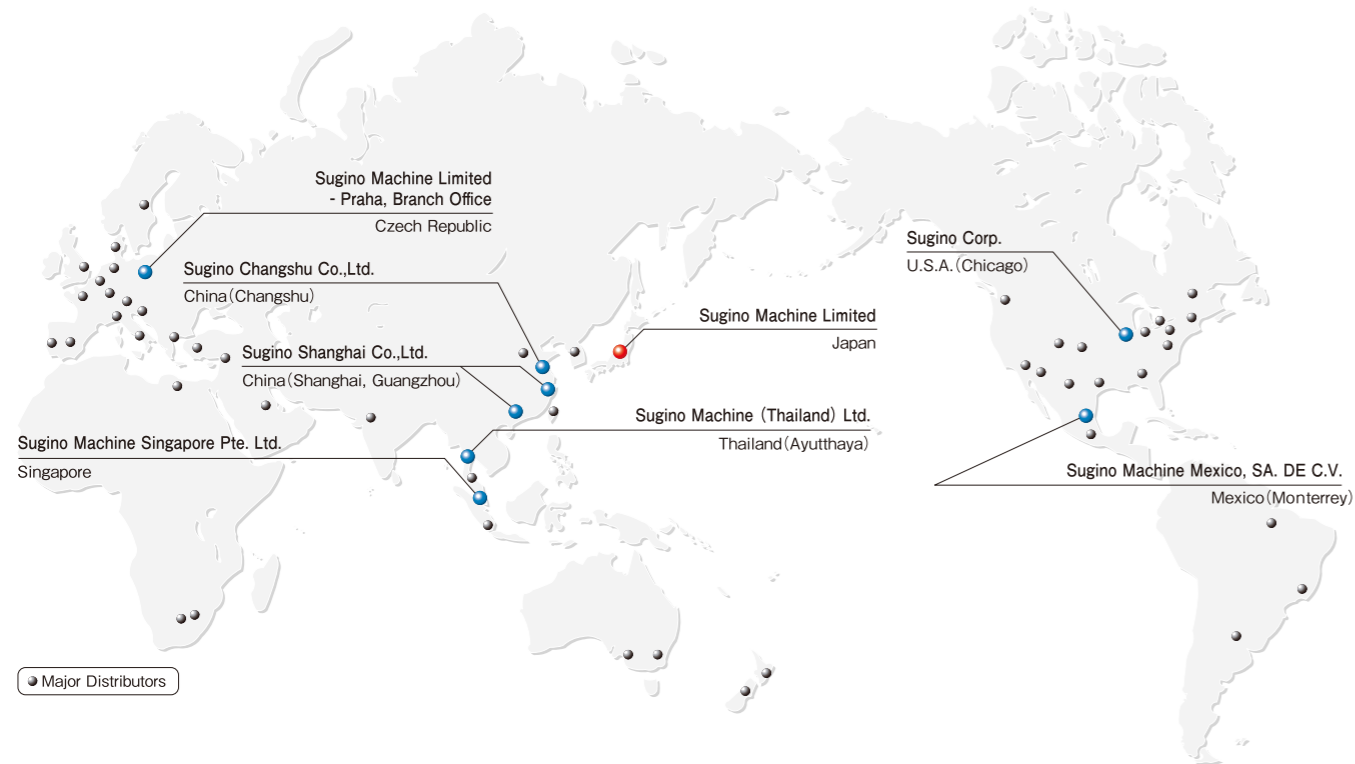


## Sugino Global Network



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Multipurpose Highly Efficient Washing System

**New**

*Jet Clean Center*™  
series



# Total Solution-Wash / Deburr to Part Cleanliness Assessment

Since its introduction in 1998, the Jet Clean Center (JCC) has been well received among many worldwide customers. Now, Sugino is proud to introduce a New and Improved JET CLEAN CENTER family of fully programmable modular machines and the equipment needed to support the washing and deburring process. Creating this family of modular machines responds to our customer's requests to offer total solutions for washing and deburring to final part cleanliness assessment.

