

Designed and developed for the 1<sup>st</sup> in the world,

# Caster Wheel Cleaner

Factory Cleanliness, It begins with us.



# 01 Motivation for Development

01

## **Need to Solve Workplace Pollution Problems**

Severe contamination of workplace from wheels → Wheels need to be cleaned.

02

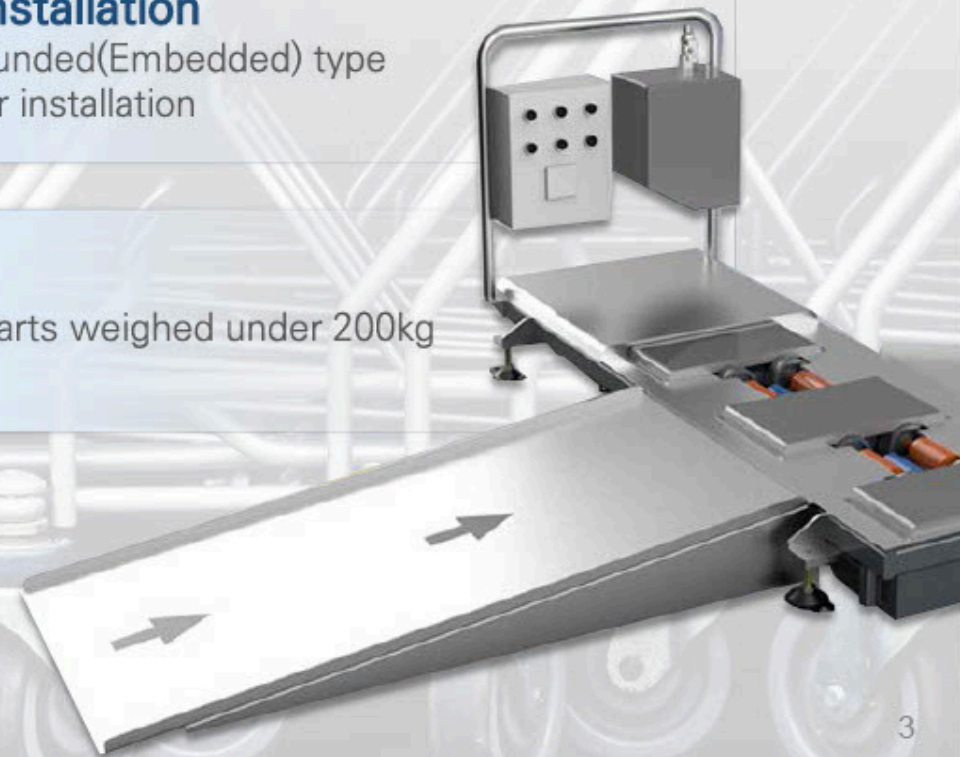
## **Limited Form of Previous Installation**

Manufactured and sold only In-ground(Embedded) type Previously. → Many Restrictions for installation

03

## **Slope type is developed.**

No need to dig the ground. Small carts weighed under 200kg Is available for using Slope Type .



## 02 Products Overview



### **In-Ground Type**

(Cleaning Weight: 200kg ~ 2,000kg )

