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**Daegu office**

Secheon-ro 7-gil 17-28, Dasa-eup,  
Dalseong-gun, Daegu Metropolitan City  
TEL. 053-593-0777 | FAX. 053-593-0842

**Cheonan office**

Pungsesandan-ro 226-40, Pungse-myeon,  
Dongnam-gu, Cheonan-si, Chungnam  
TEL. 041-571-0777 | FAX. 041-561-0778

**Gyeonggi research institute**

Dongtan IT Tower #602, Dongtansunhwan  
-daero, Hwaseong-si, Gyeonggi-do  
TEL. 041-571-0777 | FAX. 041-561-0778

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**CTS****the leader in the foreign particle removal equipment and  
creating a clean industrial environment**

CTS Co., Ltd. is a company specialized in ultrasonic dry  
cleaners over the past 20 years based on the management  
philosophy of win-win management, reliable company,  
human resource development, and innovation management.

CTS Co., Ltd. succeeded in localizing the ultrasonic dry cleaner  
for the first time in South Korea and has own technologies  
for small and large dry cleaners. It will strive to be the world's  
best company in the touchless cleaning in the semiconductor  
and display industries through ceaseless R&D.

[www.drycleaner.co.kr](http://www.drycleaner.co.kr)



# ULTRASONIC DRY CLEANER

Environment-friendly industrial fields,  
CTS, the leading company of equipment removing foreign materials



## About us

### Touchless USC for semiconductors and displays (Ultrasonic cleaner) **World No.1**

CTS Co., Ltd. is a professional manufacturing firm that researches, develops, and manufactures touchless dry ultrasonic cleaners for cleaning displays such as LCD, OLED and FILM.

CTS Co., Ltd. has specialized in ultrasonic dry cleaners in the past 20 years. CTS Co., Ltd. also developed the technology of generating dry ultrasound for the first time in South Korea. We are securing customer trust through continuous research and development, technological innovation, and thorough quality control in the entire cleaner industry by applying dry ultrasound cleaning technique. We are also investing in new product development, research institute expansion, and development personnel full steam in order to improve technologies, cope with technology trends, and meet market and customer needs. We are growing into a global corporation that extends the company's capabilities and vision to the world by valuing customer satisfaction and product quality.

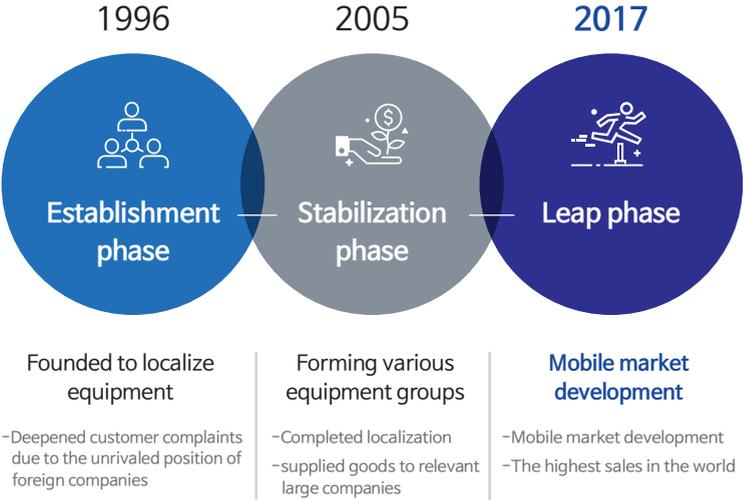
## Company overview

Date of foundation	April 1996	CEO	Dae Joon Lee
Daegu office	Secheon-ro 7-gil 17-28, Dasa-eup, Dalseong-gun, Daegu Metropolitan City T. +82-53-593-0777   F. 053-593-0842		
Cheonan office	Pungsesandan-ro 226-40, Pungse-myeon, Dongnam-gu, Cheonan-si, Chungnam T. +82-41-571-0777   F. 041-561-0778		
Gyeonggi research Institute	Dongtan IT Tower #602, Dongtansunhwan-daero, Hwaseong-si, Gyeonggi-do T. +82-41-571-0777   F. 041-561-0778		
Main products	Ultrasonic dry cleaners for manufacturing displays and others		
Corporation type	A star company, a hidden champion global company, an export-promising SME, and a company with excellent enterprise abilities		
Company certification	ISO 9001 / ISO14001 / CE / Innobiz / Venture company / Main biz / The Company Producing the First-Class Products in the World		
Major customers	Samsung display, Samsung electro-Mechanics, LG display, BOE, CSOT, HKC, TIANMA, EDO, VISIONOX		
Industrial property rights	14 patents and 4 patent applications		





