



SCREEN

SU-3400 Single Wafer Processor

Innovation for a Sustainable World

Leading Edge Single Wafer Processing for Sustainable Manufacturing

SCREEN Semiconductor Solutions Co., Ltd.

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Agenda

- System Introduction
- Performance & Consumption Reductions Overview
- Close-up on Specific Consumptions for Common Utilities/Chemicals
- Overall Assessment & Summary

SCREEN Product Portfolio



SU-3400
Single Wafer Cleaner



SU-3300
Single Wafer Cleaner



SU-3200
Single Wafer Cleaner



SU-2000
Single Wafer Cleaner



SP-2100
Spin Processor



SS-80EX
Spin Scrubber



SB-3300
Wafer Back-side
Cleaning System



SS-3300S
Spin Scrubber



SS-3200
Spin Scrubber



SS-3200 for 200mm
Spin Scrubber



**WC-620C/
WS820C/820L**
Wet Station



FC-821L
Wet Station



CW-2000
Compact Wet Station



FC-3100
Wet Station



DT-3000
Coat/Develop Track



RF-300EX
Coat/Develop Track



RF-200EX
Coat/Develop Track



SK-60EX/80EX
Coat/Develop Track



SC-80EX
Spray Coater



ZI-2000
Inspection System



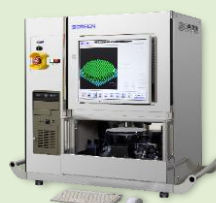
LA-3100
Flash Lamp Annealer



ZI-3600/3500
Inspection System



VM-2500/3500
Measurement System



VM-1200/1300
Measurement System



VM-1020
Measurement System



RE-3500
Measurement System

SU-3400 Single Wafer Processor

The Evolution of the World's No. 1* Cleaning Equipment

MAX.
24

24 chamber
configuration

6×4

6 level, 4 tower
construction



Single chamber servicing

AQUASPIN



Productivity + Capability

- Throughput of up to 1,200 wph
- Footprint reduced by 30%

Sustainability

- Reduction of environmental load
(Exhaust/Nitrogen/Chemical)

Stability

- Stable operation using Big Data and
malfunction prevention through camera
surveillance

* SCREEN in-house research

High Productivity - Throughput up to 1,200 wph



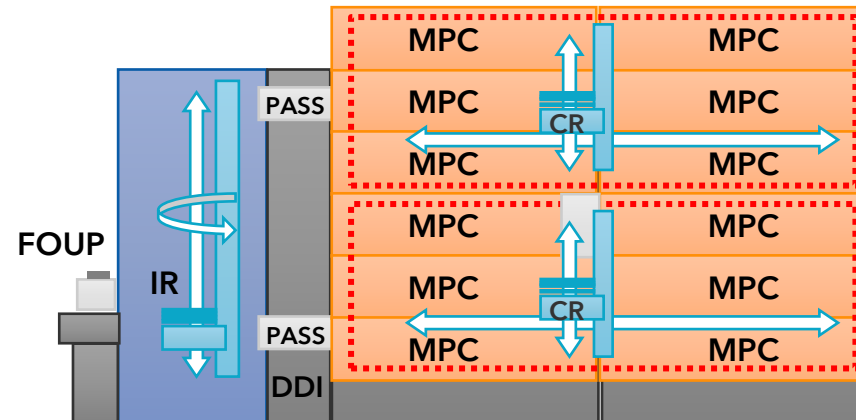
High throughput wafer transfer robotics and unique chamber layout

- Superior cleaning and processing capacity approaching that of batch-type cleaner equipment. By improving the configuration and layout of the wafer transport robots and the wafer processing chambers, we have achieved a processing capacity of 1,200 wafers per hour, leading the world in the field of single-wafer cleaning equipment.



SU-3400

(24 ch. = 6 levels x 4 towers)



Footprint - Reduction by 30%



Small footprint

- Achieved a 30% footprint reduction by downsizing the 24 cleaning process chambers of SU-3300 and upgrading to a six-tiered tower structure.