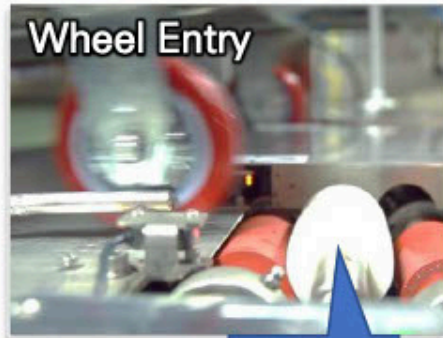


### **Slope Type**

(Cleaning Weight : under 200kg )  
: Selected of Industrial Convergence Items



## 02 Products Overview



Washing  
Sponge



Cleaning Wheels  
perfectly

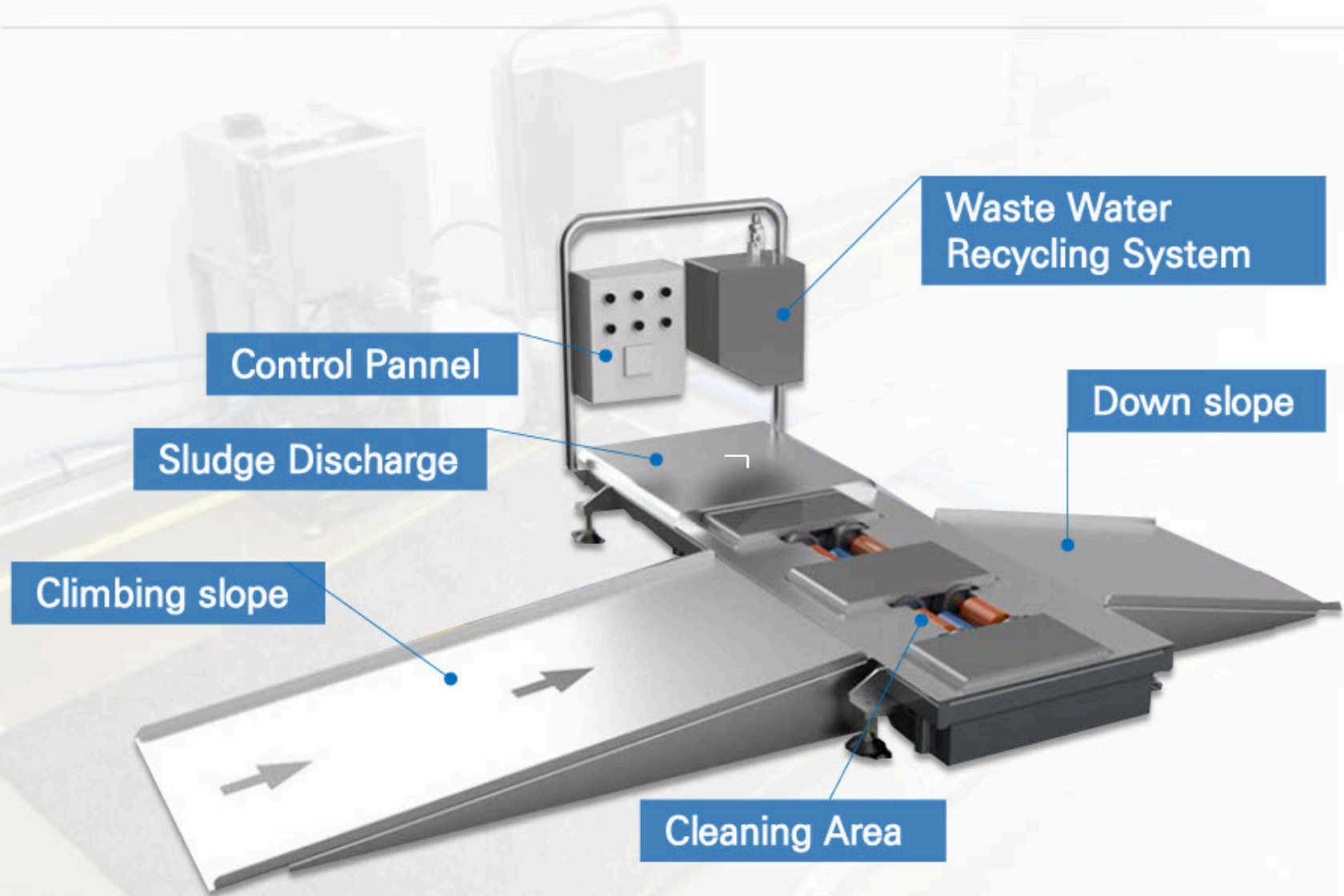


The Washing Sponge, which always contains water and detergent, washes the wheels by spinning in the opposite direction of the wheels and wipes the wheels.





## 03 Parts Name



# 04 Special Features

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1. Strong cleaning power by water + detergent + sponge roller

(Reliability Assessment Test Finished)

2. Wheel-Turning Prevention Technology while it is cleaning.

(Patented Technology)

3. Automatic pushing forward wheels after cleaning

(Patented Technology)

