Wiper Roll Cleaner

Sawa Eco Roll：SC-ER360WF

Sawa Corporation

www.sawa-corp.co.jp

地球益につくす

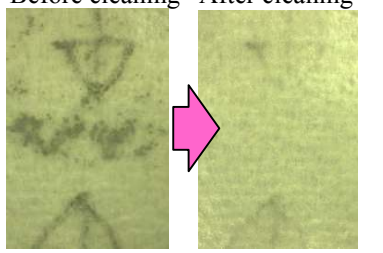
Save the earth resource

Development background

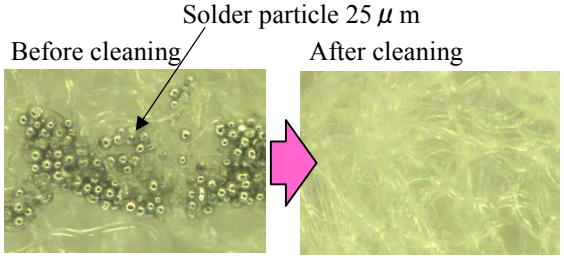
Wiper rolls are widely used for under stencil cleaning to wipe off solder paste in the SMT factories. Most of them are used only once, then either disposed or used for other cleaning purpose. The targets of development are environmental measure and cost reduction by recycling the wiper rolls.

SC-ER360WF Features

Environmental measure	Recycling wiper rolls 1. Reduce the usage of lumber 2. Reduce the CO2 emission generated during incineration
Easy to use	Easy to set the used wiper roll. Automatic cleaning
Cost reduction	Reduce the new purchase price and disposal cost in one sixth by Recycling 5 times (internal test).



Magnification x20（between arrows）



Magnification x200

Appeared In Nikkei

Nikkei, May 21, 2009, “Economy products”

Good cost performance

Cost reduction

**If the customer uses 3 wiper rolls every day,
And JPY 4000 per each roll**

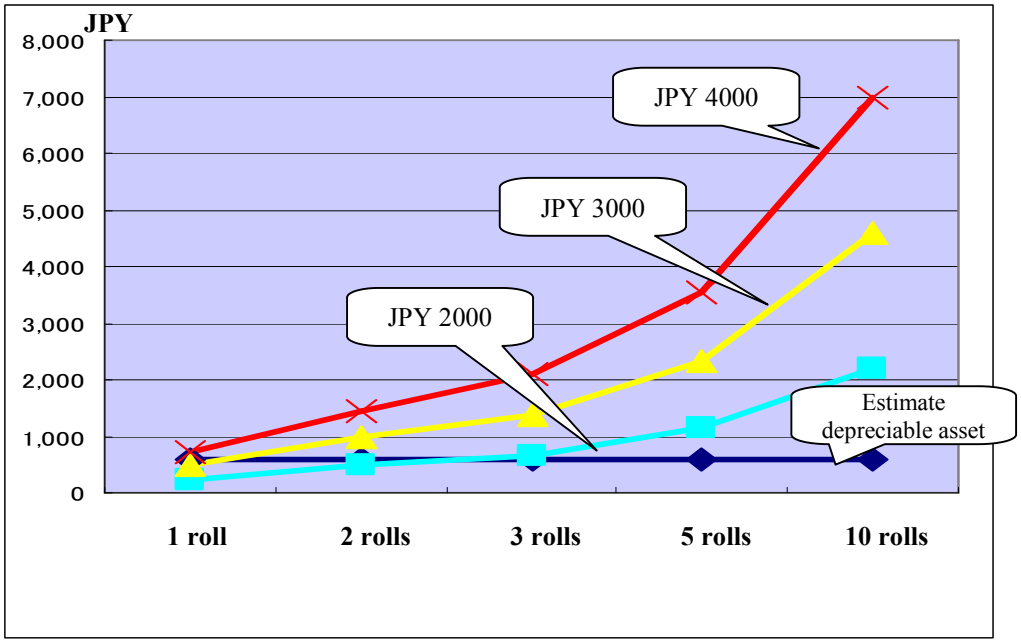
**Over 2 million JPY
Profit achieved**

Current wiper roll cost **JPY 2,894,000**

**72.3% down
JPY 2,092,000 down**

**5 times recycling
Total cost** **JPY 802,000**

Annual cost reduction comparison



Wiper roll usage condition

Factory opertaion days	20	days / month
Length of roll	18	m (1 roll 0.7kg)
Disposal cost（1 roll base）	20	JPY （1m3=JPY 10,000）