Footprint reduced by 30%

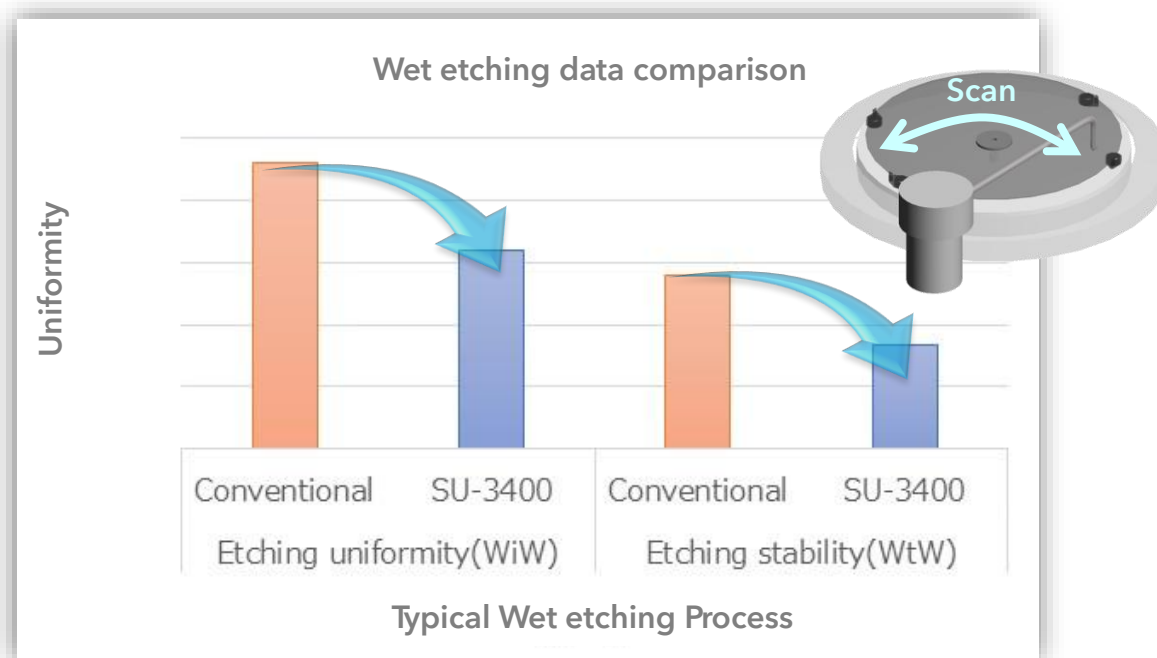
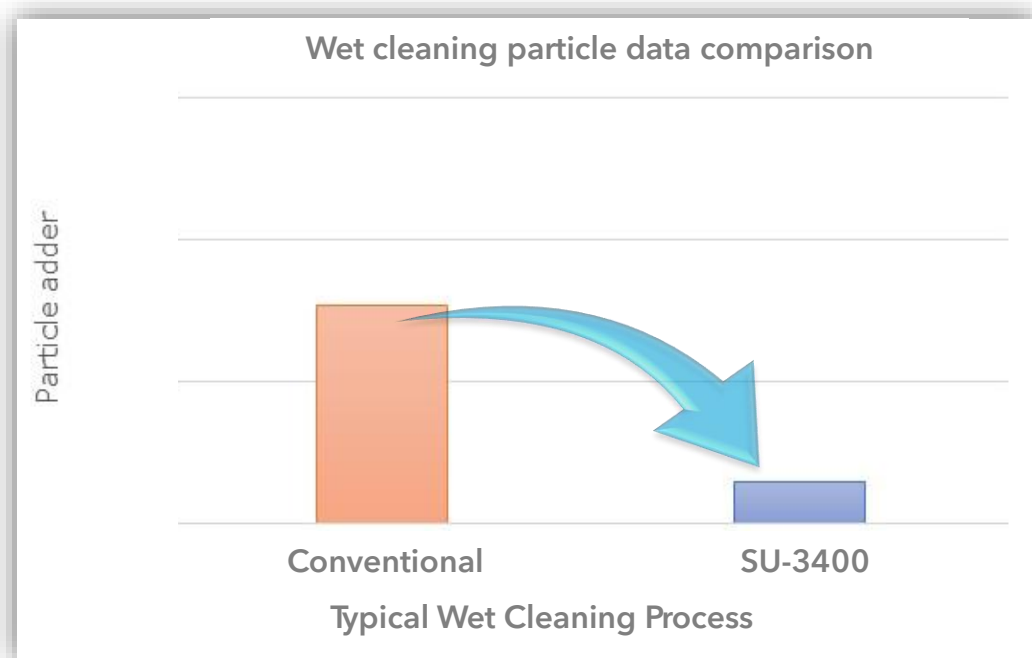
Tool	Single Wafer Processor		
	SU-3200 (12 ch. x 2 =24 ch.)	SU-3300 (24 ch.)	SU-3400 (24 ch.)
Layout			

Performance



Particle and Etching performance improvement

- Improvements to the cleaning nozzles and use of a highly efficient chemical circulation system have substantially reduced the amount of chemicals needed.
- Also, this system shows the highly reliable etching performance with new Nozzle scan function adapted.

