, and maintenance service for mass-production systems including laser-annealing systems.
Our four groups of sales, RD/design, manufacturing, and service closely cooperate to provide higher level of solutions and improvements to your system.

Solution Service

Production Support

- 常驻支持
- 培训
- 呼叫支持
- 部件销售
- 设备记录
- On-site support
- Training
- On call support
- Parts sales
- Machine record

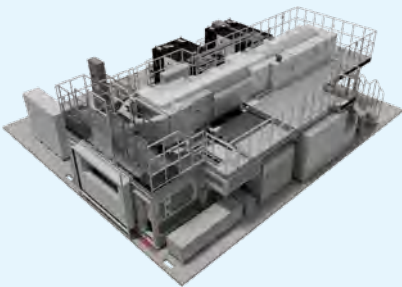


为了让客户长期安心使用设备, 我们还提供设备培训和对应工程师的常驻服务。另外, 通过本公司独创的机器记录系统 (设备处理记录) 为客户提供服务支持。

To improve uptime and efficiency we are pleased to offer training and on-site engineer support service. We use our original machine record system (to record all system trouble and events) to support customers.

System Update

- 保养、修理
- 移设
- 改良、改造
- Overhaul and repair
- Relocation
- Upgrade and retrofit



我们承接客户设备的移设及为改善质量而实施的修理、改造。如果有需要解决的问题, 请随时咨询。

We offer system relocation and overhaul/upgrade for quality improvement. If there is a request or issues with your system, please contact us.

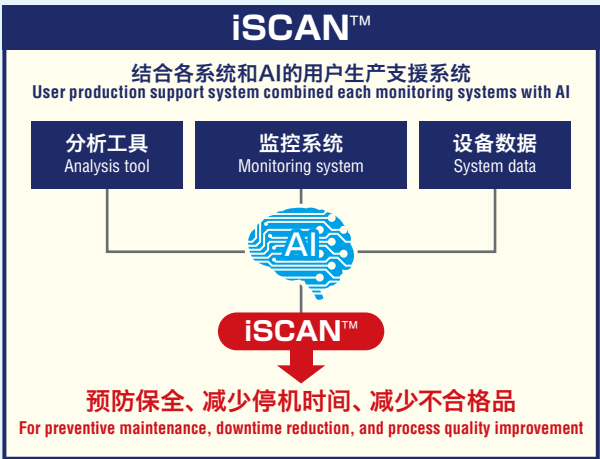
Process Support

- 生产支援系统 (iSCAN™)
- 质量改善调查
- 分析 (SEM、AFM)
- User production support system (iSCAN™)
- Quality improvement survey
- Analysis (SEM, AFM)



我们可以满足和提高生产效率、改善质量/成品率的需求。近年来, 我们还致力于开发使用AI的生产支援系统 (iSCAN™)。

To increase productivity and improve product quality/yield, we can provide technical solutions. Recently, we developed a production support system (iSCAN™) using AI.





Technology

随着平板显示器的高精细化和半导体电路的高集成化的不断发展，
对量产设备的性能要求也越来越高。
我们每天都努力开发新技术，除了开发最符合客户所需系统的光学设计外，
还钻研极其精细的各种控制技术等。

**As flat-panel displays become more high-definition
and semiconductor circuits more highly integrated, mass production systems are
increasingly required to provide a sophisticated performance.**

**We are constantly striving to improve our technological expertise by
developing optical designs optimized for the systems that customers need,
and by creating various fine-tuned control technologies.**

光学设计技术

Optical Design Technology

JSW Aktina System株式会社可提供适用于各种激光工艺的光学系统方案。

We are able to make suggestions for suitable optical systems for various laser processes.

- 最佳激光光源的选定
- 聚光光学系统、投影光学系统的构建
- 光束轮廓仪、光功率计量等辅助类设备的选定
提供可将光学要素、支架类、测量设备等系统进行升级，并提供在生产设备上可运用的激光设备。

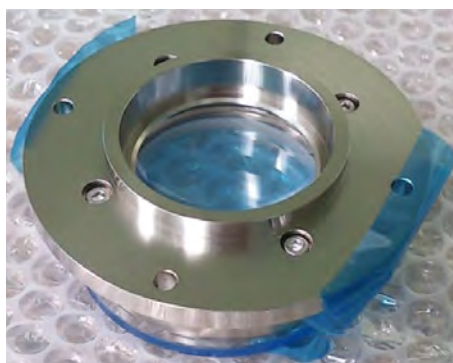
- Select optimal laser source
- Build condensing and projection optical systems
- Select auxiliary equipment including beam profilers and optical power meters. We set up optical elements, mounts, measuring equipment, and provide laser systems to operate as production systems.