### Major history



### Company history

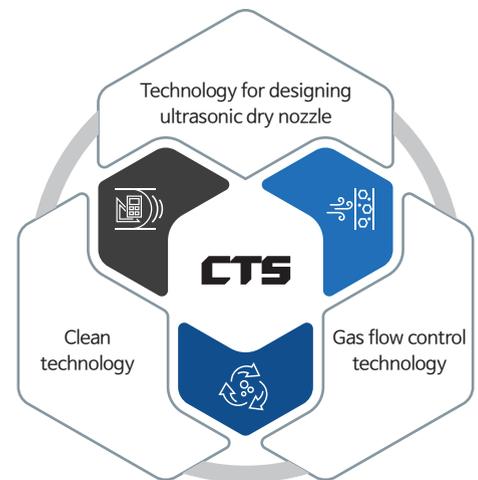
- 1996. 04 ▾..... Foundation
- 1999. 03 ▾..... Development and delivery of ultrasonic dry cleaner for PDP and LCD (successful localization)
- 2000. 07 ▾..... Development and delivery of 8th generation ultrasonic dry cleaner (PDP, LCD, and Solar)
- 2003. 06 ▾..... Company name changed to CTS Co., Ltd.  
..... Selected as a venture company and Innobiz company
- 2011. 06 ▾..... Completed the development of an ultrasonic dry cleaner for smartphones and the 10th generation ultrasonic dry cleaner
- 2016. 02 ▾..... Increased exports owing to the development of various product lines
- 2017. 07 ▾..... Supply to Samsung Vietnam and enter other overseas markets
- 2017. 08 ▾..... Changed company-affiliated research institute (R & D Department → Research Institute)  
..... Established Cheonan Office
- 2018. 04 ▾..... Passed IPO audit  
..... Completed the development of camera lens cleaner
- 2018. 11 ▾..... Selected as a Star Enterprise 100 and won the Steel Tower Order of Industrial Service Merit
- 2019. 04 ▾..... Selected as a Hidden Global Champion, an export-promising SME, and Excellent Competence Company
- 2019. 10 ▾..... Received the Productivity Hidden Champion Award (President Award)  
..... Won the SME Grand Prize (excellence award) from Daegu Metropolitan City
- 2019. 11 ▾..... Selected as a producer producing high-quality goods

## CTS Specialized in the ultrasonic dry cleaner

CTS is a professional company that has been researching and developing ultrasonic dry cleaning technologies for the past 20 years.

CTS has gained strength in the touchless cleaner business for various industries such as LCD, OLED, FILM, and special panels.

CTS is a professional hidden champion company in the touchless cleaner business that has been researching and developing various products for the camera lens, its parts, and sensor product processes based on the accumulated technologies.



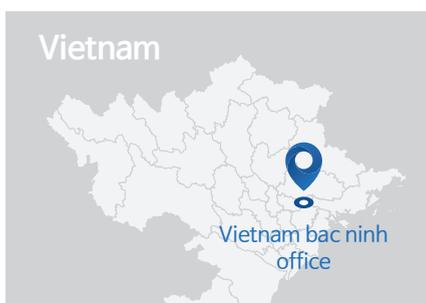
### Daegu office (HQ)



### Cheonan office



### Gyeonggi research institute



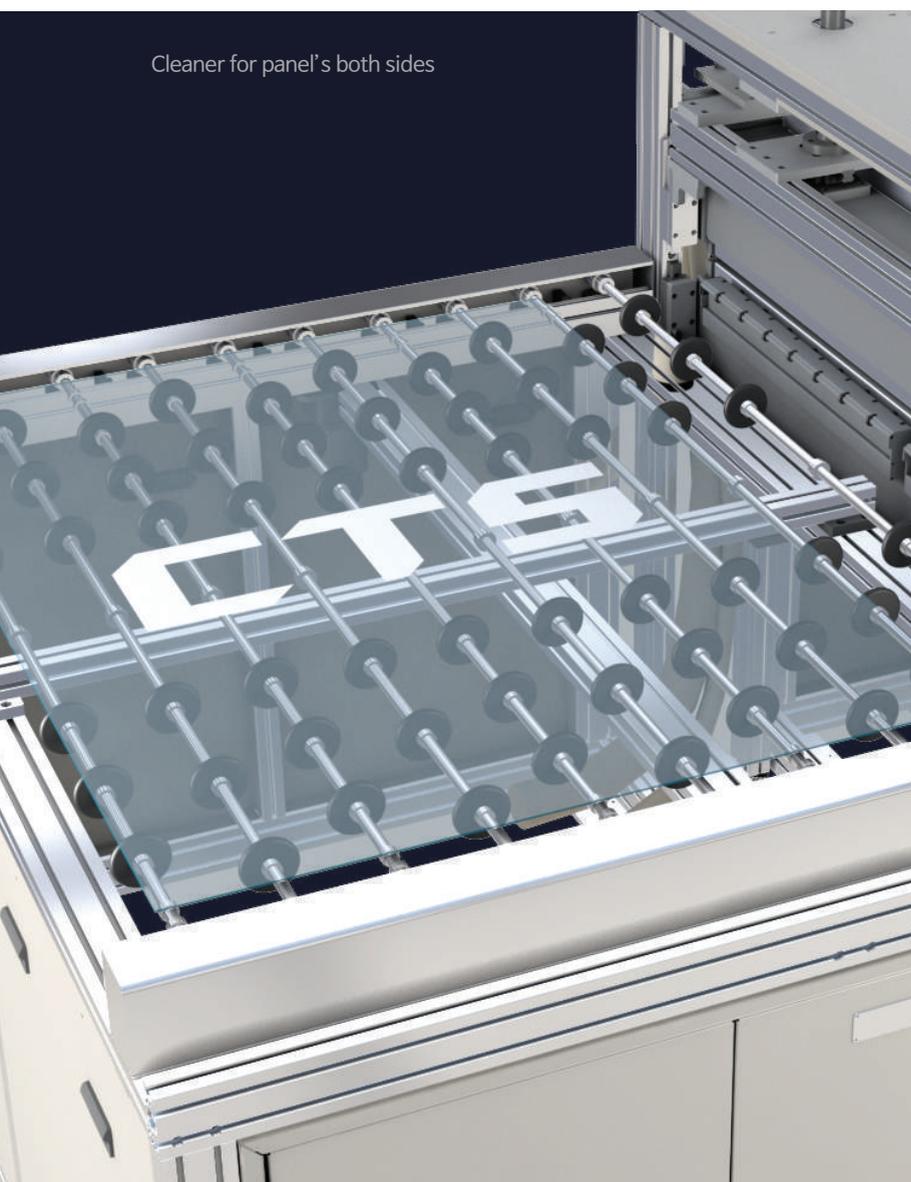


# ULTRASONIC DRY CLEANER

It is a touchless cleaner that removes foreign particles from the product surface and prevents secondary contamination by sucking up fine foreign particles with ultrasound-vibrated air on the surface of products, which are separated from the surface by blowing pressurized air.