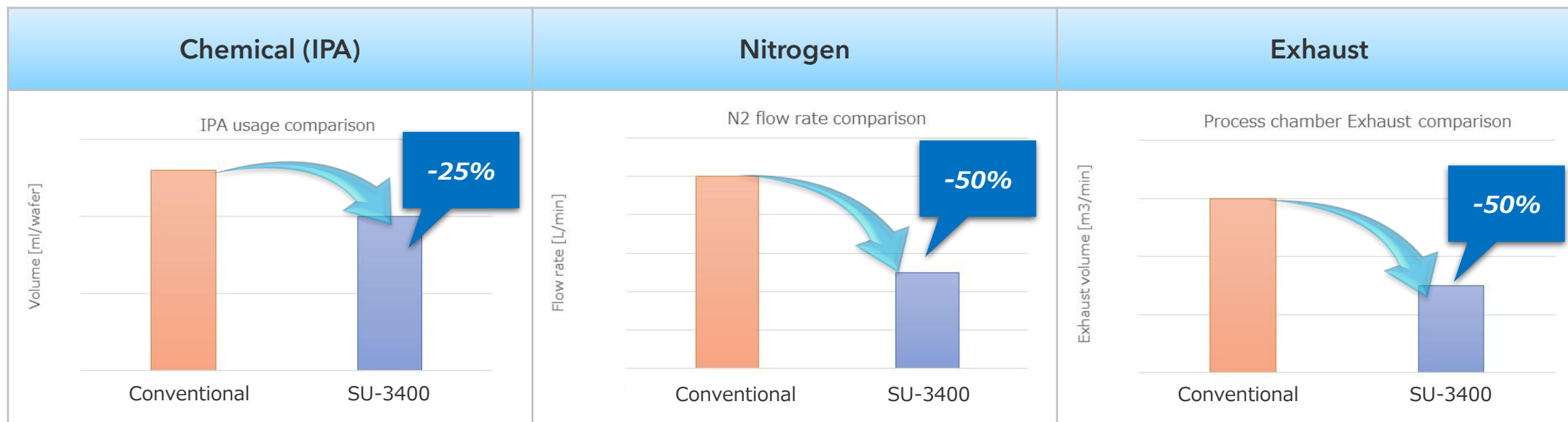


Reduction of Chemical Consumption & Environmental Load



Exhaust/Nitrogen/Chemical reduction

- The semiconductor manufacturing industry is facing the challenge of reducing the environmental impact created by its manufacturing processes.
- The equipment's environmental impact has been reduced by >20% by minimizing exhaust amount by fully automating the airflow and significantly reducing chemical use by improving the cleaning nozzle and chemical circulation system.

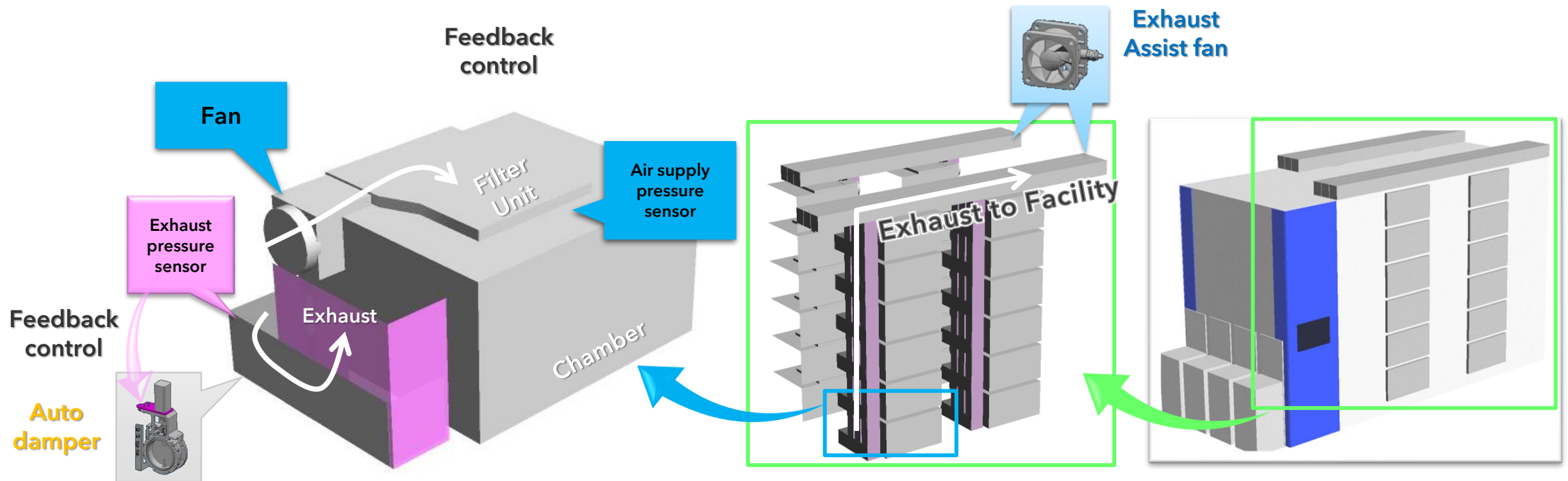


Reduction of Environmental Load - Exhaust



Auto Air Flow Feedback Control System

- The adoption of fully automated airflow control has significantly lowered the volume of air discharge.