## Contents

### Family of Versatile Washing/Deburring Machines

The series of washing/degreasing solutions includes turret type machines, submerged washing technology, drying equipment, and equipment for measuring cleanliness. Improved cost performance is achieved using common components across machine types.



CNC Turret Type High Pressure Cleaning and Deburring Machine . . . **p4-5**  
**Jet Clean Center-WIDE**  
**Jet Clean Center-SLIM**

CNC Turret Type High Pressure Cleaning and Deburring Machine / List of Equipment **p6-7**

※Special-cover specification



CNC Submerged Washing Machine . . . . . **p8**  
**Jet Clean Center-U-Jet**

※Special-cover specification



Air Blow Dryer . . . . . **p9**  
**Jet Clean Center-BLOW**

Vacuum Dryer . . . . . **p9**  
**Jet Clean Center-Vacuum Dry**

※Special-cover specification



Cleanliness Assessment System . . . **p10-11**  
**Residue Collecting Unit**  
**Cleanliness Assessment Equipment "CLEANRISER"**

## More Options for Automation

As all machines are modular this easily allows multiple in-line machines to be loaded and unloaded using a wide variety of automation.

## Improved Cycle Times

Highly effective processing and aggressive cycle times are achieved using the CNC programmability combined with quick rapid rates and turret index time of only 0.5 seconds.

### Cycle Time Comparison

Ex. Valve Body Washing Program

JCC-Wide	62.4 sec.	6 Seconds Reduction!
JCC (conventional model)	68.5 sec.	

## Applicable to a Wide Variety of Workpieces

We offer machines that correspond or can be adapted to a wide variety of applications depending on the part size and material.

Washing Sample / ABS Valve Body  
 Material of work piece : Aluminum  
 Pressure : 50MPa



Before Washing

After Washing

Washing Sample / Hydraulic body  
 Material of work piece : Aluminum  
 Pressure : 30MPa



Before Washing

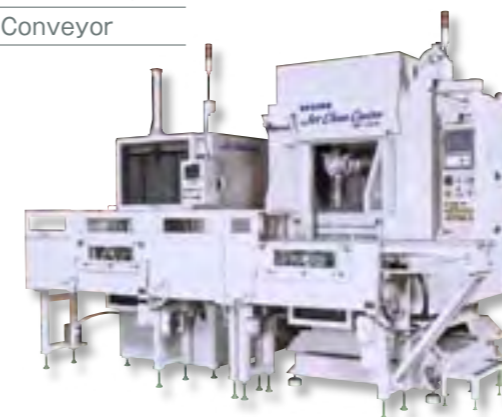
After Washing

## Turn-Key Responsibility

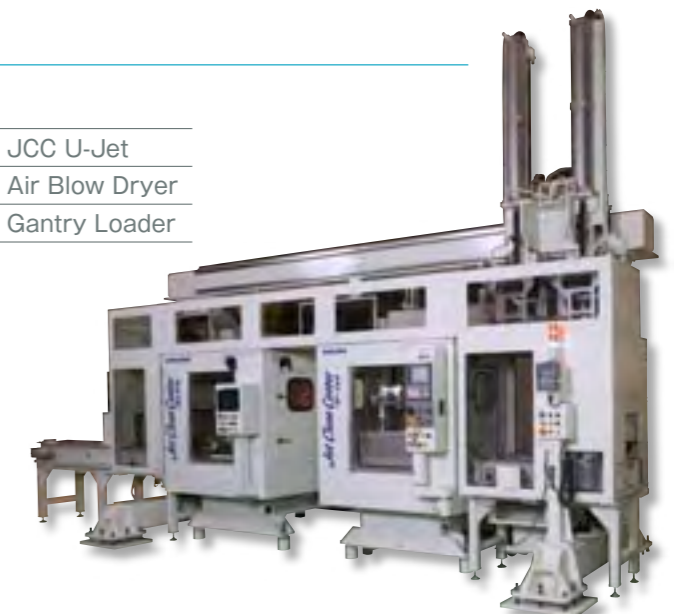
Supplying Sugino made components including high pressure pumps creates high value customer service with single source responsibility.