4. Technology to easily change by one-touch when replacing washing sponge

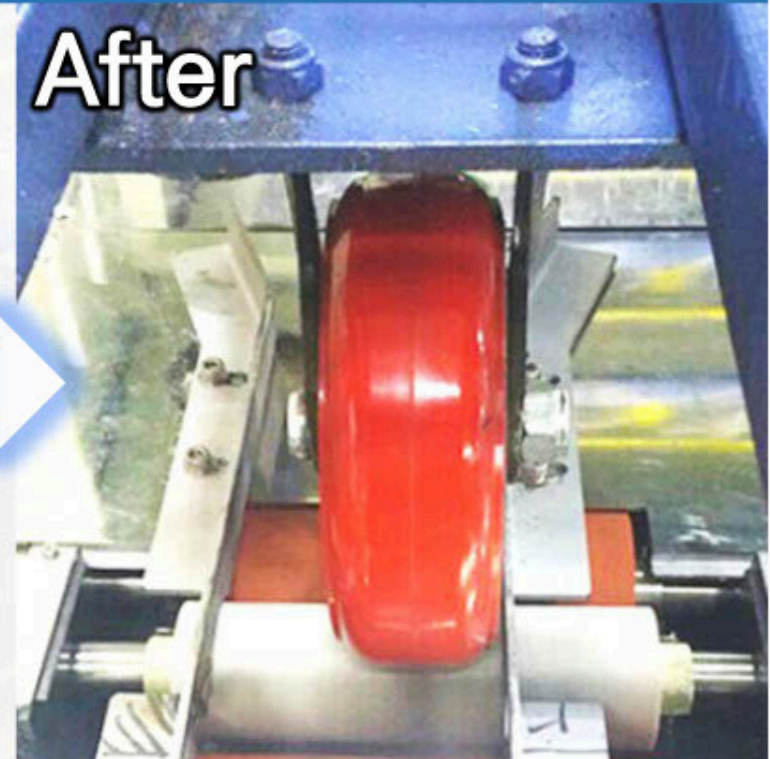
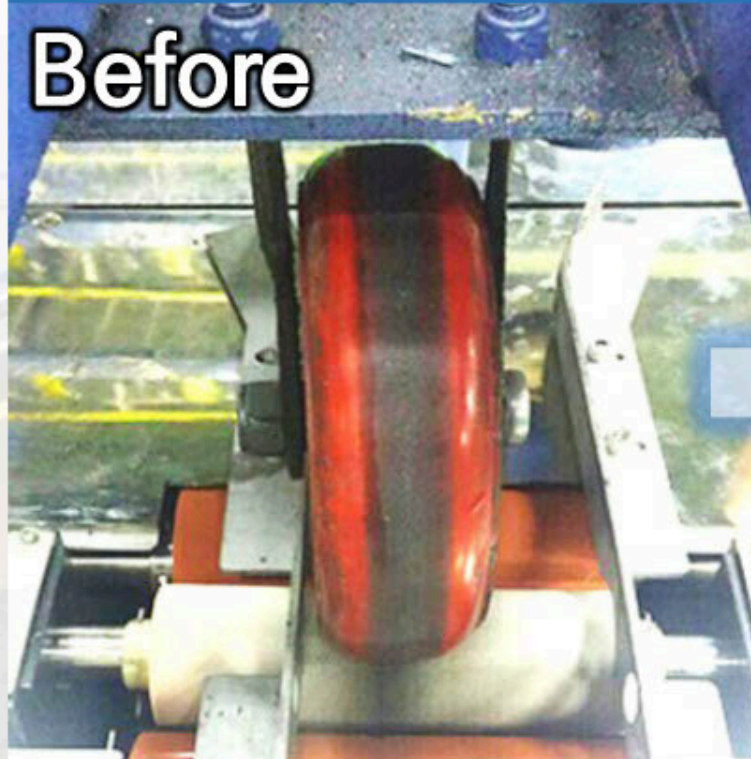
(consumables) (patented technology)

5. Sludge automatic discharge and waste-water recycling technology (industrial convergence)

6. Completely remove water on the wheels after cleaning

## 04 Special Features

1-1. Strong cleaning power by water + detergent + sponge roller as if it is wiping (Picture)





# 04 Special Features

Tested by KIMM : Korea Institute of Machinery & Materials.

## 1-2. Strong cleaning power (Data) – “Reliability Evaluation”

### Color Test.



### Result

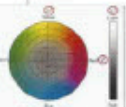
5" Washing ability test

Division		Measuring before the cleaning	Measuring after application	Measuring after dry after the cleaning
Left	1	L: +28.5 a: +19.0 b: +7.3	L: -87.9 a: +3.2 b: -5.1	L: -18.3 a: +29.4 b: +11.9
	2	L: +25.3 a: +21.8 b: +5.7	L: -82.5 a: +5.2 b: -5.4	L: -20.0 a: +29.0 b: +11.1
	3	L: +26.6 a: +24.7 b: +3.9	L: -92.7 a: +3.5 b: -4.6	L: -20.7 a: +29.7 b: +11.8
Right	1	L: +23.0 a: +23.1 b: +3.8	L: -78.6 a: +0.5 b: -2.8	L: -19.4 a: +30.6 b: +0.6
	2	L: +24.5 a: +21.3 b: +0.1	L: -89.0 a: +1.6 b: -3.6	L: -16.5 a: +28.5 b: +11.1
	3	L: +24.2 a: +22.1 b: +3.1	L: -80.1 a: +1.3 b: -3.1	L: -22.1 a: +27.5 b: -11.9