Cleaner for panel's both sides



## Characteristics of ultrasonic dry cleaning



Touchless cleaning does not cause physical or chemical damage to the product.



We pride ourselves on the sanitary conditions and quality of our environment and process.



The rate of operation is high because there are only a few equipment failures.



Possible to remove fine particles that cannot be removed by a general air cleaning process.



Special nozzle cleaning is possible even for various complex products.



It does not require water, solvents or drying processes because air is used as a cleaning medium.

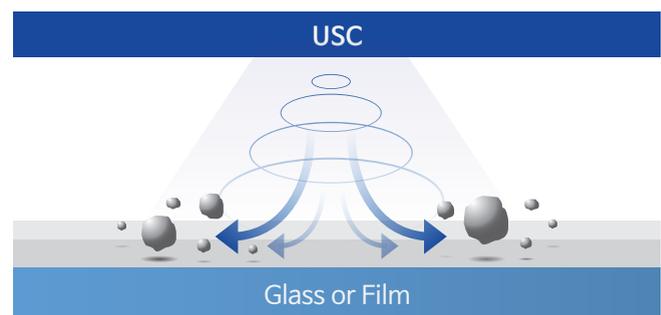
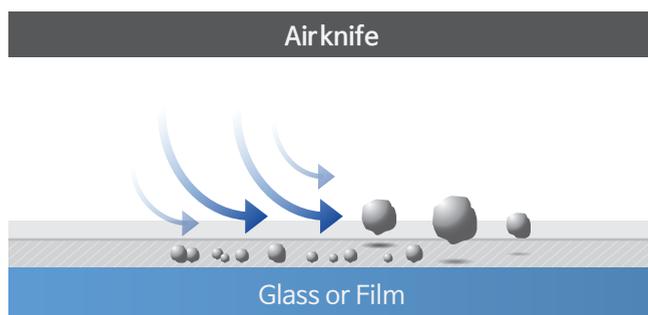
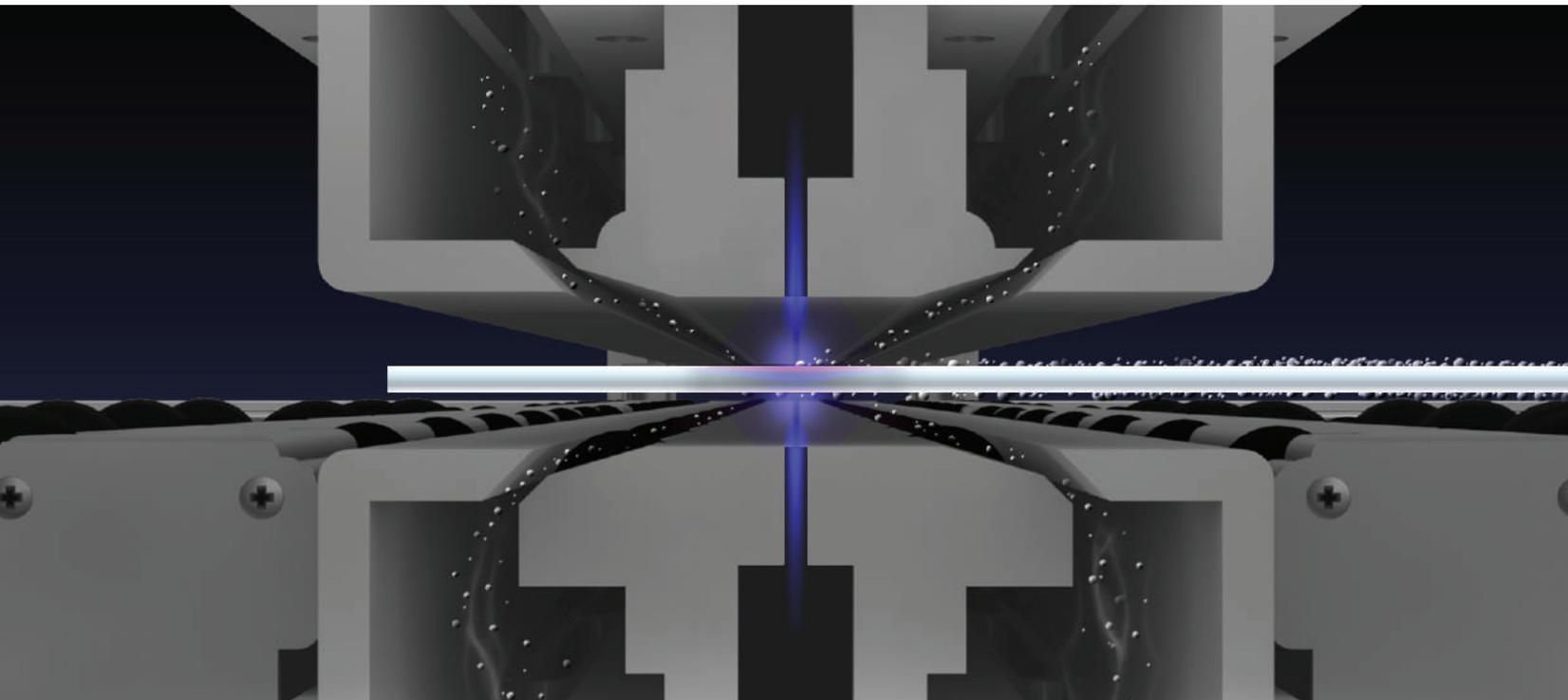
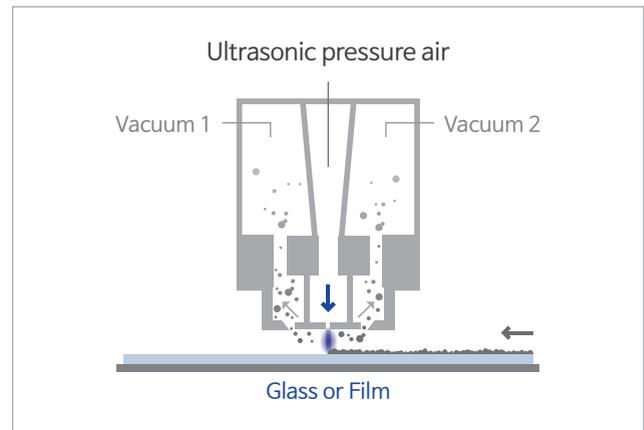


It is possible to operate 24 hours continuously and it has a low maintenance cost.

