

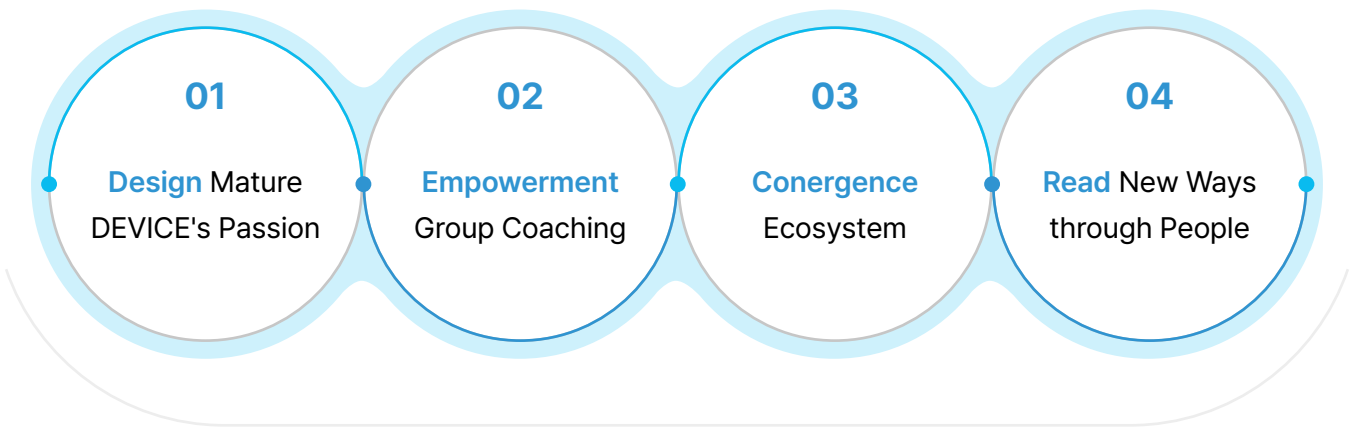
DEVICE

DEVICEENG, the company of Innovation & Trust
Pioneer of New Future with Challenge & Passion

Vision

DEVICE

Contamination Control Solution Provider



Reading Innovation & Trust

Internet of Things

Semiconductor & Display

Soluble Control Platform

Greeting

**Human creates technology,
Technology creates tomorrow**

The Promise human and technology make.

DEVICEENG Co., Ltd. is a solution provider for display, semiconductor based on contamination control technology.