特殊投影透镜的设计、制作案例

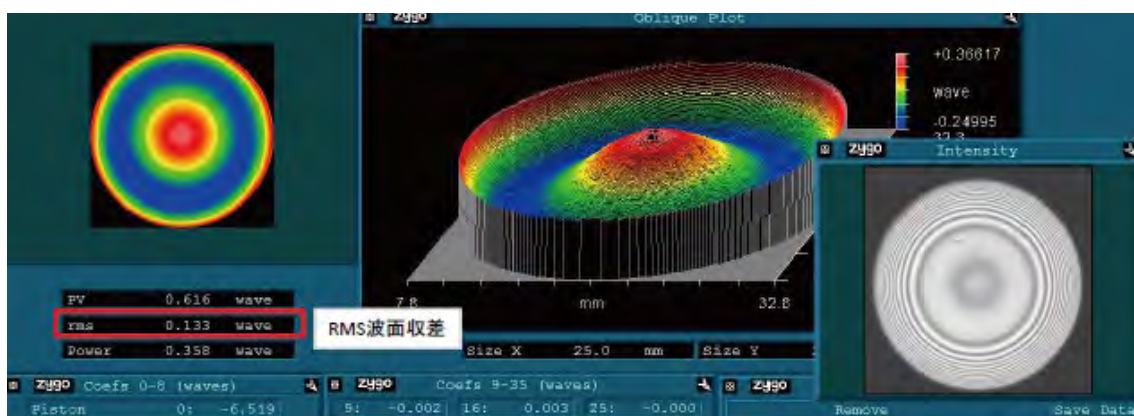
用于缩小与被摄体距离 (WD) 长度的投影系统用透镜

Example of design and fabrication for special projection lens

Projection lens for reduced-size projection system with long working distance (WD)



长WD投影透镜
Projection lens for long WD



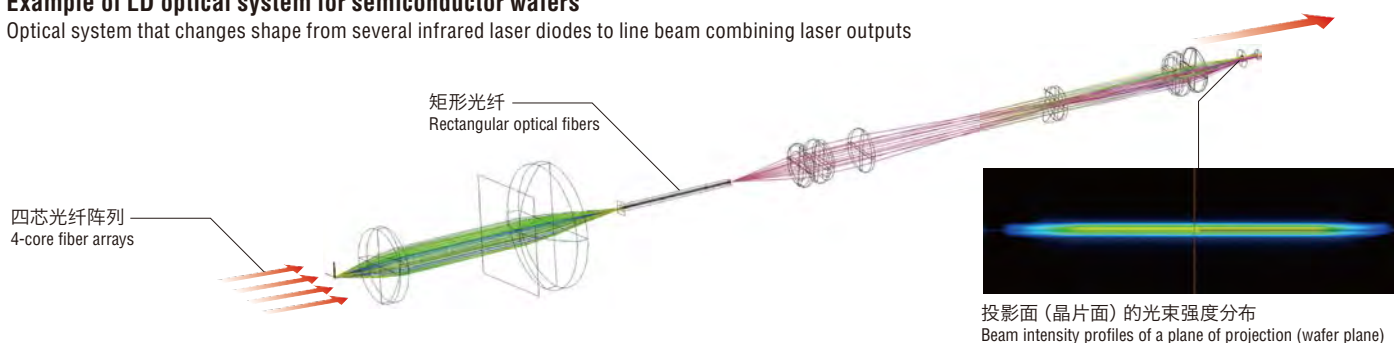
投影透镜的波前像差测试案例
Example of measuring wavefront aberration on projection lens

半导体晶片用LD光学系统的案例

结合多个红外激光二极管的输出，形成光束状的光学系统

Example of LD optical system for semiconductor wafers

Optical system that changes shape from several infrared laser diodes to line beam combining laser outputs



投影面 (晶片面) 的光束强度分布
Beam intensity profiles of a plane of projection (wafer plane)