Original Color  
(Red) Data

White Powder  
Color (White)  
Data

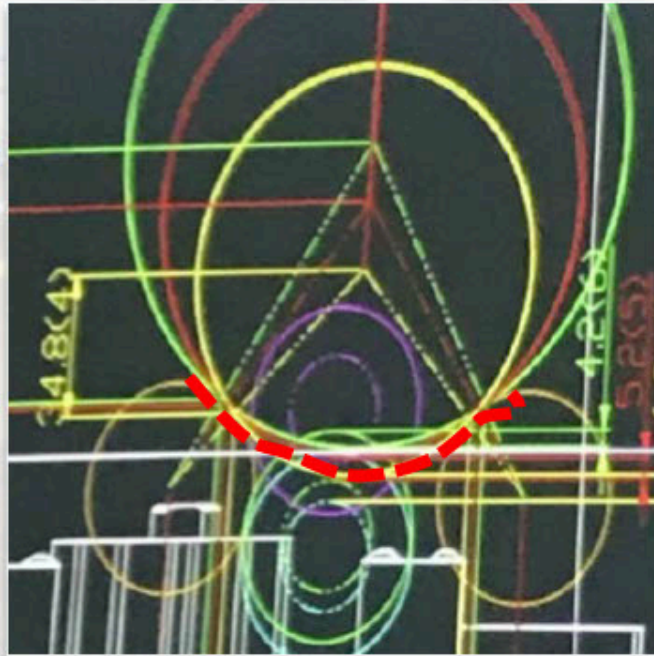
After Cleaning  
(Red) Color Data



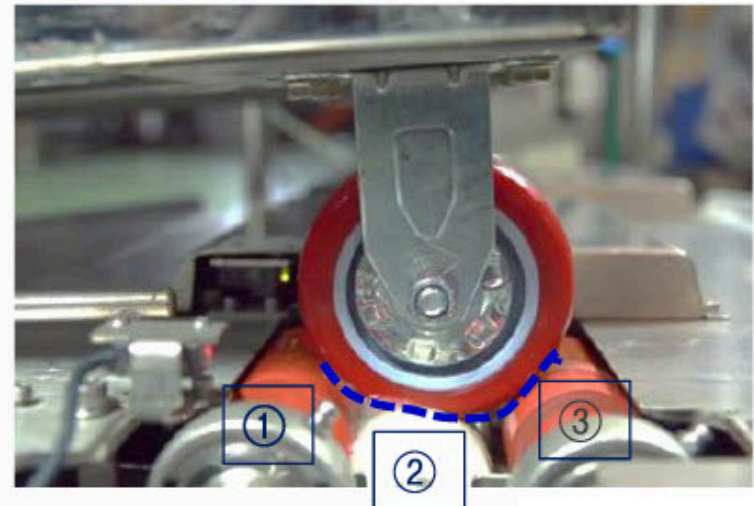
We used color tester. When we apply White Powder on the wheels as test, The color data changed, after cleaning wheels, data is back to red color data (Proved The Strong Cleaning Power)