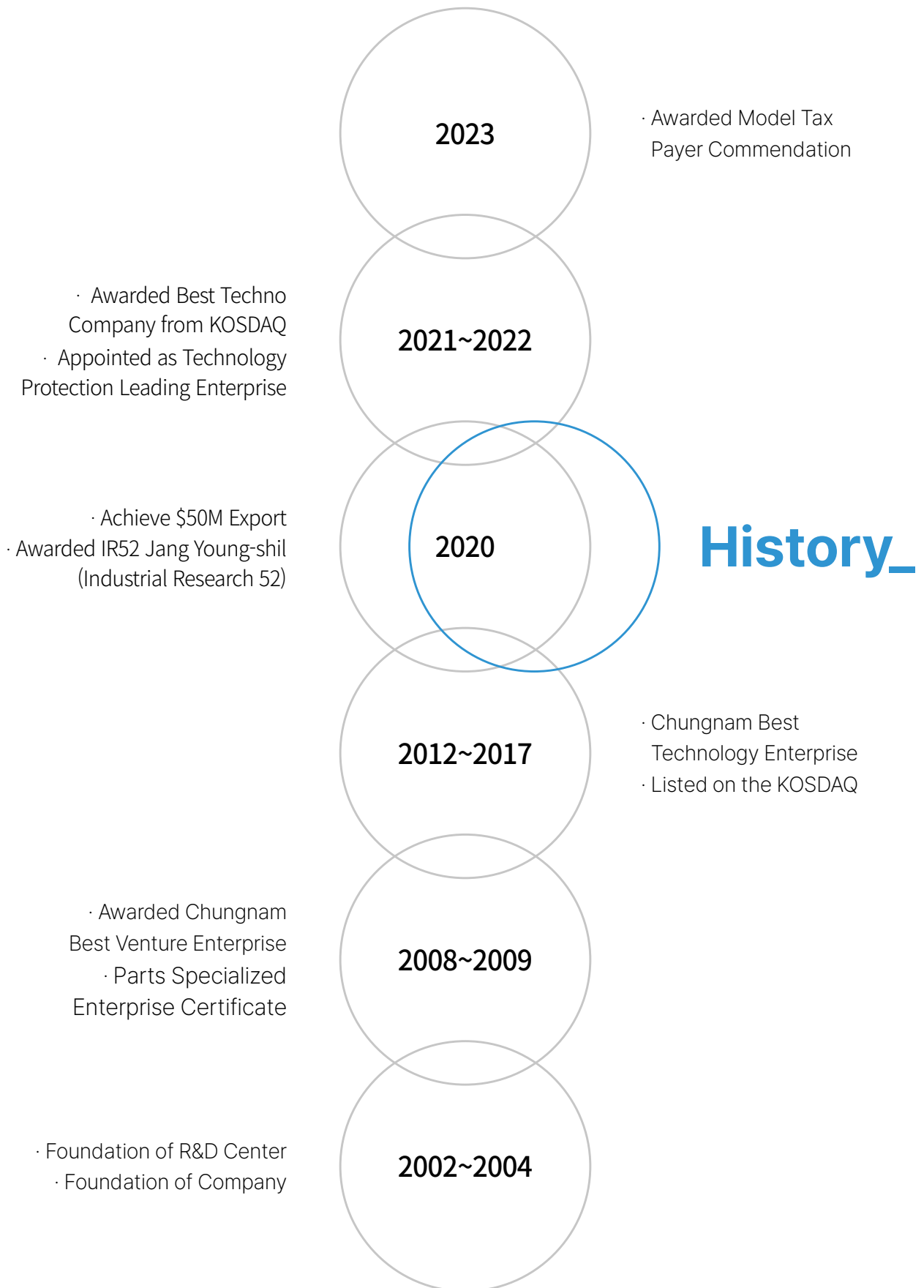
Supply Single Wafer Cleaner,
Auto FOUP Cleaner for memory logic in semiconductor field!
Sole provider applied inspection equipment before
and after cleaning process for display field!

For R&D, securing OLED thin film coating technology using organic ink and developing next-generation eco-friendly cleaning technology by continuous technical cooperation with global companies!

DEVICEENG Co., Ltd. will continue to focus on R&D and investment with years of accumulated know-how to develop the best development and competitiveness.

Thank you.

CEO *Choi, Bong-Jin / Bang, In-Ho*



R&D ACHIEVEMENTS_

- 2021** · Develop & Sale of semiconductor SWC (Single Wafer Cleaner)
- 2019** · Develop Micro LED transfer equipment
- 2017** · Develop Vacuum Vapor Drying (VVD) technology, an EHS friendly alternative for AMOLED cleaning / drying process
- 2016** · Selected as Advanced Technology Center (ATC) for AMOLED Clean process
· Research Project - Develop FM Mask Complex Clean Process Technology for AMOLED
- 2015** · Develop Thin Film Coating System for Printed Electronics of Multiple Solution Processed
- 2012** · Develop OLED lighting equipment using Printing / Sputtering Hybrid Process
· Develop Liquid Type of Nozzle Printing Process for OLED
- 2011** · Develop & Supply Bonding / Laminating Equipment for 3D Display Panel (Brand New Product)
- 2010** · Develop Crystalline Structure of High-Efficiency Solar Cell Process Dryer
· Localization of Conductive Polymer Transparent Conductive Film for Thin Film Solar Cell
· Develop & Sale of 300mm FOUP Cleaner
- 2008** · Develop Eco Digital Printing System with Ultra-small Structure
- 2007** · Develop 300mm Tube Cleaner (CLYTIE) and productized
- 2006** · Develop Chemical Supply System for 45nm device development
· Develop Single Spin Process System (4S-CLAIR) and productized
- 2005** · Develop Remote Control Manufacturing Process and System design (RCP)
- 2004** · Develop new wafer dryer for 60nm semiconductor device
- 2003** · Develop 300mm Wet Station electrical assembly and software

ESG

GENUINE ESG MANAGEMENT

DEVICEENG will strive to fulfill its responsibilities to society and the environment through genuine ESG management and establish a systematic approach to adapt to changing external systems.