Annual cost reduction by used roll numbers in 1 day

	1 roll	2 rolls	3 rolls	5 rolls	10 rolls
Annual redemption cost	600				
JPY2000/roll	244	488	652	1,140	2,200
JPY3000/roll	484	968	1,372	2,340	4,600
JPY4000/roll	724	1,448	2,092	3,540	7,000

1 time cleaning cost **JPY 533**

Cleaning time	30	min
Electricity cost	9	JPY/roll (0.3JPY/kw/min) 1KWh=JPY18
Air cost（500NL/min）	66	JPY/roll (2.2JPY/500NL/min)
Solvent cost	304	JPY (NPA: JPY8500, 14kg; consumption 0.50kg(18m))
Filter cost	110	JPY (change filter every 100 times cleaning)
Maintenance cost	37.5	JPY (cleaning head cost JPY 1.25/min)
Solvent disposal cost	7	JPY/roll (dispose 3 liters for every 60 liters)

Calculate the depreciable asset as product cost JPY 3m and 5 years equally.
Blue area indicates purchasing price is higher than cost reduction.

Reduce CO_2 by one sixth generated in incineration

Current (5 rolls per day)

1,200 rolls disposal

Annual CO_2 emission

529.2kg

After installing Sawa Eco Roll

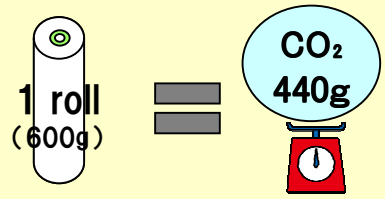
200 rolls disposal

Annual CO_2 emission

88.2kg

Reference: CO_2 exhaust amount 11kg that one beechen tree absorbs in one year (Forestry and Forest Products Research Institute calculation)

Waste redemption amount and CO_2 emission



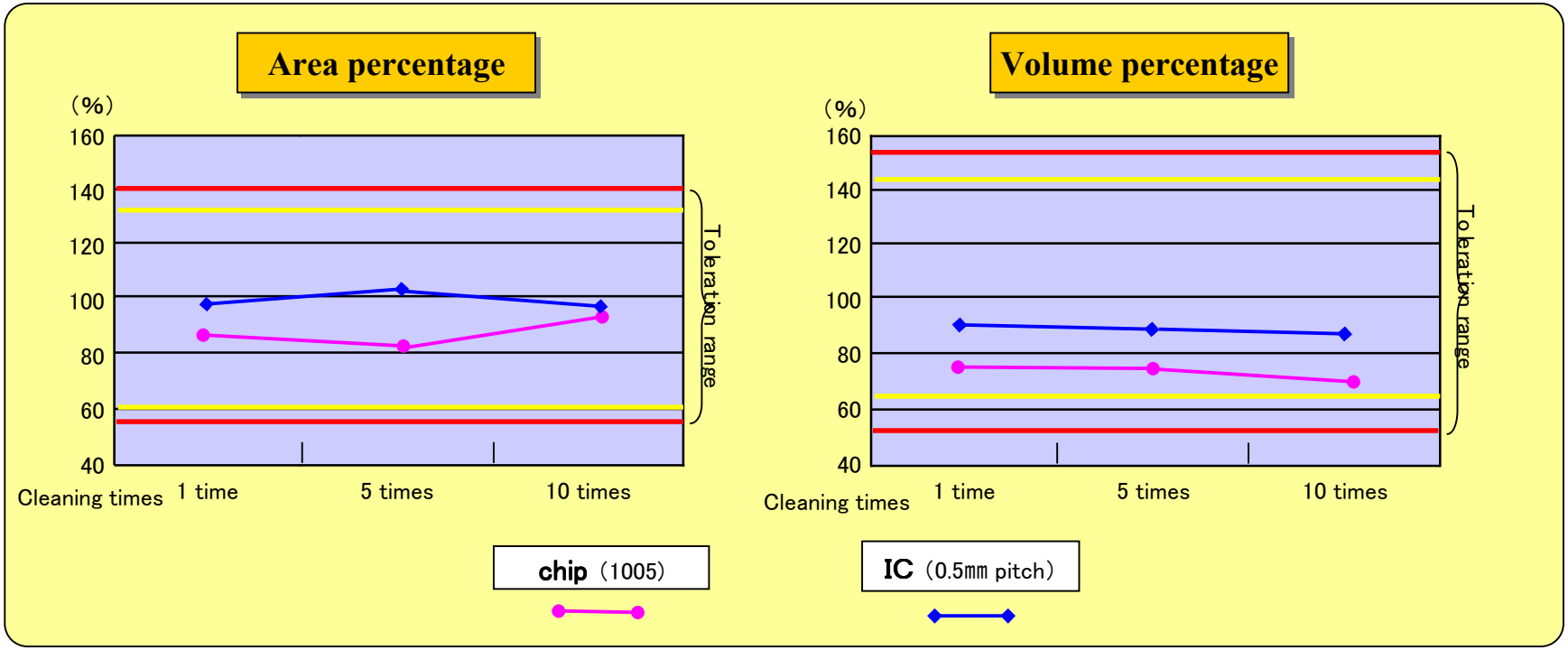
CO_2 emission coefficient according to incineration of waste: 735kg-CO_2/t
Emission factor according to use of electricity supplied: 0.555kg-CO_2/kWh