## Washing System Examples

JCC U-Jet  
 Vacuum Dryer  
 Conveyor



JCC U-Jet  
 Air Blow Dryer  
 Gantry Loader



CNC Turret Type High Pressure Cleaning and Deburring Machine

# Jet Clean Center-WIDE / Jet Clean Center-SLIM



This CNC turret type cleaning and deburring machine is capable of jetting high pressure water of 50MPa (MAX) from a CNC positioned nozzle to the cross holes, deep holes and tap holes to totally remove chips and burrs. SLIM and WIDE machines are available depending on the installation space and workpiece size.

## Features

### High Accuracy Target Washing

With CNC control, 0.08mm positioning contributes to highly accurate and efficient washing.

### Total Removal of Any Chips and Burrs

We correspond to various workpieces by offering washing nozzle attachments such as L type nozzle and twin nozzle, and deburring tools. - Please see page 6 for details.

### Corresponding to Automatic Transfer Line

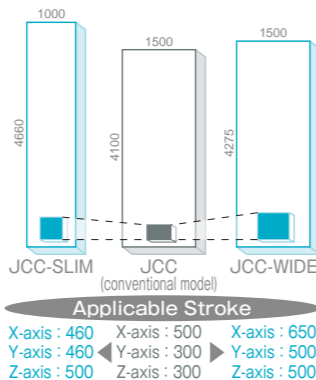
Best modular type washing machine suitable for gantry loader, conveyer, and robot transfer.

### Plenty of Options

We offer suitable options for workpiece such as tables and filters. - Please see page 6 and 7 for details.

### Wider Washing Area

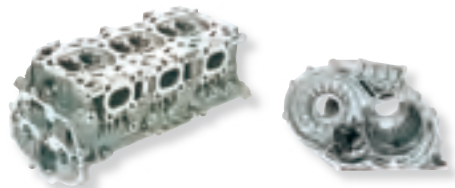
JCC-WIDE - same machine width as the JCC (conventional model) at 1,500mm, yet provides X-axis stroke of 650mm.  
JCC-SLIM - even with the machine width at 1,000mm, it will handle the same part size as the conventional model.



Washing Nozzle Options

## Applicable Work

**JCC-WIDE** Cylinder head, Cylinder block, Crankshaft, Stator housing for EV, Transmission parts, etc.



**JCC-WIDE** ABS Housing, Valve body, EPump body, Brake calipers, etc.



JCC-W6650  
CE



JCC-S6450

(Special-cover specification)