01

Quality Management



02

Environmental Management



03

Future Management



04

Safety Management



05

Ethical Management



06

Social Contribution



DEVICE
SEMICONDUCTOR
&
DISPLAY

/

DEVICEENG PROVIDES TOTAL CLEANING SOLUTIONS
FROM PRODUCTION TO EQUIPMENT.

Single Wafer Cleaner

It is a single etching and cleaning equipment using chemical, UPW and physical method on wafer surfaces.

Feature

- 1Xnm level process capability
- Compact design & high throughput
- Contamination control technology
- High end material
- Green factory technology
- Multi process nozzle configuration
- High stability & reliability
- Easy maintenance design
- SEMI standard



Application

- Semiconductor, OLEDs, LED Process, R&D
- Pre/Post clean(DHF, SC1, Spray, IPA Dry)
- Backside clean(Front & Backside Megasonic)
- Backside strip(Poly Decap, Bevel Etch)



FOUP Cleaner

It is cleaning FOUP(Front Open Unified Pod) which is used in semiconductor process for 300mm wafer in manual / auto

Feature

- Auto conveyance by articulated robot (Fully automatic system)
- High throughput (Optimization of the cleaning process)
- Compact equipment (Minimize footprint)
- High efficiency cleaning uniformity & dry solution
- Several types of FOUP & FOSB (Front Opening Shipping Box) applicable (SEMI Standard compliant FOUP)
- Auto FOUP cover system (Opener) prevents inflowing particle contamination
- Apply FAB automation system (OHT, RGV, Operator)
- FOUP stock area (Store FOUP before & after cleaning)
- Damaged FOUP and wafer detecting function (Option)
- VCD module (Option)
- SEMI standard, CE mark

Application

- Semiconductor 300mm (12") Wafer Carrier (FOUP, FOSB) Cleaning Process



AFC342V



AFC340N

Cassette/Magazine Cleaner

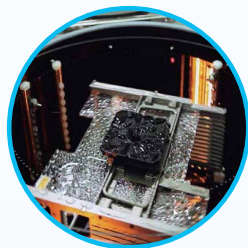
It is cleaning cassette / magazine automatically which is used in CIS process. It jets out DIW and Hot DIW through shower nozzle to clean and uses N₂,CDA and radiant of visible ray-lamp to dry.

Feature

- Auto conveyance by articulated robot (Fully automatic system)
- High throughput (Optimization of cleaning process)
- Compact equipment (Minimize footprint)
- High efficiency cleaning uniformity & dry solution
- Apply FAB automation system (OHT, RGV, Operator)
- Cassette / Magazine stock area (Store Cassette / Magazine before & after cleaning)
- SEMI standard, CE mark

Application

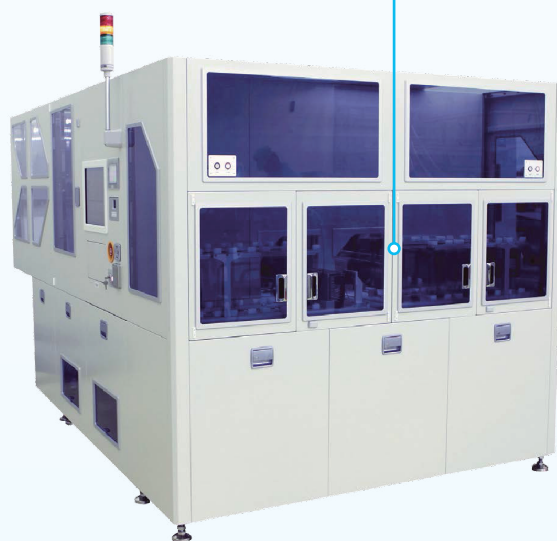
- CIS Production Process



Cassette Cleaner



Magazine Cleaner



POD Cleaner

POD cleaner which is used in semiconductor process conveys POD for 200mm wafer on cleaning tray. It jets out DIW through shower nozzle to clean and uses hot CDA to dry.

Feature

- Auto transfer by conveyor (Fully automatic system)
- High efficiency cleaning uniformity & dry solution
- High throughput (Optimized cleaning process)
- SEMI standard, CE mark

Application

- Semiconductor 200mm (8") Wafer Carrier Cleaning Process



Metal Lift Off

It removes a metal layer and photo resist on a sapphire wafer used in a LED process through physical / chemical method.