Note: The emission factor is assumed the calculation only of CO_2, and other greenhouse gas is not calculated. Only the amount of the CO_2 exhaust by the incineration of wiper roll is calculated.

No influences found on printing result

Investigate the changes caused by cleaning

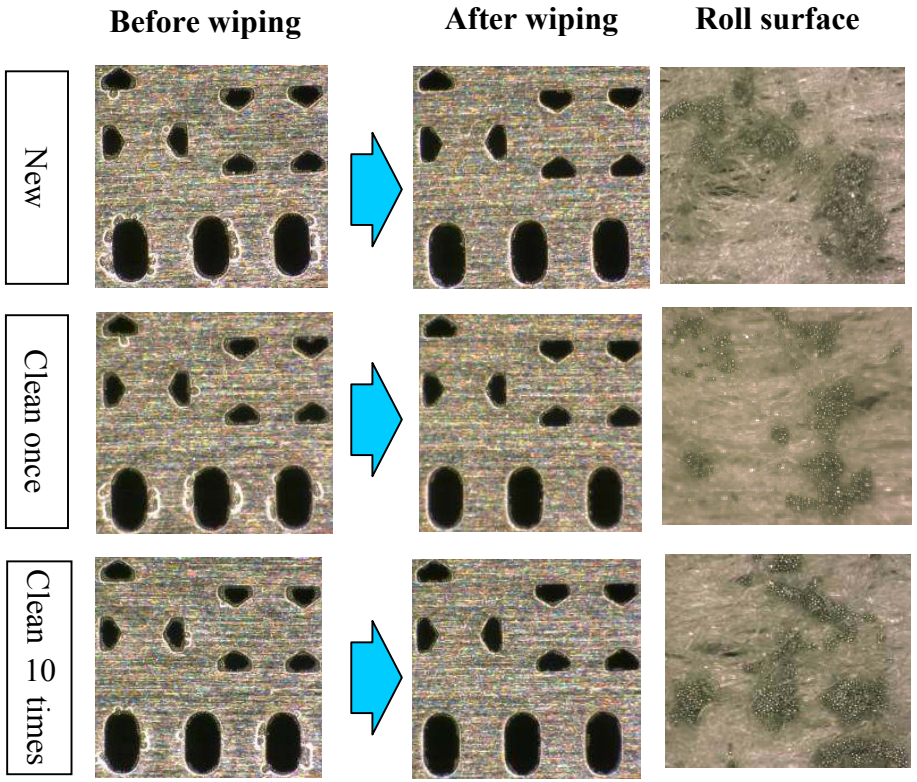
Solder paste appearance inspection shows no change was found on the measurement value (area percentage, volume percentage on land even after 10 times recycled wiper roll.