决定高精度定位的控制技术

High-Precision Positioning Control Technology

在最先进的激光工艺中, 对工件的玻璃基板和半导体晶片的精密搬送技术是不可缺少。

本公司考虑各种激光工艺和光学系统的特性, 设计最合适的工作台搬送系统, 并在客户的工厂实施从安装到运转的业务。

我们拥有高精度工作台的精度保证所需的激光干涉仪、自动准值仪、校准器等, 有助于设备的稳定运行。另外, 为了充分发挥高精度工作台的性能, 控制程序也很重要。我们提供将运动控制器、定位光学系统、位移传感器等组合而成的综合控制技术, 来保证稳定运行工作台的搬送系统。

The high-precision transport technology is necessary for workpieces of glass substrates or semiconductor wafers with cutting-edge laser processing.

We build an optimal stage transport system considered characteristics for various laser processes and optical systems, and then set and launch our products at customers' manufacturing plants.

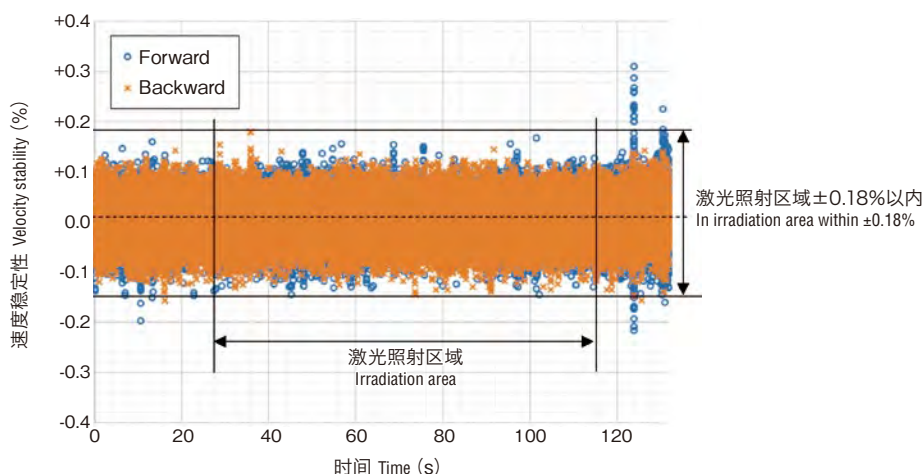
We have laser interferometers, auto-collimators and levelers to guarantee the accuracy of high-precision stages, and manage them for stable operation of our products. Also, a control program is essential to take advantage of the performance of high-precision stages. We provide stage transport systems with stable operation, using total control technology combined with motion controllers, alignment optical systems, and displacement sensors.

在激光退火工艺中, 工件搬送的匀速性非常重要。

下面表示匀速性测定结果的一例。

It is indispensable that the workpiece transport velocity remains stable in the laser annealing process.

Measurement result example of velocity stability is shown.

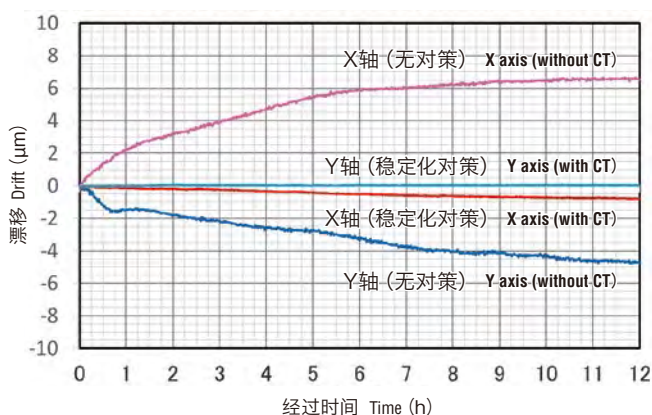


X-Y工作台绝对位置定位精度的测定案例

即使在工艺时间较长的情况下, 通过实施对应技术, 也能保持高水平的绝对定位精度。

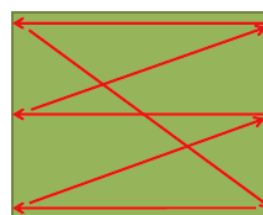
Measurement example of absolute positioning accuracy on X-Y stages

Even in a long-process time case, apply countermeasure technology to maintain high absolute positioning accuracy.