## Ultrasonic air generation nozzle

It does not remove dust oscillation using a physical device. It regulates and controls the flow of air.

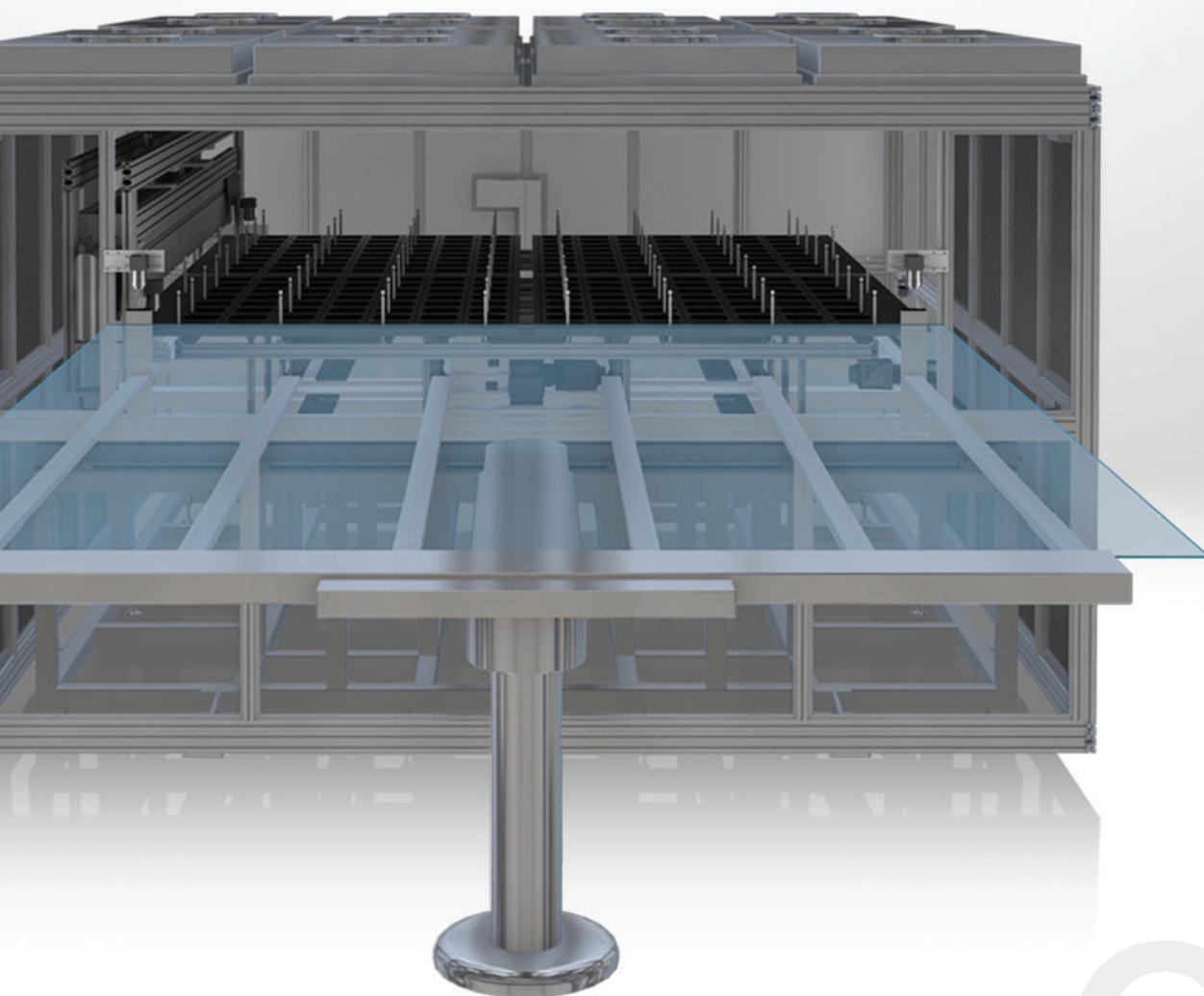
The nozzle can remove fine particles that cannot be removed in the general air cleaning by generating ultra sonic air.



# Cleaner for panel's single sides



A facility that supplies panel to USC, vacuum-lifts it on the stage, and cleans the upper side.