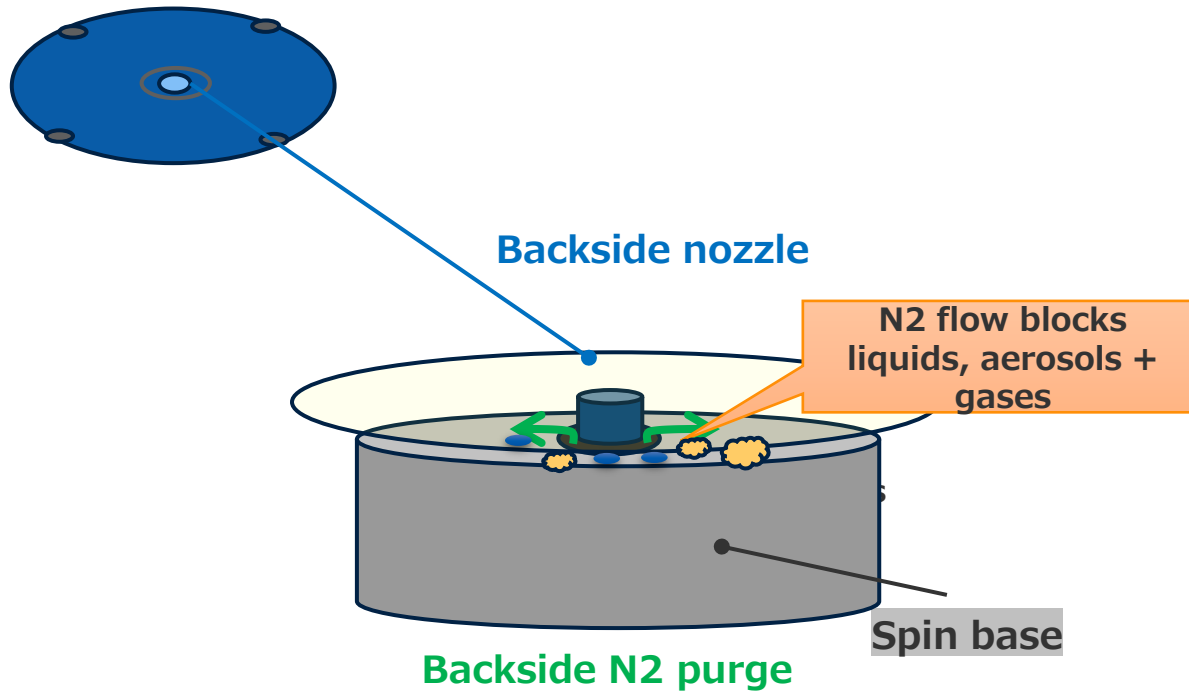


Consumption Reduction #1 - N2



Reducing Backside N2 Flow by 50%

- Backside N2 is to prevent liquid and chemical vapor diffuse into motor shaft / spin-motor.
- SU-3400 backside nozzle design has been modified to minimize the N2 injection gap area, allowing to operate at significantly lower flow rates.

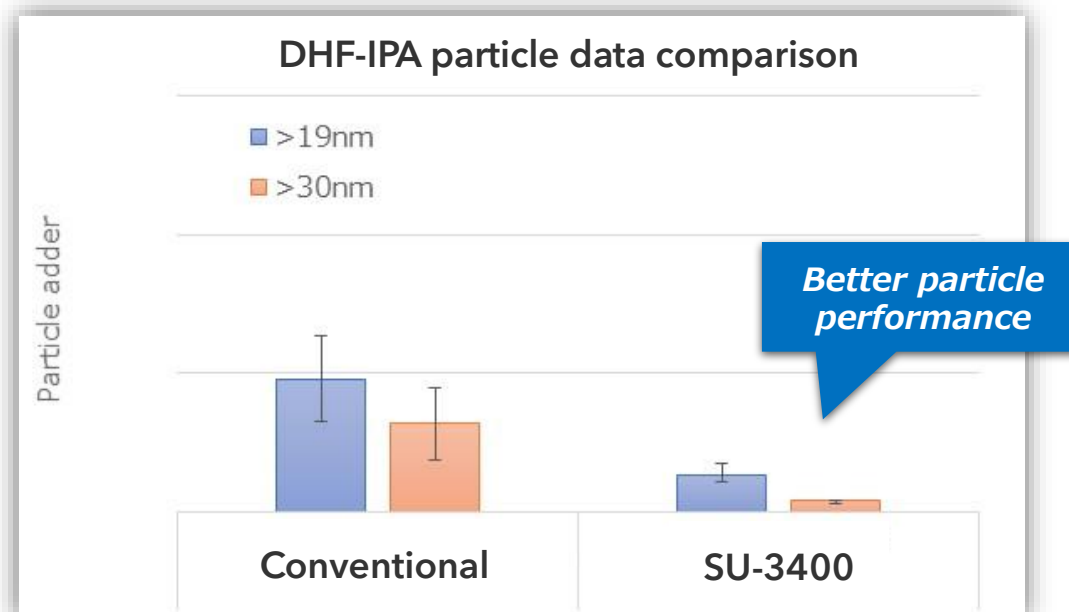
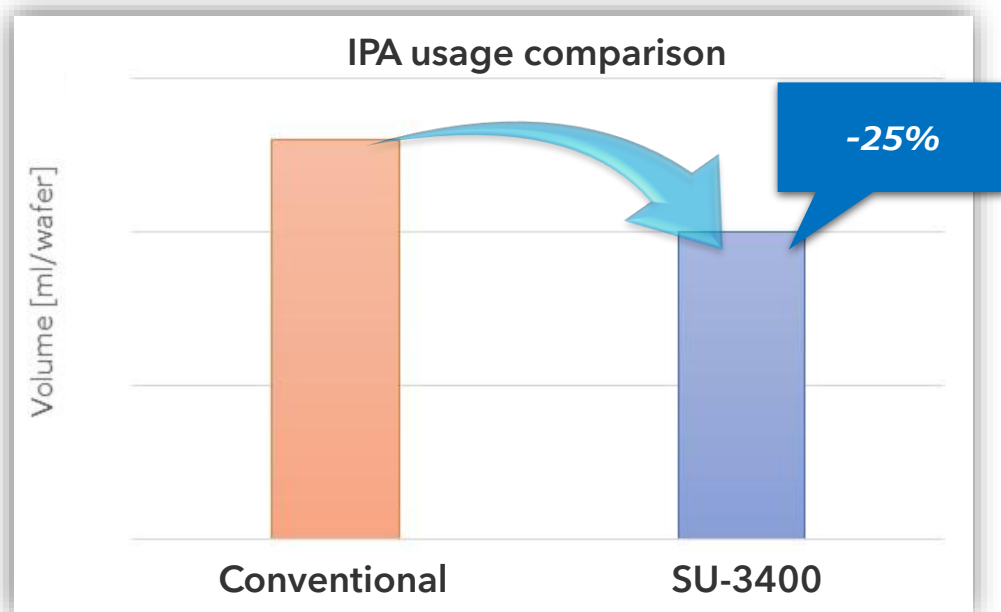