位置漂移用测定点
Measurement points for position drift

225mm(X)×80mm(Y)



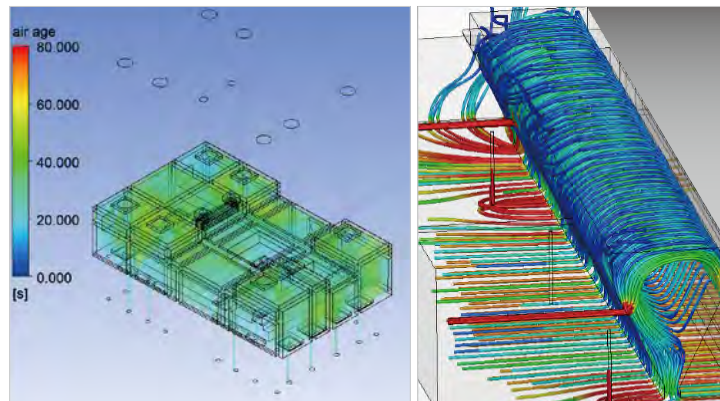
X-Y工作台动作模式
X-Y stages operating pattern

照射环境/Particle控制技术

Irradiation Atmosphere/Particle Control Technology

随着FPD的高精细化，更加严格的要求工艺管理变得重要起来。本公司注重以激光照射部环境及腔室内的气流分析技术，为提高客户的产品成品率做出贡献。

With the needs of high-resolution flat-display panels, stricter process management is important. Our accumulated technology over analysis of irradiation atmosphere and air flow in chamber assuredly improves customer's production yield.



工艺分析技术

Process Analysis Technology

我们致力于激光照射的Si结晶化工艺以及分析技术的研发。在各种分析技术的基础上，满足客户的要求。

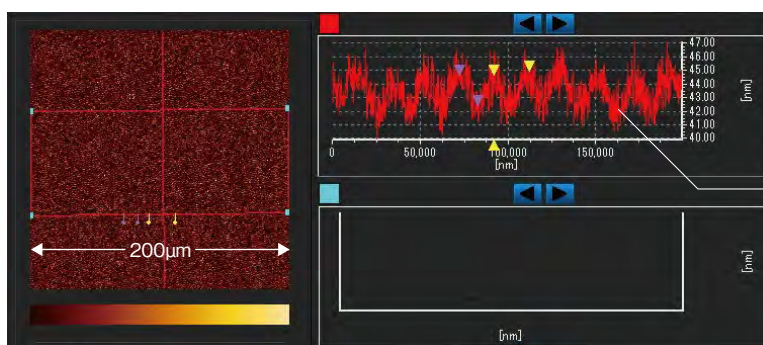
We have been developing a process for laser crystallization of amorphous silicon and engaged in R&D activities of analysis technique. Our various analysis technique will provide customers with solutions.

分析案例

Analysis example

通过扫描探针显微镜分析结晶化Si表面形状

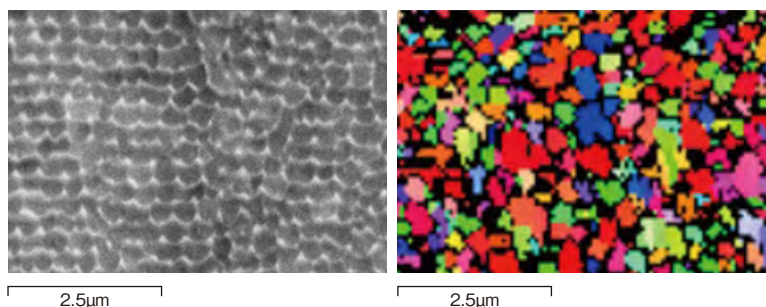
Analysis of surface profile by scanning-probe microscope on crystallized silicon



由激光照射的照射间距而引起的形状变化
Profile change associated with laser irradiation pitch

使用电场发射扫描型电子显微镜分析结晶化Si₂次电子图像和结晶方位的案例

Analysis examples of secondary electron image and orientation of crystallized silicon by field emission SEM