Feature

- Wafer auto conveyance by index robot and transfer robot
- Minimize metal contamination
- Able to collect metal of wafer
- Energy saving mode
- Compact equipment (Minimize footprint)

Application

- 4" Wafer LED Process (Compatible with 8" Wafer)



Exhaust Reduction System

It is an equipment that uses a wet treatment method to discharge harmful gases occurred in manufacturing processes such as Semiconductors, LEDs, OLEDs, and LCDs, and provides a clean environment at the manufacturing site.

Feature

- 2 packed scrubber zone
 - High abatement efficiency by configuration of 2 packed scrubber zone & separate circulation for each zone
 - Abatement efficiency : $\leq 90\%$
- Compact footprint design
- Reduction of water consumption
 - Control water flow rate by normal & idle mode
- Pump & gravity drain
- Bypass function by auto damper

Application

- Manufacturing process of Semiconductors, LEDs, OLEDs, LCDs



Flushing System

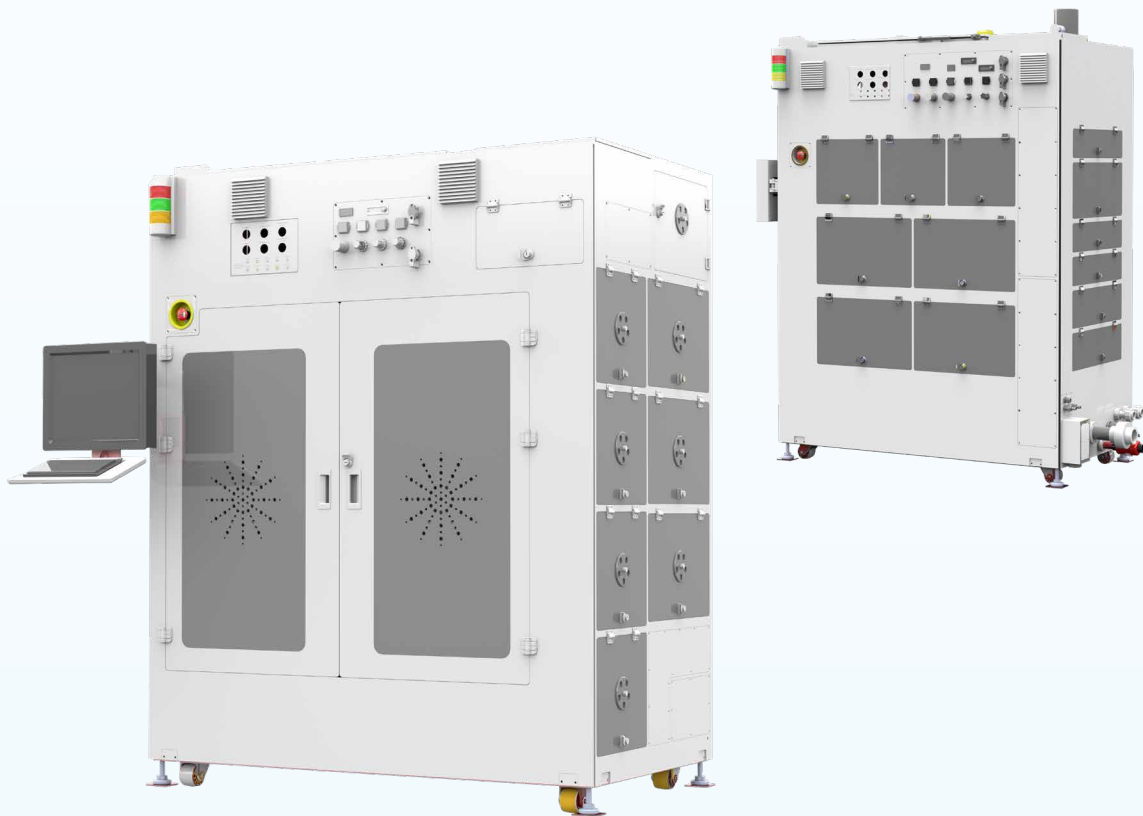
It is flushing filter & valve of semiconductor process tools to secure cleanliness, prevent recontamination and improve production yield.