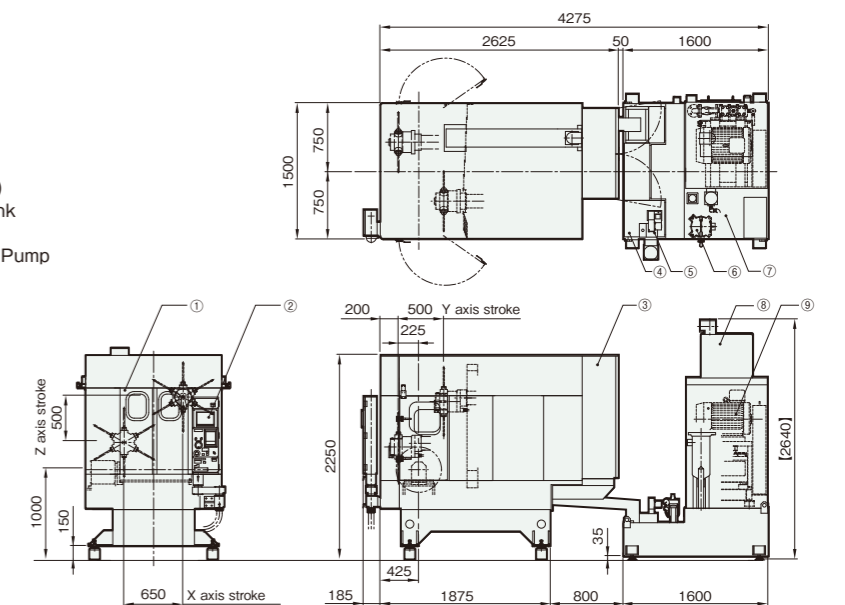
## Specifications

Item	Model	JCC-WIDE	JCC-SLIM
		JCC-W6650	JCC-S6450
Pressure	MPa	Max.50	
Flow Rate	L/min	18 (At 50MPa)	
Stroke	X axis	650	460
	Y axis	500	460
	Z axis	500	500
Rapid Feed Speed(X,Y,Z axes)	m/min	48	
Main Spindle Speed	min <sup>-1</sup>	Max.1,000	
Positioning Accuracy	mm	0.08(Total Stroke)	
Repeatability	mm	±0.05	
Number of Tools	-	Max.6	
Indexing Time	sec	0.5(Random Shortest Approach by CNC Control)	
Machine Dimensions(W×D×H)	mm	1,500×4,275×2,640	1,000×4,660×2,600
Machine Weight	kg	4,000	3,000
Controller	-	FANUC Oi-MD	
Power Capacity	kVA	45	

## Dimensions

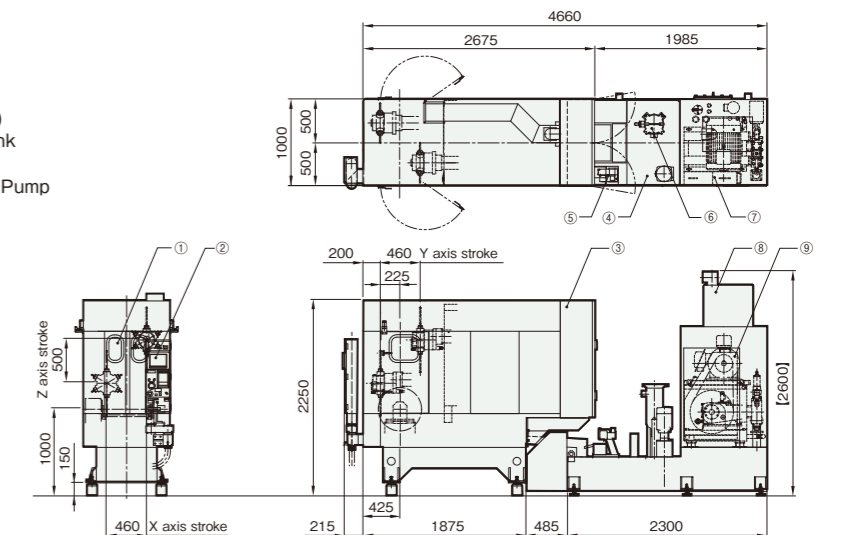
### JCC-WIDE

- ① Slide Door
- ② Operation Panel
- ③ Electric Control Panel
- ④ Primary (Dirty) Tank
- ⑤ Oil Skimmer
- ⑥ Bag Filter (Standard:1)
- ⑦ Secondary (Clean) Tank
- ⑧ Mist Collector
- ⑨ Sugino High Pressure Pump



### JCC-SLIM

- ① Slide Door
- ② Operation Panel
- ③ Electric Control Panel
- ④ Primary (Dirty) Tank
- ⑤ Oil Skimmer
- ⑥ Bag Filter (Standard:1)
- ⑦ Secondary (Clean) Tank
- ⑧ Mist Collector
- ⑨ Sugino High Pressure Pump