# 04 Special Features

## 2. Wheel-Turning Prevention Technology while it is cleaning.



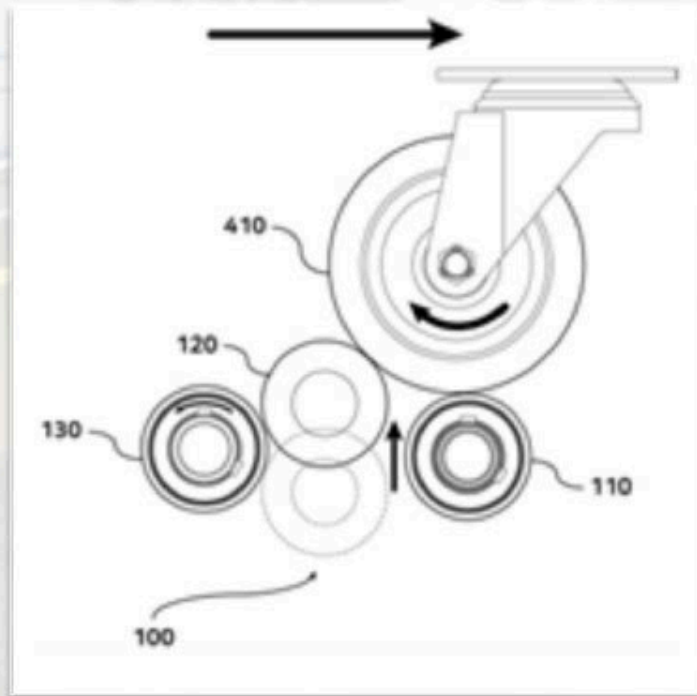
1,2,3 rolls fit to wheel size  
=> Prevent Wheel Turning



# 04 Special Features

## 3. Automatic pushing forward wheels after cleaning

Safety for wheel forward





## 04 Special Features

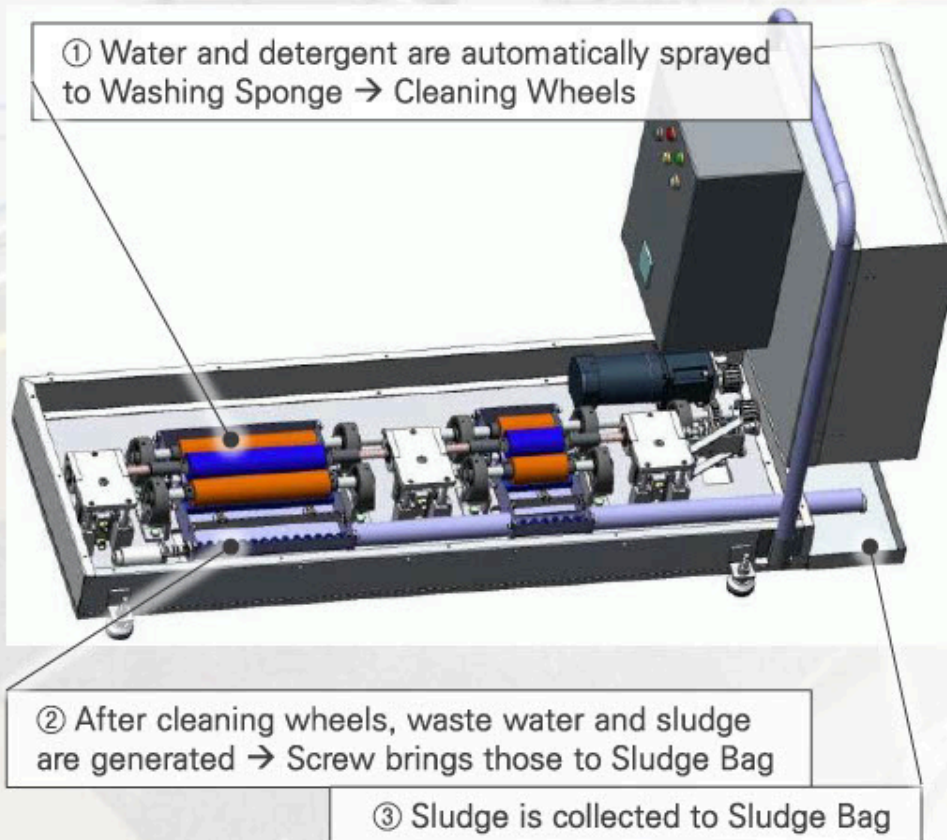
### 4. Technology to easily change by one-touch when replacing Washing Roller