01

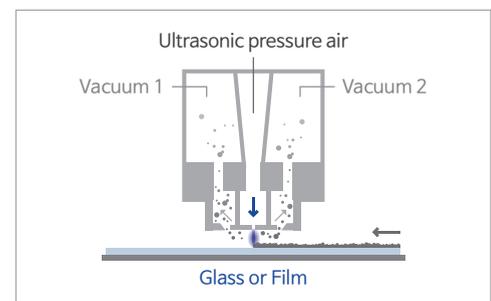
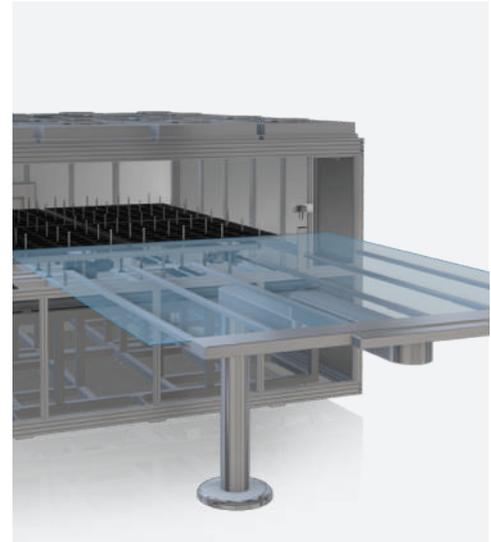
## 01 Product features

Applicable panel size	2G(370x470) ~ 10.5G(2940x3370)mm
Minimum thickness of applicable panel	0.3mm or more
Cleaning speed	Recommended = 180mm / s, Maximum = 300mm/s
Cleaning power	Remove 99% or more of silica powder (1.6um or more)
Nozzle standard gap	1.5~2.0mm
Moving type	Head moving / Stage moving
Power	AC208V 3P 60Hz / 50Hz
Panel supply	Robot

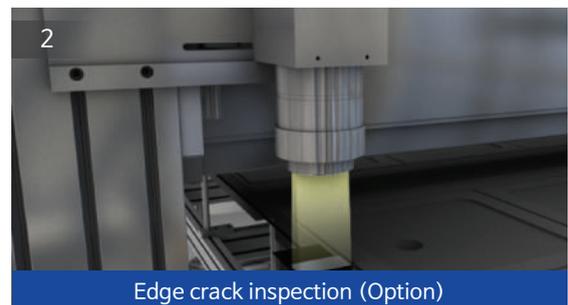
A single-face dry cleaner that cleans 0.3mm or thicker panels by using ultrasonic air without touching the panels

A-type vacuum-lifts a panel on the vacuum stage and transfer the USHead

B-type vacuum-lifts a panel on the vacuum stage and transfer the vacuum stage



## 02 Process



## Cleaner for panel's both sides



It is a facility that cleans the upper side and lower side of a panel at the same time while moving it using a conveyor.



## 01 Product features

Applicable panel size	2G(370x470) ~ 10.5G(2940x3370)mm
Minimum thickness of applicable panel	0.3mm or more
Cleaning speed	Recommended = 180mm / s, Maximum = 300mm/s
Cleaning power	Remove 99% or more of silica powder (1.6um or more)
Nozzle standard gap	1.5~2.0mm
Power	AC208V 3P 60Hz / 50Hz
Panel supply	Conveyor roller



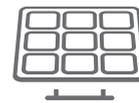
Both sides ultrasonic dry cleaner that cleans 0.3mm or thicker panels by using ultrasonic air without touching the panels

This type cleans both sides of the panel at the same time during conveying

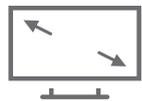
## 02 Applicable industries



OLED



SOLAR

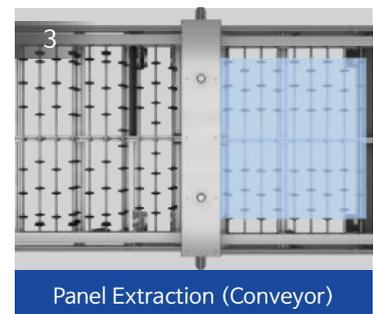
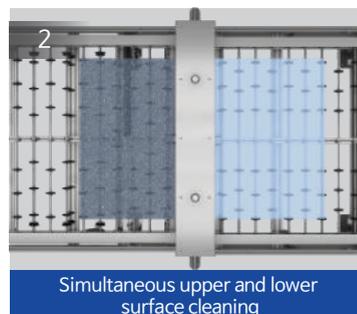
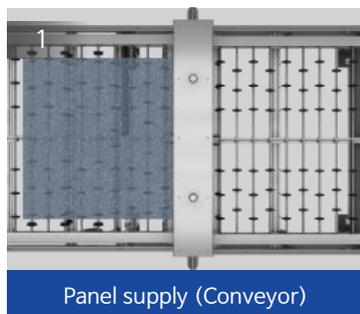