Feature

- Prevent recontamination by auto flushing function that removes residual DIW or chemical in pipe
- Secure convenience by applying dedicated install jig
- Apply metal free parts for piping area
- Improve production yield by installing after flushing to semiconductor process tools
- SEMI standard, CE mark

Application

- DIW Filter, Chem. Filter, IPA Filter, Valve of Semiconductor Process Tools



HDIW Supply System

It is a system that supplies hot DIW for cleaning silicon wafers used in the semiconductor manufacturing process, and prevents impurity pollution through the application of a halogen lamp and a quartz glass dual-structure, non-contact heating method and shows high-clean, high-efficiency compact design DIW heating system.

Feature

- Realization of high cleanliness and cross-contamination prevention through the application of high-shoe furnace materials
 - Heating : Quartz Glass & Halogen Lamp
 - Piping : Fluoropolymer application (PFA, PTFE, PVDF)
- Diverse lineup
 - 12L ~ 48L HDIW supply model
- High heating efficiency
- Application of safety measures such as overtemperature, fire, leakage, instantaneous power outage, earthquake, etc.
- SEMI standard, CE mark

Application

- Semiconductor Wafer Rinse Process



Chemical Delivery Supply System

It is chemical mixing and supplying system for wafer cleaning, etching and stripping process.

Feature

- **Very reliable, ultra - precision chemical mixing and supplying system (Patented)**
 - Flexible chemical mixing and concentration control depending on processes as well as applied patented ultra-precision chemical mixing technology
- **Well-aligned with main processing systems**
 - Customized configuration system also available to meet user and process requirement
- **Compatible with main process systems and additional options**
 - Available customized chemical supply system and programs according to user's requirement
- **Convenient recipe setting**
- **Applicable chemicals**
 - SC-1, DHF, DSP, BOE (LAL), H-IPA (High Temperature IPA), etc.

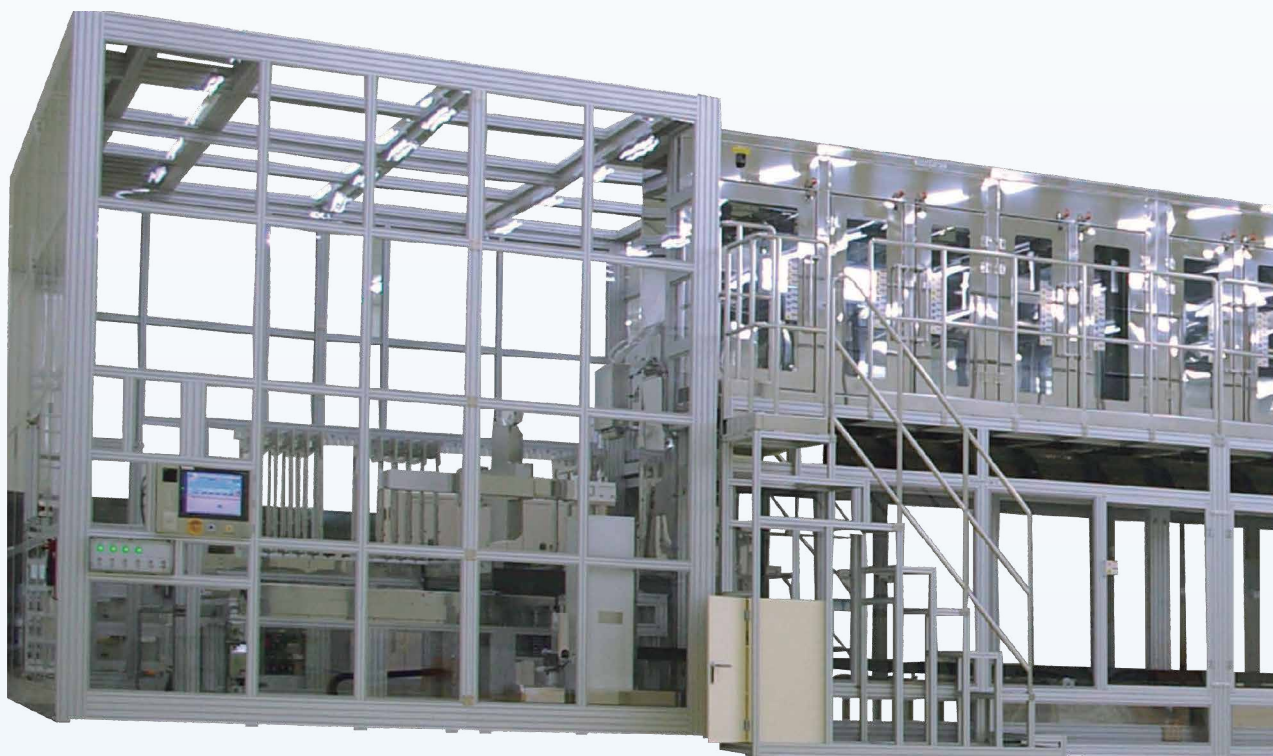
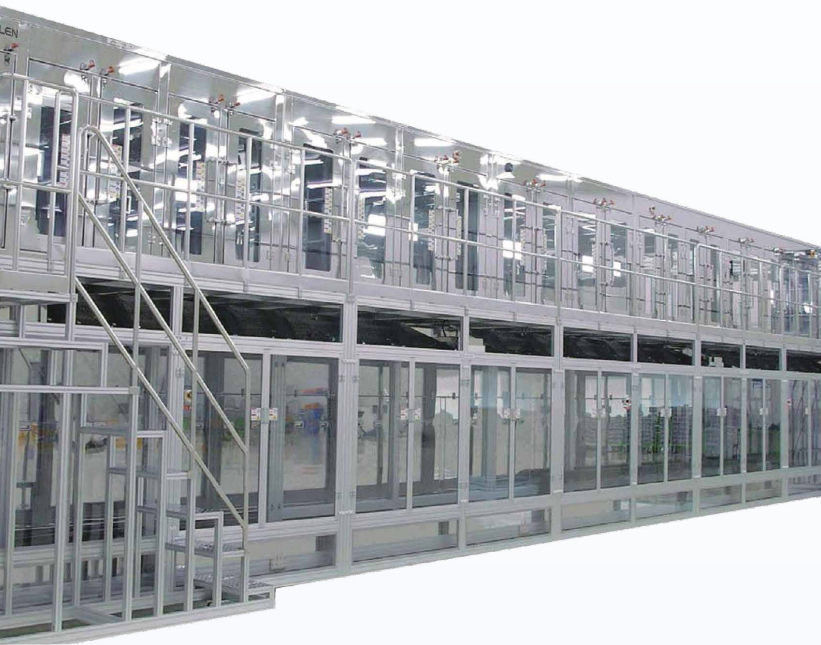
Application