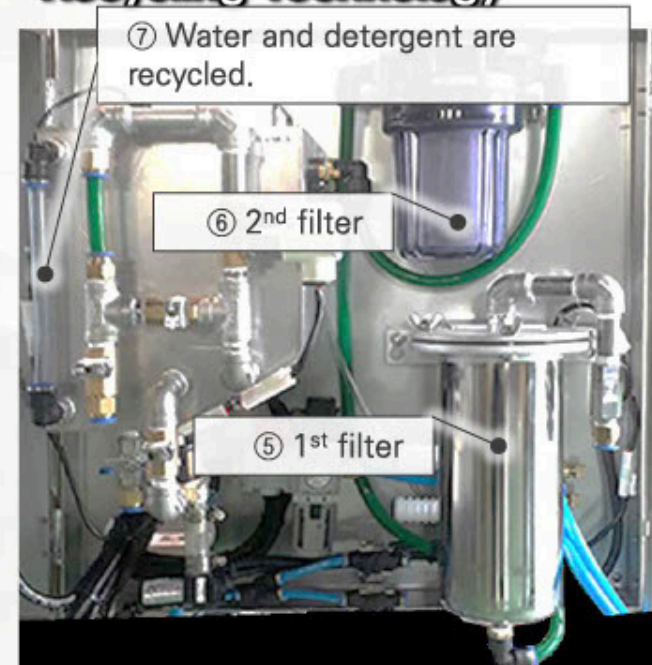
# 04 Special Features

## 5. Automatic sludge discharge and waste-water recycling technology

### Automatic Sludge Discharge



### Recycling Technology

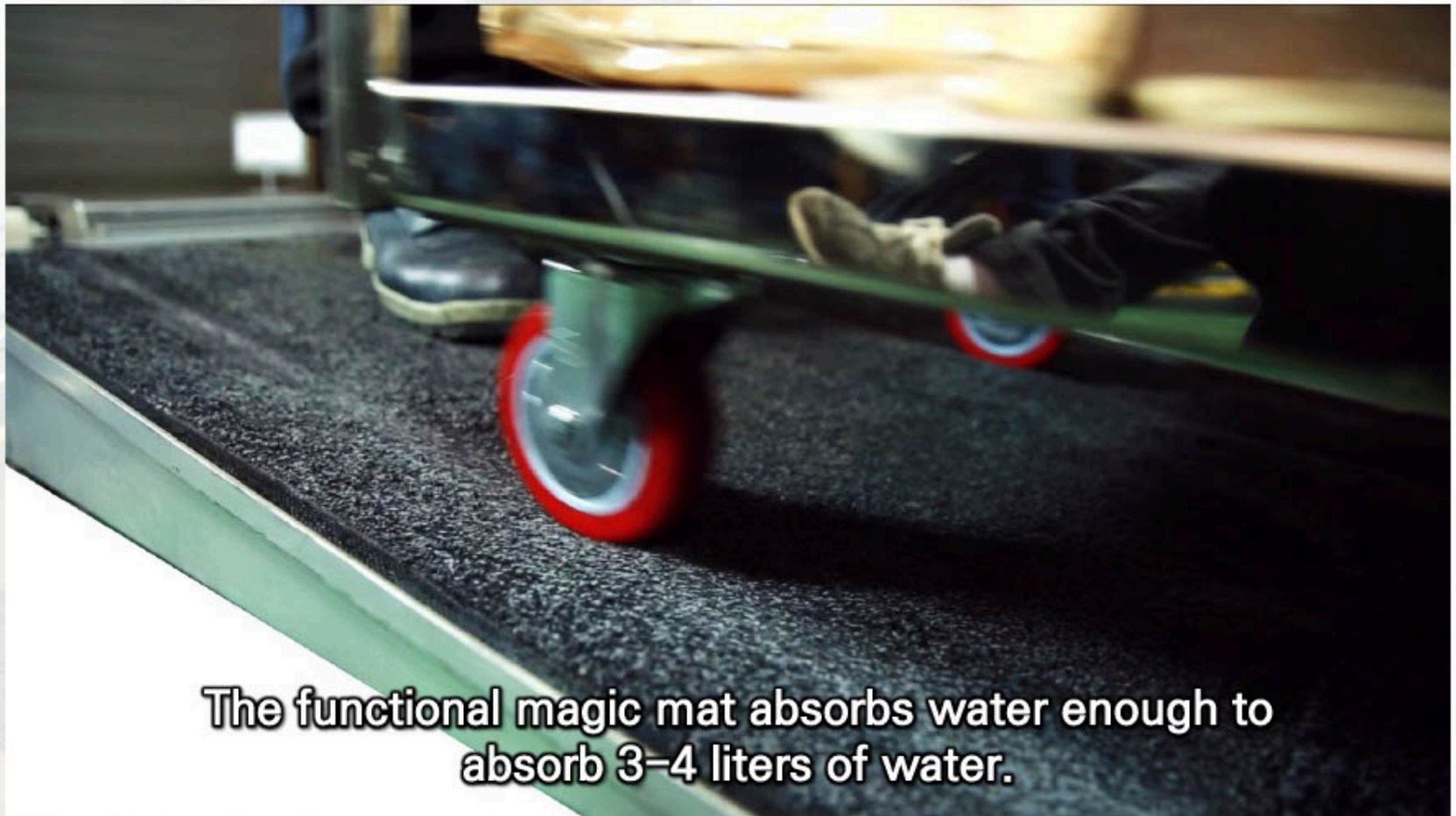


④ Waste water is pumped to 1<sup>st</sup> and 2<sup>nd</sup> filters and recycled