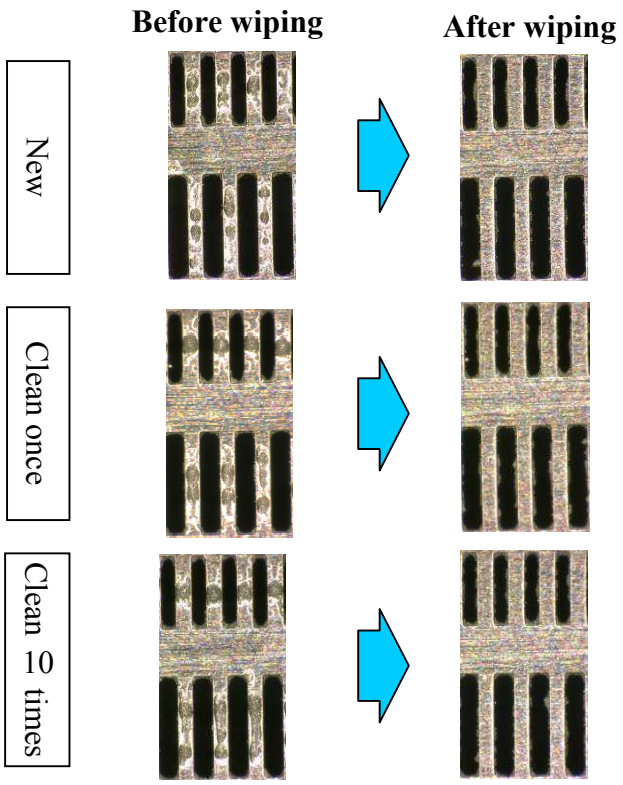
No problems found on wiping performance

Repeated wiper rolls cleaning gives no influences to the wiping performance on any components aperture.

Chip



IC connectors

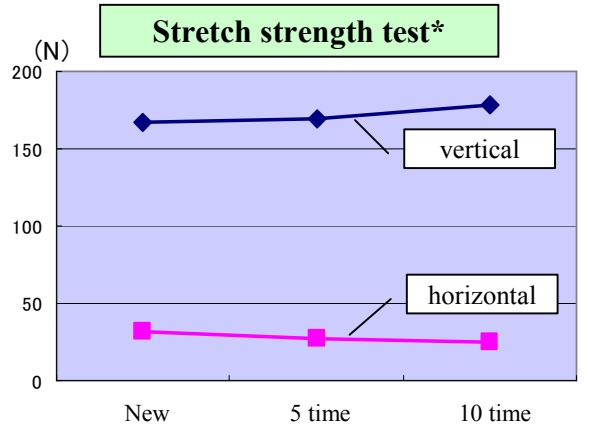


Wiper roll performance deterioration not seen after cleaning

Stretch strength （JIS B 7721）

No large change was found in horizontal and vertical direction of wiper rolls. The problems of roll shifting or tear do not occur in wiping .

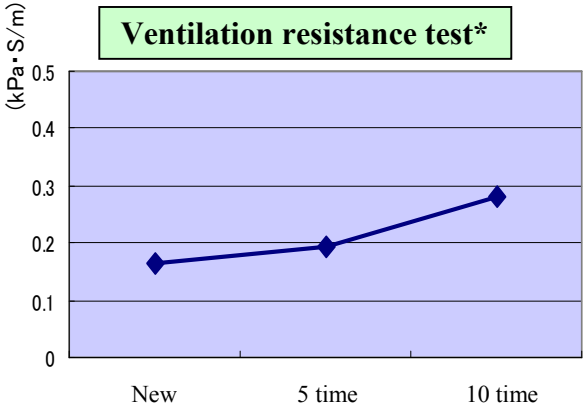
	New	5 time	10 time
vertical	166.6	168.8	178.8
horizontal	31.5	27.8	25.5



Ventilation resistance （JIS L1096）

The ventilation resistance influences the vacuum function of the printer. Maximum reuse frequency sets as 10 times since the ventilation resistance arise by repeat cleaning.

	New	5 times	10 times
0.4MPa	0.166	0.195	0.280



***Industrial technical center report**

Wiper roll performance deterioration not seen after cleaning

Non electrification （JIS L1094）

Considering the absorption of dust, lower value is better in electrification. The difference on use of the new roll and ten time cleaned rolls is not seen.

Rotating the test piece 5×5mm, the electrification pressure 10kV is electrified by corona discharge for 30 seconds. Time that the electrification pressure attenuates to 1/2 is measured. (check with the oscilloscope, and measure it with the stop watch.) ※

Result

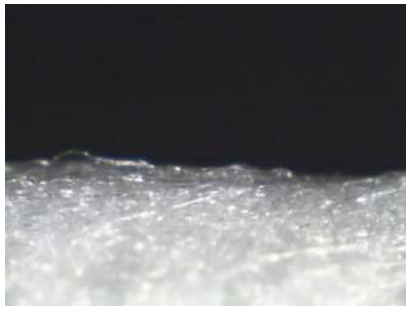
New roll	10 time cleaning roll	Polyethylene(ref.)
1st 1.02 sec	1st less than 1 sec	30 sec
2nd 1.03 sec	1st less than 1 sec	

***Industrial technical center report**

Fiber shagginess Inspected with microscope

Check the change in the fiber shagginess by cleaning. In the visual inspection with the 140 times microscope, the difference in the new roll and five time cleaning roll is not seen.

New roll



5 time cleaning