Consumption Reduction #2 - IPA



25% IPA Consumption Reduction

- Optimal hardware and process recipe on SU-3400 provide better particle performance with IPA consumption reduced.

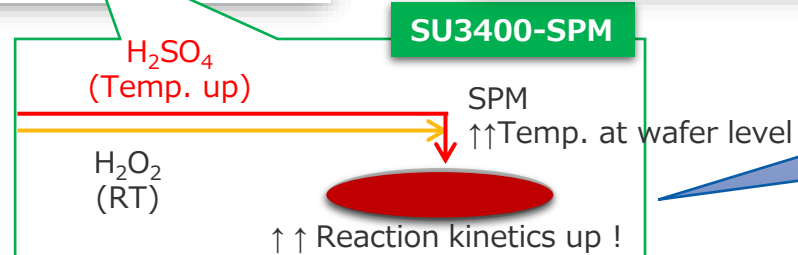
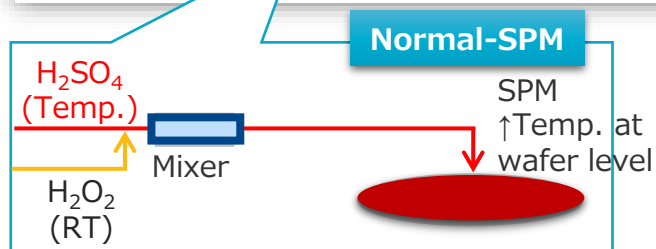
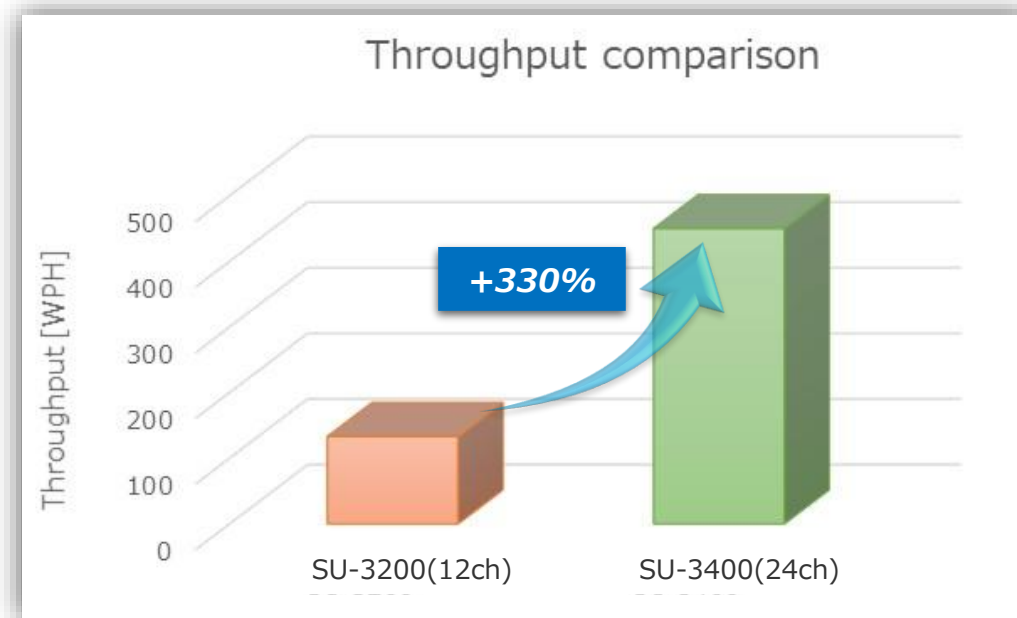
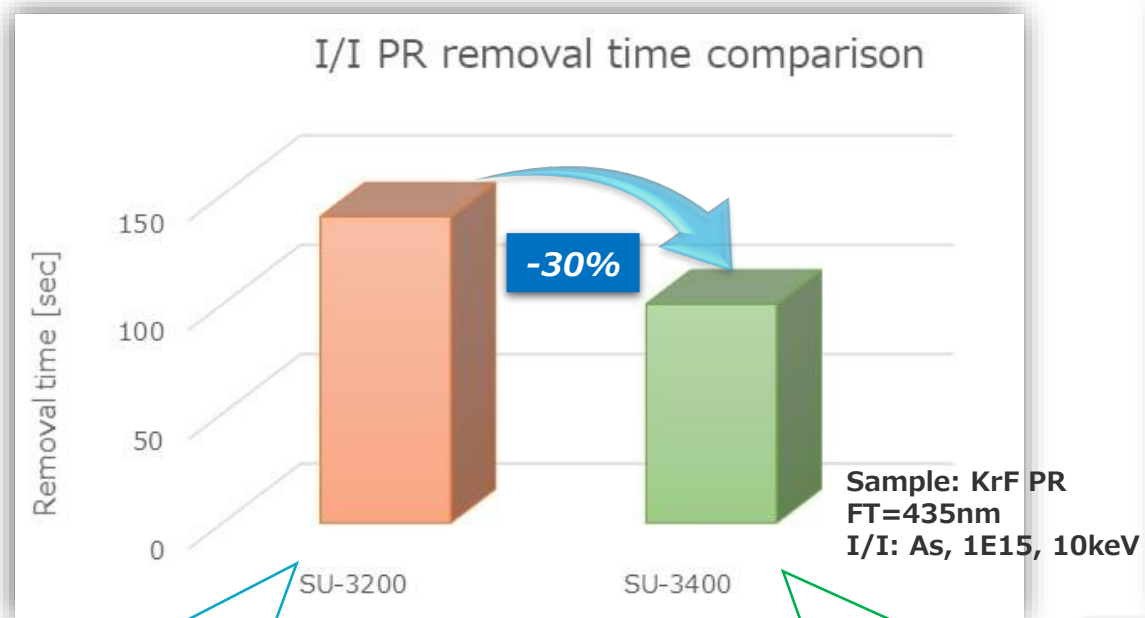