LCD



Special steel

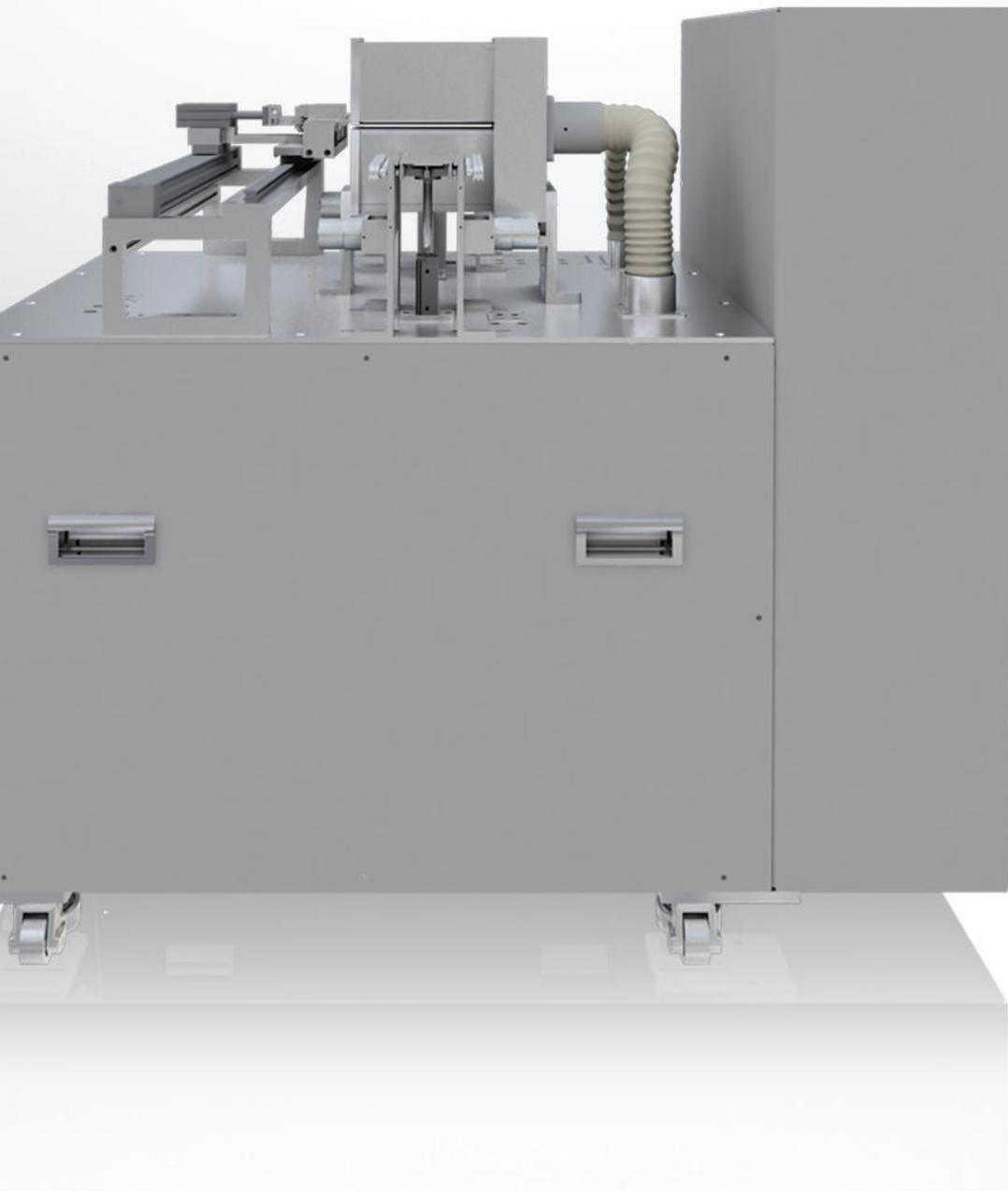
## 03 Process



# Mobile panel cleaner



A facility that automatically inserts and extracts small panels before and after printing by using a roller method and cleans the upper and lower sides of the panels simultaneously.



## 01 Product features

Application	Mobile Glass / Panel
Cleaning speed	Recommended = 180mm / s, Maximum = 300mm/s
Cleaning power	Remove 99% or more of silica powder (1.6um or more)
Nozzle standard gap	1.5~2.0mm
Power	AC208V 3P 60Hz / 50Hz
Panel supply	Conveyor roller



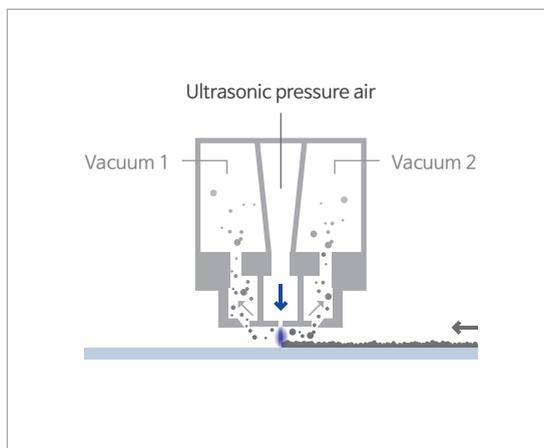
Double-side touchless dry cleaning for glass with a thickness of 0.3mm or more on in-line

Vacuum adsorption so a table not unnecessary / process simplification / possible to install it in a small space

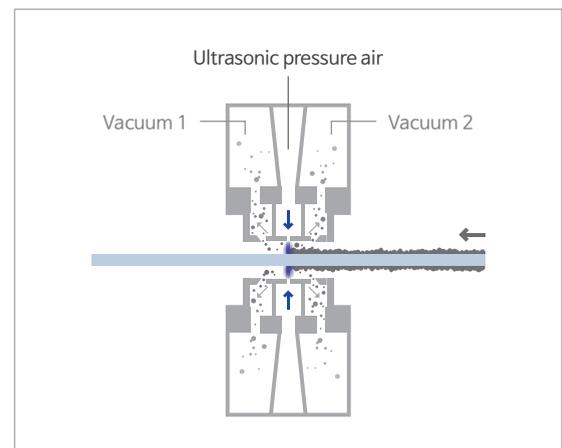
Clean after fixing the Panel to Jig. Suitable for cleaning both sides of a small panel simultaneous

Possible to construct it in an in-line form in connection with return logistics

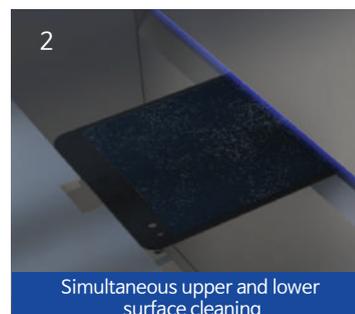
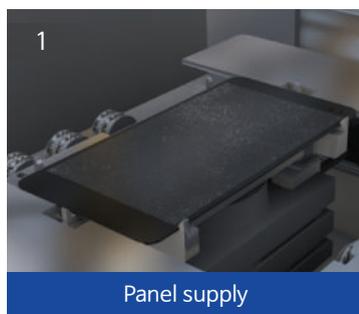
〈 For section 〉



〈 For both sides 〉



## 02 Process



# Smart phone camera lens cleaner

A facility that cleans fine particles that cause various issues to diverse parts such as lens, lens assay, and lens barrel in the smartphone manufacturing process using touchless specially-shaped ultrasonic nozzle, which was developed by the accumulated technology and various experiences of CTS.