- Full Semiconductor Processes
- Clean (PRE CLN, IMD CLN, Backside)
- Etch (Oxide Etch)
- Strip (Organic Strip)
- R&D



OLED Mask Cleaner

It is an equipment that precisely and automatically cleans organic, inorganic matter and particles on the surface of FMM (Fine Metal Mask) and OMM (Open Metal Mask) that are repeatedly used in the vacuum evaporation process to generate RGB pixel patterns and other organic and inorganic layers during the OLED panel manufacturing process.



Feature

- FMM (Fine Metal Mask) Cleaning, OMM (Open Metal Mask) Cleaning
- Chemical Reduction System
 - 50% reduction in organic cleaning solvents and 90% reduction in organic solvents for drying
 - Reduction of green-house gas (CO₂) emissions
 - Free from environment safety and health regulations
 - Expanded eco-friendly solution
 - VVD (Vacuum Vapor Dryer)
- High quality, High efficiency OLED Mask Cleaning
 - Improved organic and cathode cleaning performance
 - Optimized cleaning for high resolution FMM/OMM
 - Auto macro inspection and image saving

Application

- 2G, 4.5G, 5.5G, 6G, 8G, OLEDos
- Initial Mask Cleaning
- Organic Mask Cleaning
- TFE Mask Cleaning
- Cathode Mask Cleaning