Consumption Reduction #3 - SPM



SPM consumption reduction + throughput improvement

- SU-3400 can increase H_2SO_4 temperature at wafer level
- Reduced SPM usage by 30%
- Increase throughput 3.3 times



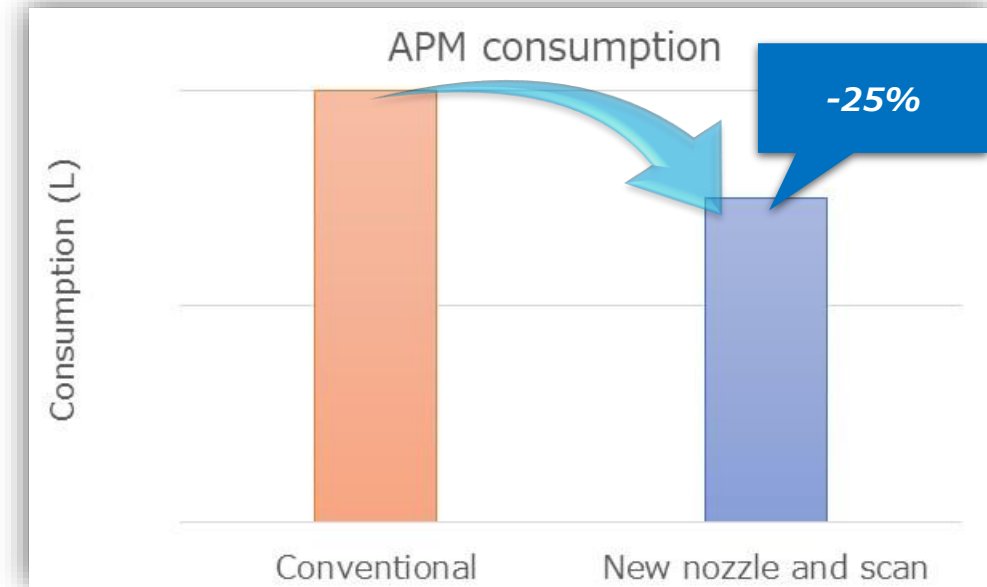
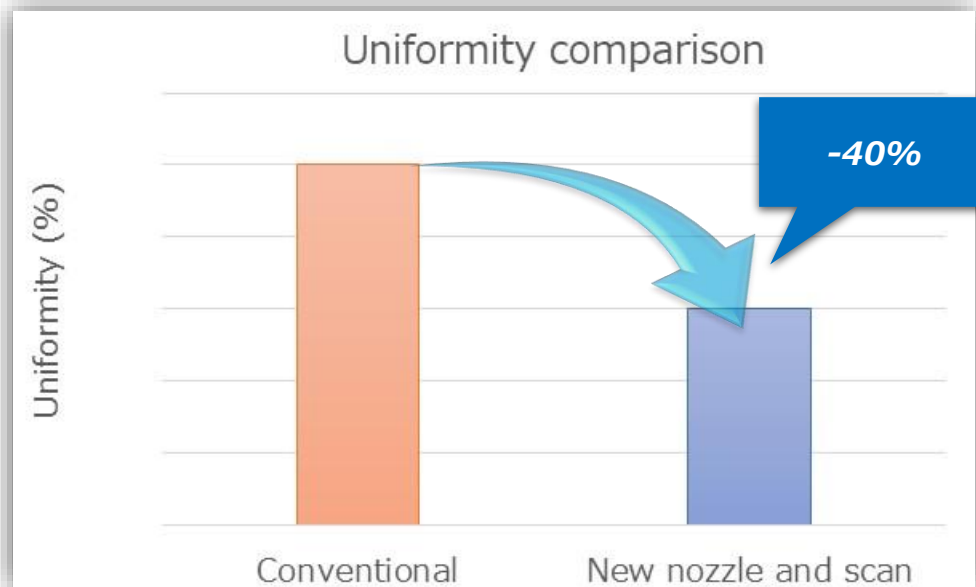
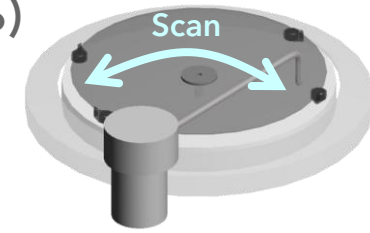
Addition - Countermeasure to prevent chamber contamination