设备开发的业绩 Achievements of system development

激光退火设备

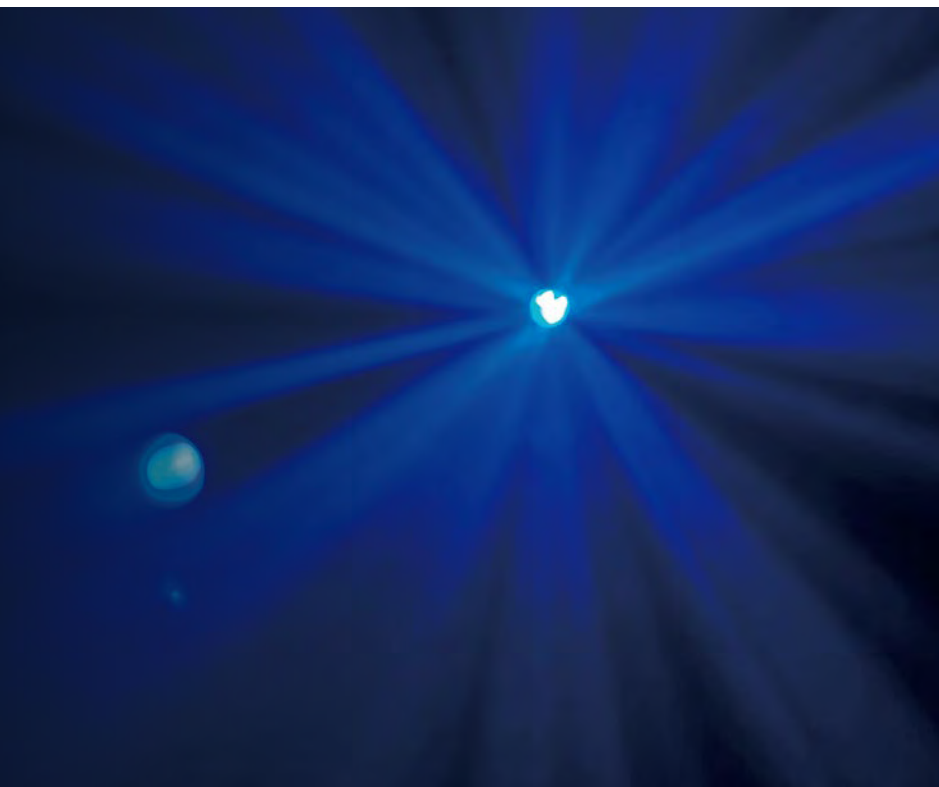
Laser Annealing System

JSW Aktina System株式会社不仅研发了主力ELA设备，还开发了各种类型的激光退火设备，交付给显示屏制造商和半导体制造商。

JSW Aktina System株式会社根据工艺需求提供适用于各种退火工艺设备。

JSW Aktina Syetem has developed not only the ELA system but also various types of laser annealing systems used by end users.

JSW Aktina Syetem proposes annealing processes and system suitable for the process.



SLS设备 Sequential Lateral Solidification (SLS) System

对aSi膜进行激光照射熔融、固化后，Si膜沿着面内横向生成结晶（Lateral solidification）。SLS是通过激光照射Mask pattern，控制结晶生成的起点，在基板的整个面上形成均匀粒径的pSi膜的方法。

JSW Aktina System株式会社为SLS方法开发了设备，并于2004年向显示屏制造商交付。SLS设备通过投影透镜向玻璃基板上的aSi膜照射300W的准分子激光。在大功率激光器中的光学系统的稳定性和工作台位置控制方面，采用了各种各样的功能和技术。

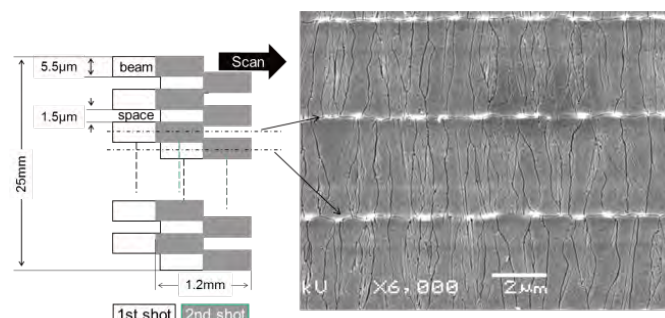
When the aSi film is melted and solidified by irradiating it with a laser, the Si film grows laterally along the in-plane (Lateral solidification). SLS is a method of controlling the starting point of crystal growth by irradiating a mask pattern with a laser to form a pSi film with a uniform grain size on the whole surface of the substrate.