## 04 Special Features

### 6. Completely remove water on the wheels after cleaning



**The functional magic mat absorbs water enough to absorb 3–4 liters of water.**



# 04 Special Features – Reliability Assessment Test

## Electric Shock Safety



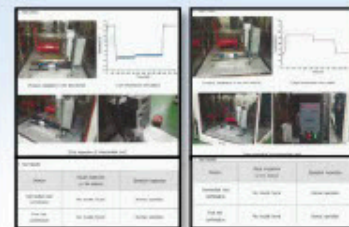
After applying the 500V voltage test, check the high insulation resistance of **"76 GΩ"**!  
**Electric shock rate: Low**  
**Electric Shock Safety Certified!**  
 Source: KIMM

## Sponge Roller Life Test



**5" Wheel Sponge Roller Life Test :**  
 The Sponge is torn  
**"At 2614 Cycle!"**  
**Very High Cycle!**  
 Source: KIMM

## Temperature Dependent



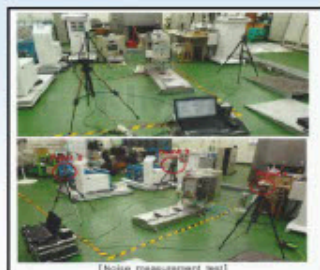
**Normal Operation at Low Temperature**  
 (-7 °C ~25 °C), **High Temperature**(2 °C ~55 °C) !  
 Source: KIMM

## Sponge Roller Life Test



**6" Wheel Sponge Roller Life Test :**  
 The Sponge is torn  
**"At 8710 Cycle!"**  
**Very High Cycle!**  
 Source: KIMM

## Noise



**Excellent for indoor use with 59 Db!** Source: KTL

Sample	Noise measurement result			
	Position	Point 1	Point 2	Point 3
1	Noise	59.1	59.1	59.1

Tested by KIMM : Korea Institute of Machinery & Materials.

# 05 Excellence

Evaluation Lists	Evaluation Methods	Description
Dimension(Slope)	A TYPE B TYPE	1900 x 3000 x 950mm 2250 x 3000 x 950mm
Capacity	Operating Setting Time	720 carts /day (2 carts/min)
Allowable Weight	Slope Type	200kg
Safety	Automatic pushing forward wheels	After cleaning the wheel, Auto forward
Efficiency of Cleaning	Automatic Spray	Water and Detergent Auto Input and Spray
	Cleaning Power	Most Strong Cleaning Power as if it is wiping
	Cleaning Methods	Brush Roller and Sponge Roller
Convenience of Maintenance	Washing Roller Replacement	One- Touch Exchange
	Waste Water Recycled	Waste water pumped into filters and auto recycled
	Automatic Sludge move	Sludge is auto collected in Sludge Bag
	Time Setting	Various operation settings such as cleaning timer (control panel)
Wheel Turning Prevention		Patented

# 06 User Economics – Estimated Cost per Month

## Caster Cleaner – (20days/month, 6hrs/day) cost

Content	Usage	Cost(won)	Remarks
Waste Water	2,160L	200,000	1,000L=105,000won (If use Recycling System: 1/4 cost reduced)
Detergent	16,800ml	200,000	10L=100,000won
Electricity	120Kw	20,000	1Kw=150won
Washing Roller	4sets	200,000	1set=1week ( 500 carts/day cleaning standard)
Total		620,000 won	Estimated cost per month

## Cleaning Labor Cost without Caster Cleaner – Month(20days)

Content	People	Cost(won)	Remarks
Labor Cost	4	2,400,000 won	〈Reference : Auto Parts Company Monthly Cost before using Caster Cleaner〉
Total		9,600,000 won	Monthly Cost