# JCC-WIDE/JCC-SLIM List of Equipment

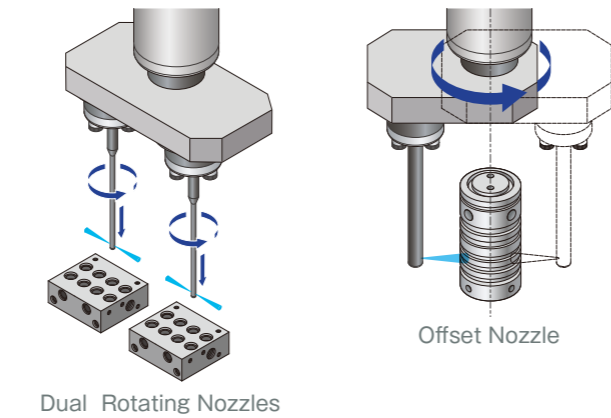
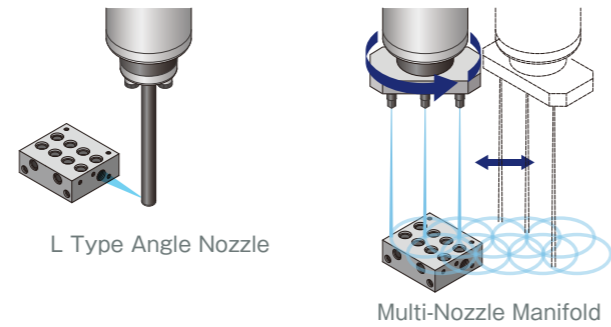
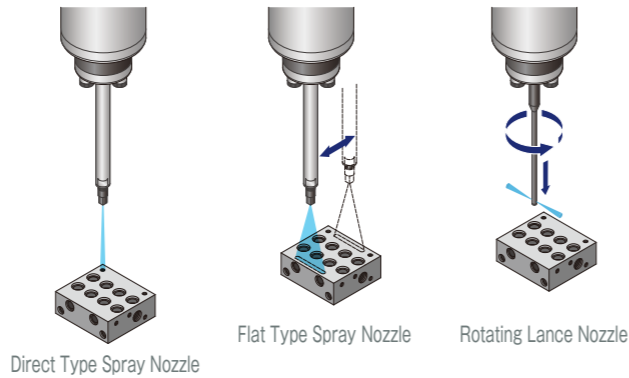
Machine Body ●: Included as Standard ○: Option Items

◆ Tooling	
· Washing Nozzle Options	
Direct Nozzle	
Flat Spray Nozzle	
Lance Nozzle	
L-type Nozzle	● Standard: 3 positions
Multi-Nozzle	○ Option: 6 positions
Twin Nozzle	
Offset Nozzle	
· Deburring Tool	
Drill / Special Deburring Tool	
Brush	
◆ Table	
· CNC Index Table (Single Station)	○
· Pallet Shuttle Table	○
· 180° Turntable	○
◆ Exhaust Device	
· Mist Collector (0.4kW)	●
· Mist Collector (0.75kW)	○
◆ Air Blow Unit	
◆ Air Blow	○
◆ Auto Lube Device	
◆ Slide Door	○
◆ Revolving Light / Signal Light	○
◆ Fixture and Clamp Device	○
◆ Auto Loader	○
◆ Ceiling Auto Door	○
◆ Area Sensor / Light Curtain	○
◆ Air Gun	○
◆ Coolant Gun	○
◆ Part Type Detector	○
◆ Specified Paint	○
◆ Inside Light	○
◆ Standard Cover	●
◆ Special-Cover	○

## Nozzles

A variety of available nozzles are selected based on the application.  
3 nozzles are included as standard, optional up to 6.