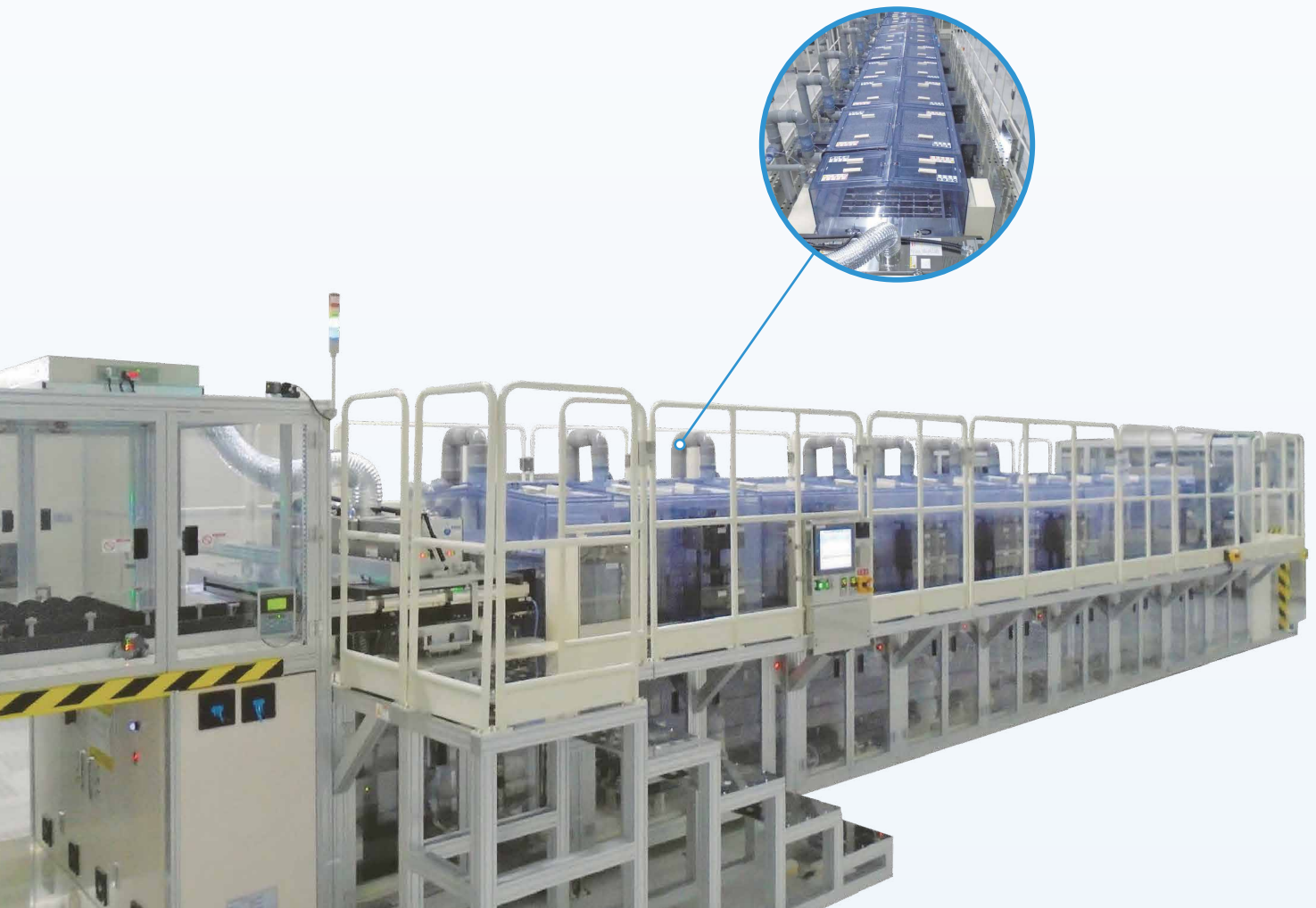


Glass Cleaner

It is a cleaning equipment that uses a chemical for deposition and patterning of LCD and OLED TFT / CF processes to perform initial cleaning, develop, etching, and PR stripping before and after the process.