04

## 01 Product features

Application	Lens (Tray) Lens assy unit Lens barrel
Cleaning speed	Recommended = 180mm / s, Maximum = 300mm/s
Cleaning power	Remove 99% or more of silica powder (1.6um or more)
Power	AC208V 3P 60Hz / 50Hz
Product supply	Tray



Cleans the outer surface of the lens barrel, the upper and lower surfaces of the lens by using a touchless ultrasonic air method.

This type automatically cleans the upper, lower, and sides of the lens supplied by the tray



Lens



VCM



Actuator

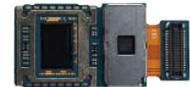
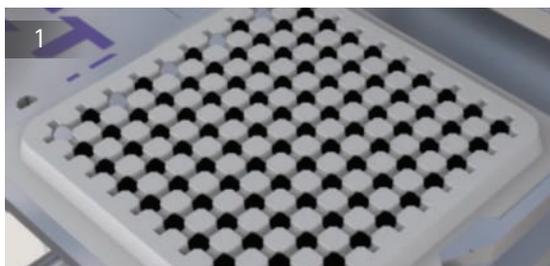
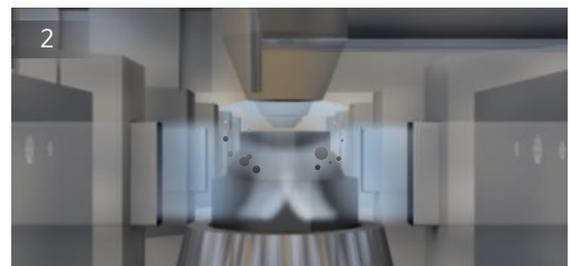


Image sensor

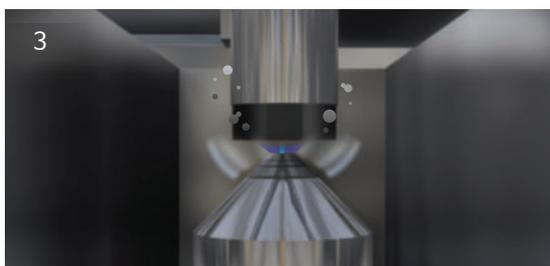
## 02 Process



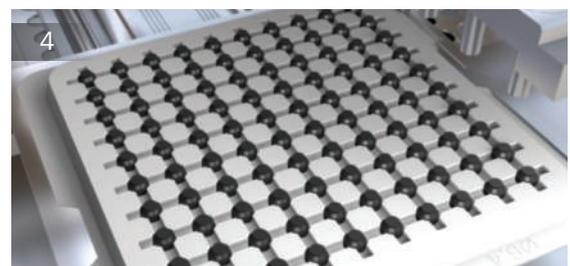
Lens supply (Tray supply)