### Washing Nozzle Options



### Deburring Tools



## Pump Station

◆ High Pressure Pump	
HP Pump (50MPa×18L)	● Select from 3 standard options
HP Pump (35MPa×29L)	
HP Pump (20MPa×50L)	
◆ LP Washing Pump (1.1kW)	○
◆ Filter Pump	
Filter Pump (0.55kW)	●
Filter Pump (1.5kW)	○
◆ 3-Way Cylinder Valve	●
◆ Primary (Dirty) Tank (200L)	●
◆ Secondary (Clean) Tank (550L)	●
◆ Primary Filter	
Basket Filter	●
Rotary Filter	○
Magnet Separator	○
Drum Filter	○
◆ Secondary Filter	
Bag Filter	● Standard: 1
Cyclone Filter	○ Option(Standby): 1
◆ Oil Skimmer	●
◆ Liquid - Level Gauge	●
◆ Washing Coolant Warming Heater	○

## Table(Fixture Platform, Optional Equipment)

Combining table axis and spindle axis to wash 6 faces.



## Pump Station

A variety of optional equipment is offered based on the application.  
Flexible pump layout.

3-Way Cylinder Valve (Standard)      High Pressure Pump (Standard)      Secondary Filter Bag Filter

Primary Filter Basket Filter      Oil Skimmer (Standard)      Liquid - Level Gauge (Standard)      Secondary (Clean) Tank (Standard)

Primary (Dirty) Tank (Standard)

Standard Equipment: Secondary Filter, Bag Filter(Standard:1)

Optional Equipment: Basket Filter, Magnet Separator, Drum Filter, Cyclone Filter

CNC Submerged Part Washing Machine  
**Jet Clean Center-U-Jet**



Synergy effect between the 7 MPa HP Jet and cavitation efficiently and effectively removes debris from complex features within a part.

**Applicable Work**

Cylinder head,  
Cylinder block,  
Valve body, etc.



Washing Sample / Cylinder head  
Material of work piece: Aluminum  
Pressure: 5MPa

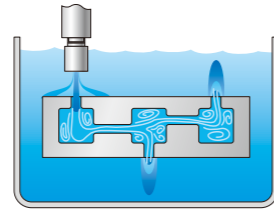


Before Washing      After Washing

**Features**

**Best for Parts with Complex Internal Features**

Swirling water by U-Jet cavitation creates access to blind corners and hidden passages in complex parts.



Effectively and aggressively washes and removes debris from areas within a part that cannot be reached directly with a high pressure nozzle.

**Target Washing at High Accuracy**

Highly accurate and efficient washing is achieved utilizing the CNC control and positioning accuracy of 0.08 mm.

**Applicable to both Submerged & Open-air Washing**

Submerged and open air high pressure washing can be combined into one machine saving cost and floor space.

**Horn Nozzle for Submerged Washing**

Cavitation bubbles are effectively created by Sugino's original Horn Nozzle design.



Underwater jetting taken by high speed camera



JCC-W1607UE  
(Special-cover specification)

Air Blow Drying Machine

**Jet Clean Center-BLOW**



Combining the rotating action of a 4th axis table with multiple air nozzles configured in 3 directions to effectively dry parts.

Vacuum Dryer

**Jet Clean Center-Vacuum Dry**

A high drying standard is accomplished using a vacuum pump to generate a vacuum of less than 10 torr in the chamber to evaporate remaining moisture.

**Features**

**Dry Any Part Features**

Trapped moisture in deep drilled and tapped holes and other complicated features can be evaporated from a part.

**No Air Supply Needed**

Energy is saved since no air supply is required.

**Reduced Cooling Process**

Vacuum drying and lowering the part temperature occur simultaneously which eliminates cooling processes prior to inspection.



Before Drying      Drying (Evaporating)      After Drying

\*Please inquire details to nearby sales office.

**Features**

**Highly Efficient Drying**

High speed 4th axis table and multiple nozzles improve drying efficiency and cycle time.

**Energy Saving**

Energy saving is achieved when an optional regenerative type blower is used.

**Low Acoustic Noise**

A sealed structure limits noise levels to less than 80dB creating a safer working environment.



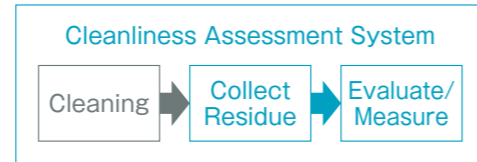
JCC-BL55  
(Special-cover specification)



JCC-VCD55  
(Special-cover specification)

## Cleanliness Assessment System

The Cleanriser was developed to complement the JCC series of washing machines and to create a system that will systematically measure and assess washing results in an efficient and accurate manner.