JSW Aktina System has developed a system for the SLS method and delivered it to display manufactures in 2004. The SLS device irradiates the aSi film on the glass substrate with a 300-W excimer laser using a projection lens. It is equipped with various functions and know-how for stabilizing the optical system and controlling the stage position in high-power lasers.



SLS设备
SLS system

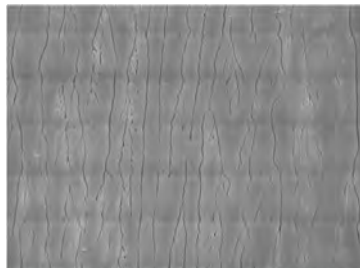
SLS法的Beam Patterns和pSi结晶 (SEM)
Irradiation beam patterns using SLS method and pSi grain (SEM)



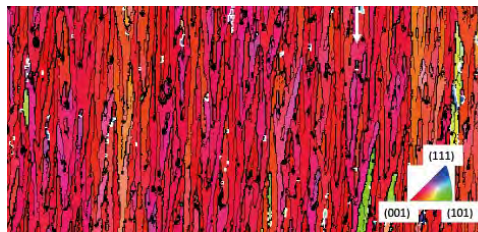
SLA设备 Solid state Laser Annealing (SLA) System

SLA设备是为了使aSi膜向一个方向连续结晶而研发的设备，于2007年向显示屏制造商交付。SLA设备搭载脉冲宽度可变（300~1200ns）的固体绿色激光，通过将光束宽度8 μ m的线状光束向一个方向扫描并退火，形成面方位一致的大粒径的pSi。SLA设备也可适用于半导体晶片，现在也用于CMOS图像传感器的制造。

The SLA system was developed to continuously crystallize the aSi film in one direction and was delivered to display manufacturers in 2007. The SLA system is equipped with a solid-state green laser with variable pulse width (300 to 1200 ns), and by scanning and annealing a line beam with a beam width of 8 μ m in one direction, a large particle size pSi with uniform surface orientation is formed. SLA systems has also been expanded to semiconductor applications and is still used in the manufacture of CMOS image sensors.



pSi晶体 (SEM)
pSi grain (SEM)



pSi晶体 (EBSD)
pSi grain (EBSD)



应用于半导体的设备
SLA system for semiconductors

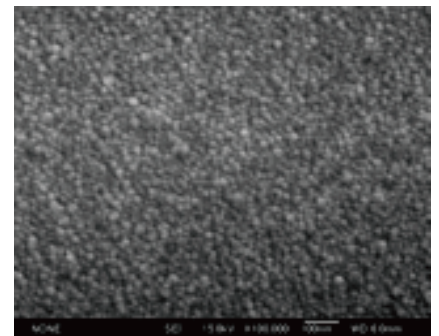


应用于FPD的设备
SLA system for FPD

R-SPC设备 Rapid Solid Phase Crystallization (R-SPC) System

R-SPC是通过固相生成技术实现aSi膜结晶化的设备，于2010年向显示屏制造商交付。R-SPC设备高速地向aSi膜照射连续波（CW）的激光。能够以微秒级改变加热时间，以最佳的加热时间在G2基板的整面形成高品质微细的pSi膜（Grain Size 10~20nm，迁移度2~5cm²/V·s）。

The R-SPC system is used for crystallizing aSi film by solid phase growth, and was delivered to display manufacturers in 2010. The R-SPC system scans a continuous wave (CW) laser beam onto the aSi film at high speed. Therefore, the heating time can be controlled in the microseconds order, and a high-quality fine pSi film (grain size: 10 to 20 nm, mobility: 2 to 5 cm² / V·s) can be applied to the whole surface of the G2 substrate at the optimum heating time.



R-SPC的pSi晶体 (SEM)
pSi grain made by R-SPC system (SEM)

公司信息 Company Information

公司概况 Corporate Profile

公司名称	JSW Aktina System株式会社	Company Name	JSW Aktina System Co., Ltd.
成立	2021年10月1日	Incorporated	October 1, 2021
董事长兼总经理	谷川贞夫	Managing Director	Sadao Tanigawa
总公司地址	〒236-0004 神奈川県横浜市金沢区福浦二丁目2番地1	Head Office	2-1, Fukuura 2-chome, Kanazawa-ku, Yokohama-shi, Kanagawa 236-0004, Japan
资本金	110百万日元	Share Capital	110 million yen
事业内容	平板显示器及电子器件相关设备/装置的制造、销售、修理、改造、移设、部件销售及维护事业等	Business Lineup	Production, sales, repair, modification, relocation, parts sales, and maintenance service for equipment/systems related flat-panel displays and electronic devices