Cleaning the outer surface of the lens barrel and the upper surface of the lens



Cleaning the inner surface of the lens barrel and the lower surface of the lens

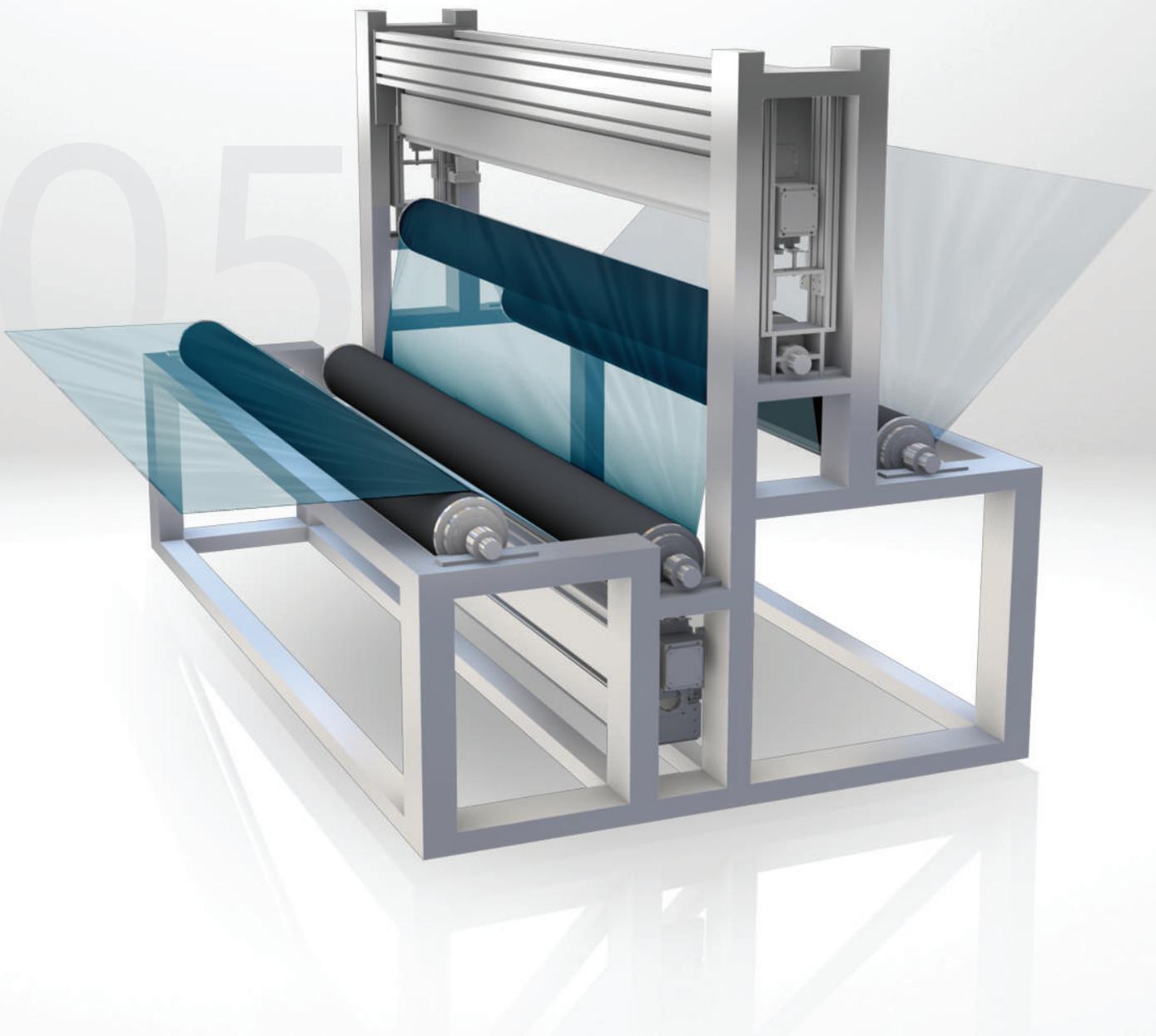


Lens extraction (Tray type)

# Film cleaner



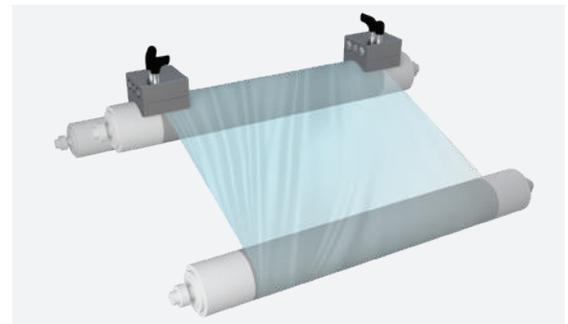
A facility that cleans the upper and lower surfaces of the film, which is transferred by the roller during the manufacturing process of the film used for display & secondary battery.



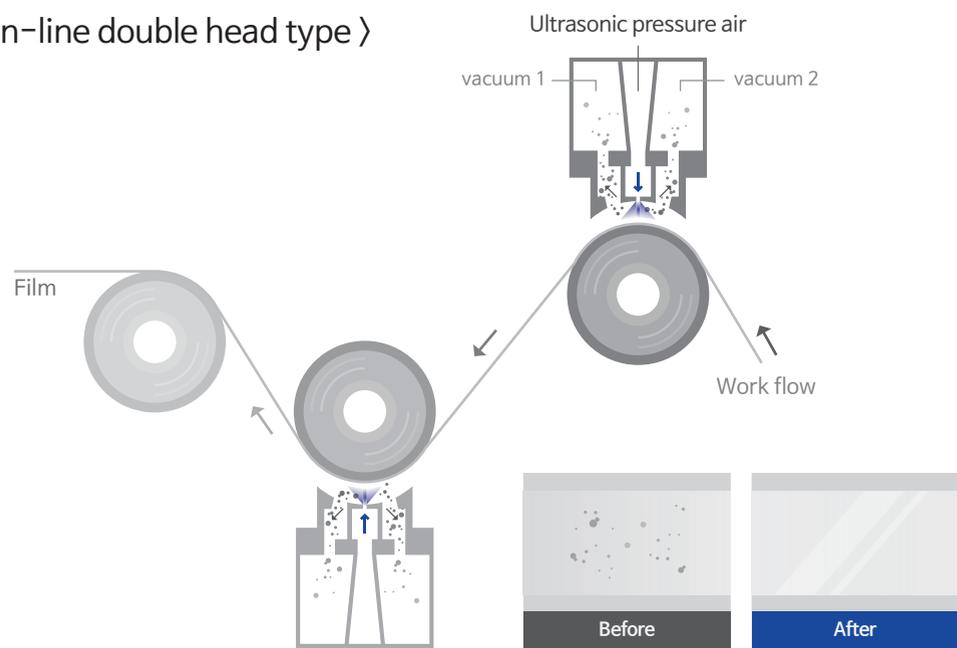
## 01 Product features

Sortation	Film front cleaner
Cleaning speed	18M/min
Cleaning power	Remove 99% or more of silica powder (1.6um or more)
Nozzle standard gap	2.0mm
Roller minimum diameter	60mm or more
Power	AC208V 3P 60Hz / 50Hz
Product transfer	Roll to Roll
Characteristics	Clean the front of the Roll to Roll type film

Sortation	Film edge cleaner
Cleaning speed	18M/min
Cleaning power	Remove 99% or more of silica powder (1.6um or more)
Nozzle standard gap	2.0mm
Roller minimum diameter	60mm or more
Power	AC208V 3P 60Hz / 50Hz
Product transfer	Roll to Roll
Characteristics	Clean the edge of the film and remaining particles after cutting touchless



### < In-line double head type >



# Photo mask cleaning tester



A facility that cleans the fine particles on the quartz of the photo mask, which is the essential part of the exposure process in the OLED and LCD manufacturing processes, and examines the cleaning status by using a vision camera.



## 01 Product features

Applicable panel size	850x1400 (mm) -Max
Applicable panel	8.0mm or more
Tact time	250sec / 1 Mask
Cleaning power	Remove 99% or more of silica powder (1.6um or more)
Nozzle standard gap	1.5~2.0mm
Moving type	Head moving
Power	AC208V 3P 60Hz / 50Hz
Mask supply	Manual cart / AGV
Foreign particle Detection Ability	30um or more
Particle detection method	Line scan camera



An ultrasonic dry cleaner that cleans the photo mask of the stepper dry and touchless

Manage the foreign particles of the photo mask during the process

Damage prevention for the photo mask

Reducing the defects due to defective photo mask in the process

## 02 Process