Consumption Reduction #4 - SC1 (APM)



APM consumption reduction with New nozzle and scan method

- Improved uniformity (40%) with APM consumption reduced (by 25%)

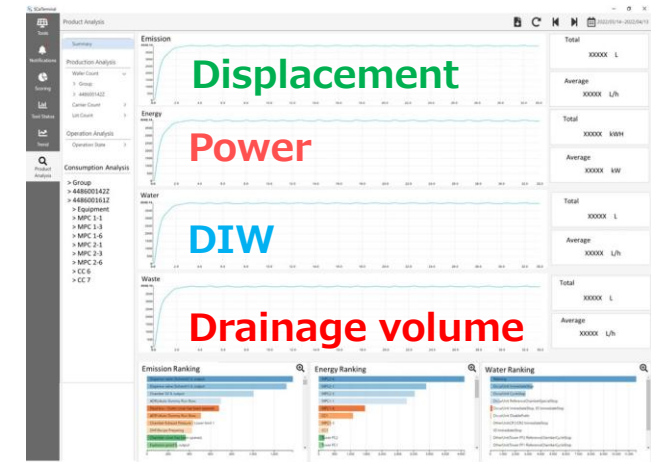
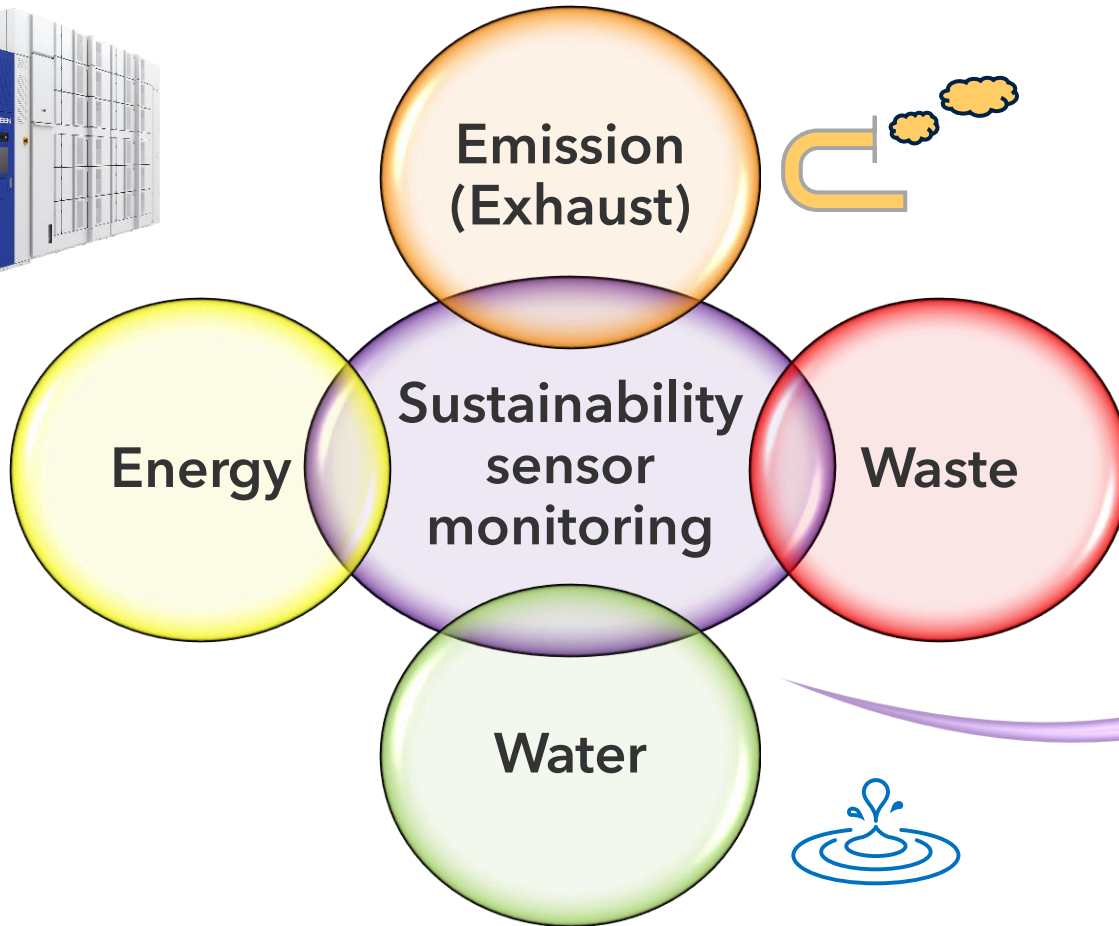
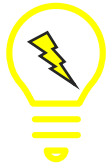


Environmental Assessment



SU-3400 System Achievement

- SCREEN SPE estimates these upgrades have reduced the SU-3400's environmental impact during operation by as much as 20% !