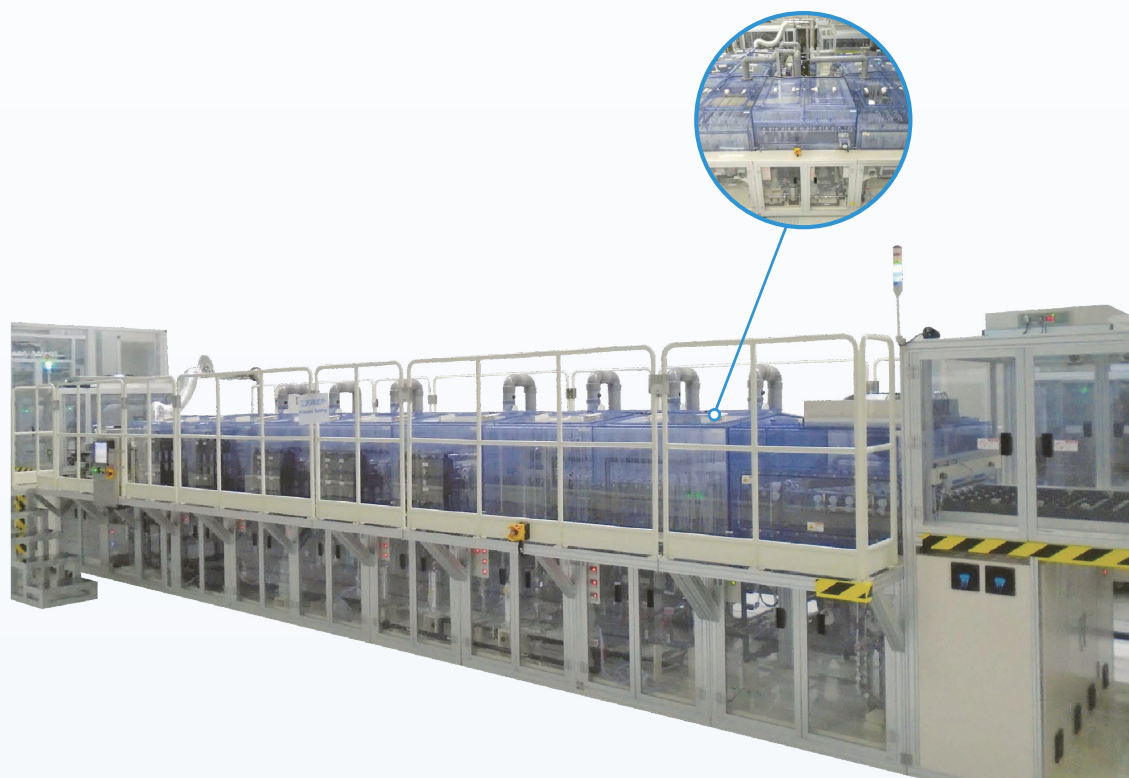
Feature

- Horizontal conveyor type
- Improve transfer ability of substrate with diagonal transfer using tilt conveyor
- Control of fume, particle by non-contact magnetism conveyor
- Secure maintenance space by optimized design of plumbing area
- Improve cleaning, strip, etching uniformity and minimize particle by EUV, disk & roll brush, high pressure spray, twin fluid rinse, water jet rinse, megasonic rinse etc
- Preventing spread of fume by sealing the driving part



Application

- TFT LCD, LTPS OLED(ELA, GI, SD), CF, CELL, TSP
- Initial Clean
- Pre Clean
- Strip
- Etch



Auto Macro Inspection

It is inspecting automatically standard / atypical faulty patterns that visually inspectable on FMM (Fine Metal Mask) and OMM (Open Metal Mask) using on OLED evaporation.

Feature

- Implementation of optimized mask scanning with kinetic scanning angle by considering several surface reflectance of the metal mask
- Implementation of light effect which is bright field / dark filed type with white line light
- Atypical patterns inspection with automatic applying normal mask image
- Direct inspection of threshold filtering type
- Able to reserve up to 100ea of the mask by separating inspection and scan
- Whole mask inspection with fast speed

Application

- FMM (Fine Metal Mask), OMM (Open Metal Mask)



DIW/Chemical Inline Heating System

It is an auxiliary unit heating DI Water, Demi water or Chemical which is used in LCD and OLED TFT / CF process by In-line heating type.

Feature

- Improve Cleaning Efficiency
- On-Line I/F communication program available. (RS-485, Ethernet, PIO)
- Electric energy monitoring, communication with Host. (Ethernet)
- Safety interlock : EMO push button, circuit breaker, earth leakage circuit breaker, leak detector, over temp etc
- Applied high capacity heater of 180KW
- Piping Material : SUS316
- CE or SEMI standard available

Application

- 2G, 4.5G, 5.5G, 6G, 8G, OLED_oS
- TFT (a-Si, LTPS, LTPO, Oxide) Glass Cleaning
- OLED Metal Mask(FMM, OMM) Cleaning



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