沿革 Corporate History

1907年	北海道炭矿轮船(株)和英国阿姆斯特朗·惠特沃斯公司(Sir W.G. Armstrong, Whitworth & Co., Ltd.)、维克斯公司(Vickers Sons and Maxim, Ltd.)三家公司共同出资成立株式会社日本制钢所	1907	The Japan Steel Works, Ltd. was founded as a joint venture by three companies: Hokkaido Colliery Steamship Company of Japan, Armstrong Whitworth Co., Ltd., UK, and Vickers Sons and Maxim, Ltd., UK.
1936年	横滨制作所在横滨市金沢区泥龟町竣工并开始运营	1936	Construction of the Yokohama Plant is completed and goes into operation at Deiki-cho, Kanazawa-ku, Yokohama-shi.
1983年	将横滨制作所搬迁到现在的金沢区福浦	1983	Relocation of Yokohama Plant to the current Fukuura, Kanazawa-ku, Yokohama-shi, is completed.
1995年	开始准分子激光退火设备的生产(第一台设备交付)	1995	Production of Excimer Laser Annealing System started (delivery of the first system).
2006年	· 作为准分子激光退火设备的售后服务公司, 成立了JSW IT SERVICE株式会社 · 准分子激光退火设备 100台交付	2006	• JSW IT SERVICE CO. was founded as an after-sales service company of Excimer Laser Annealing System. • Delivery of the 100th Excimer Laser Annealing System.
2011年	G5/G6准分子激光退火设备上市	2011	G5/G6 Excimer Laser Annealing System was launched.
2014年	以株式会社日本制钢所在中国设立的法人公司JSW Machinery Trading (Shanghai) Co., Ltd.开始准分子激光退火设备的中国销售/服务业务。	2014	JSW Machinery Trading (Shanghai) Co., Ltd., a Chinese subsidiary of The Japan Steel Works, Ltd., started system sales and after-sales service business of Excimer Laser Annealing System
2019年	准分子激光退火设备 200台交付	2019	Delivery of the 200th Excimer Laser Annealing System
2021年 10月	· JSW IT SERVICE株式会社继承株式会社日本制钢所的平板显示器事业, 成立了JSW AKTINA SYSTEM株式会社。 · 在中国的法人公司, 作为JSW AKTINA SYSTEM株式会社的100%出资公司, 设立日制钢机电商贸(上海)有限公司	Oct. 2021	• JSW IT SERVICE CO., Ltd. took over the manufacturing system business for flat-panel display of The Japan Steel Works, Ltd. and established as JSW Aktina System Co., Ltd. • JSW Electromechanical Trading (Shanghai) Co., Ltd. established in China as a wholly owned subsidiary of JSW Aktina System Co., Ltd.

组织图 Organization Chart



Locations



日制钢机电商贸(上海)有限公司
JSW Electromechanical Trading (Shanghai) Co., Ltd.

JSW AKTINA SYSTEM株式会社
JSW Aktina System Co., Ltd.



Head Quarter

JSW AKTINA SYSTEM株式会社

邮编236-0004 神奈川県横浜市金沢区福浦二丁目2番地1
TEL: +81-(0)45-787-8462 FAX: +81-(0)45-785-1379

JSW Aktina System Co., Ltd.

2-1, Fukuura 2-chome, Kanazawa-ku, Yokohama-shi, Kanagawa 236-0004, Japan
TEL: +81-(0)45-787-8462 FAX: +81-(0)45-785-1379

Sales Office

日制钢机电商贸(上海)有限公司

JSW Electromechanical Trading (Shanghai) Co., Ltd.

304, Metro Plaza, 555 Loushanguan Road, Changning District, Shanghai, China
TEL: +86-21-52665155

JSW Plastics Machinery (Taiwan) Corp.

1F., No.21, Da Hu 1st Road, Guieshan Shiang, Taoyuan, Country 33373 Taiwan, R.O.C.
TEL: +886-3-396-2102

The Japan Steel Works (Singapore) Pte. Ltd.

17 Gul Lane, Singapore 629413
TEL: +65-6861-4511