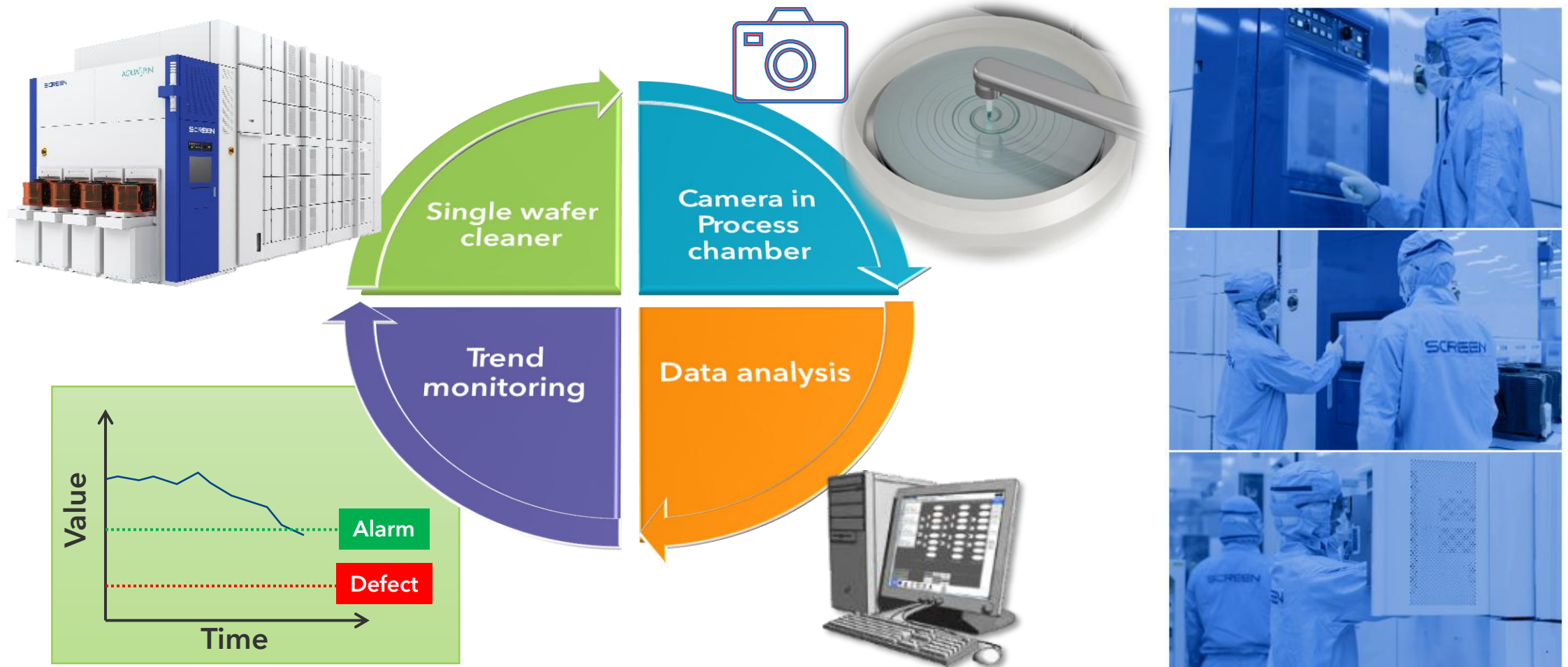


Techniques for Control & Stability



Big Data and malfunction prevention through camera surveillance

- High-resolution chamber camera monitoring is available, as well as a full range of support and maintenance functions, such as malfunction detection using IoT and big data.



Summary



SU-3400 Best in Class

- SCREEN SPE has once again demonstrated its commitment to meeting the diverse needs of semiconductor manufacturers.
- As a leading producer of cleaning systems, it is tightly focused on ensuring the continuing growth of the industry.



CLEANING SYSTEM

THE EVOLUTION OF
THE WORLD'S NO. 1^{*1} CLEANING EQUIPMENT
さらなる進化をとげる、世界シェアNo.1^{*1}洗浄装置

NEW
Single Wafer Cleaner
枚葉式洗浄装置
SU-3400 AQUASPIN

FEATURES

- ▶ Throughput of up to 1,200 wph
最大毎時1,200枚のスループット
- ▶ Footprint reduced by 30%^{*2}
フットプリント30%削減^{*2}
- ▶ Improved processing performance
プロセス性能の向上
- ▶ Reduction of environmental load:
Exhaust/Nitrogen/Chemical
環境負荷(排気/窒素/薬液)の低減
- ▶ Reliable operation backed by Big Data
ビッグデータを活用した安定稼働
- ▶ Problem prevention through camera surveillance
カメラ監視によるトラブル防止

*1 Based on SCREEN in-house research
※1 当社調べ
*2 Compared to SU-3300
※2 SU-3300との比較

Wafer size **300 mm**

Innovation for a Sustainable World

人と技術をつなぎ、未来をひらく