### Collect Residue Residue Collecting Unit

This unit is used for collecting the fluid residue accumulated from manually rinsing a part that has just been washed in a JCC type machine. It was designed with ease of operation in mind.



#### Specifications

Cleaning Method	—	Manual (Rinse solution and pressurized air)
Filter Size Coverage	mm	φ47
Applicable Workpiece Dimension	mm	Max.980×480
Attachments	—	Rinse Solution Gun, Air Gun
Dimensions (W x D x H)	mm	1,050×600×1,300
Weight	kg	100
Air Source	—	0.4MPa, 150NL/min

### Evaluate/Measure Cleanliness Assessment Equipment "CLEANRISER"

This equipment will automatically measure and evaluate residue collected by filters. It was developed using Sugino's accumulated knowledge and technology in cleaning and measuring.



Place dirty filter



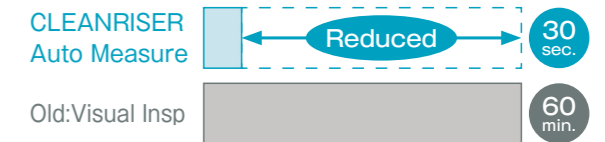
#### Specifications

Measure Target	—	Washing residue taken by filter (Cutting chips, etc.)
Filter Size Coverage	mm	φ47 (Measured View Dimension: □50)
Resolution	μm/pixel	7
Residue Measurement (Minimum Detection)	μm	50
Detector Sensor	—	High Resolution CCD Color Line Sensor (50×50mm area represents approx. 55 megapixels)
Analysis Item	—	Dimension, Quantity, Area
Data Output	—	Measurement Report: Excel format * Length Measurement Data: CSV format
Dimensions (W x D x H)	mm	370×520×1,400(Exclude working desk area)
Weight	kg	80(Exclude working desk area)
Power Consumption	W	500(AC100V)

### Cleanliness Assessment System Features

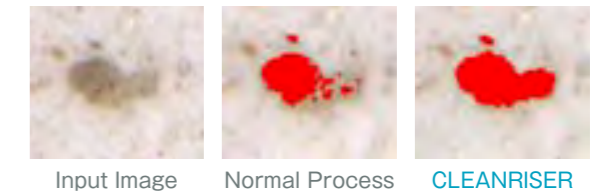
#### Reduce Extra Work & Shorten Inspection Time

Visual inspection takes a long time and more manpower is required. With the Cleanriser, a huge reduction in time and workload is achieved.



#### Improve and Stabilize Inspection Accuracy

Scan filters with collected residue at high resolution. It provides the dimension of the residue at resolution of 7μm.



#### Enhanced Features

Inspection efficiency can be significantly improved by user-friendly interface, simplified operating procedures and convenient output function.

After residue collected, then scan filter

Resolution 7μm

Measure Time within 30 sec

**Overall Image**  
55 megapixels

**Zoom-In Image**  
Selected region can be zoomed one by one.

**Thumbnail Screen**  
Display 12 pcs at same time

**Residue List**  
This indicates residue's longest length, length in each axis and area.

**Residue Distribution Graph**  
Distribution per residue size can be easily seen in the graph.

**There are just 4 easy steps for inspection.**

- 1 Enter threshold value
- 2 Click "Measure Button"
- 3 Check Auto Measure Results
- 4 Output report

**Easy Report Output Function \***  
With one click, measurement results in Excel format are displayed. It is a good report generator.

**Excel Output Items \***

- Date
- Measurement Parameters
- Measurer
- Overall Image
- Zoom-in Image
- Residue List
- Residue Distribution Graph

Example

\* Microsoft Excel and Excel are registered trademarks of Microsoft Corporation in the United States and other countries.