VS



## < References > Estimated Cost per Month : Direct Drain Waste Water

Time	Cleaning Carts	Waste Water	Detergent	Electricity
30(sec)	1 cart	150ml	0.2ml	1Kw
1(min)	2 carts	300ml	0.4ml	
60(min)	120 carts	18,000ml	24ml	
360min (6hrs)	720 carts	108,000ml	840ml	6Kw
Month (20days)	14,400 carts	2,160L	16,800ml	120Kw



# 07 Installation

## In-Ground Type (Cart weight 200kg ~ 2,000kg)



Auto Parts Company



Semiconductor Company



Auto Parts Company

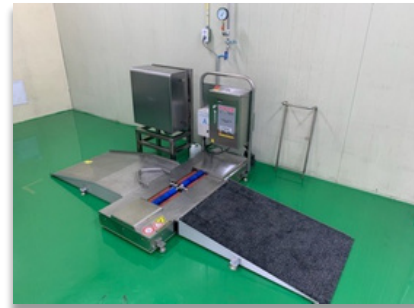


Semiconductor Company  
(Samsung SDI - Vietnam)

## Slope Type (Cart weight Below 200kg)



Chemical Company



Semiconductor Company  
(Haesung DS)

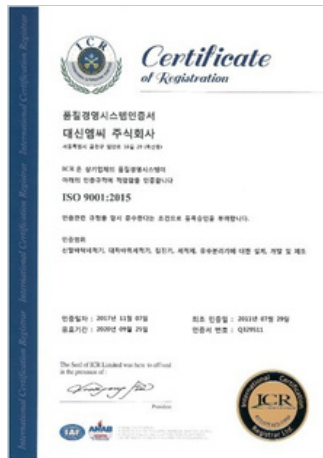


Cosmetic Company

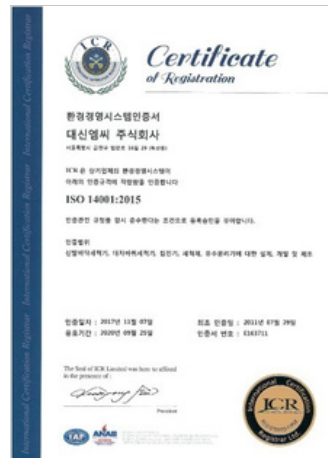


Plastic Company

# 07 Performance Reliability



Quality Management System



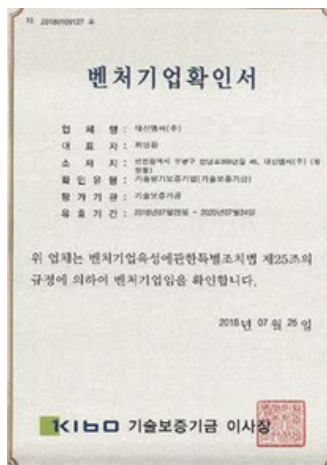
Environmental management system



Electromagnetic Compatibility  
NO : 18-019565-01-1



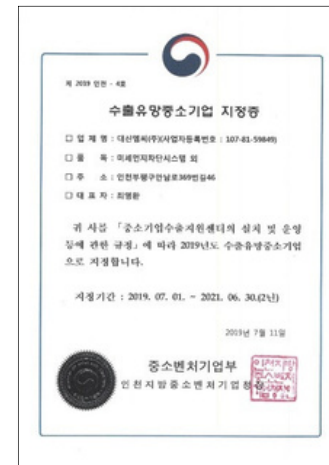
CE  
NO : K11559/M18



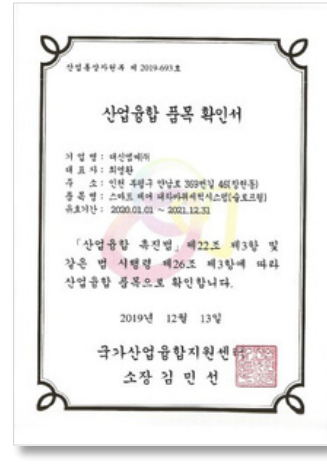
Venture company certificate



R & D  
Dedicated Department  
Certificate



Promising Export  
Certificate of Small and  
Medium Business



Industrial Convergence Item  
Confirmation  
NO: 2019-693

# 07 Performance Reliability – Patents



Domestic patent  
Washing Equipment-In  
Ground Type



Domestic patent  
Washer-Slope



Domestic patent  
Water Removal





Daeshin MC Co., Ltd.



# Thank You

As developed 1<sup>st</sup> Caster Wheel Cleaning System is an essential equipment for workplace environment.

