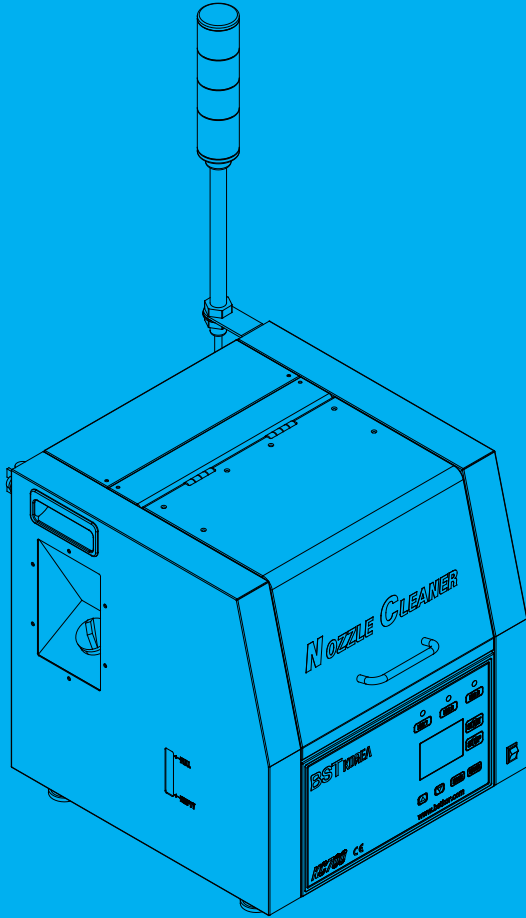


Distributed by: Manix Manufacturing, Inc.
1650 Loretta Avenue
Feasterville, PA 19053 USA
215-953-9797 / sales@manixmfg.com / www.manixmfg.com



Introduction

Nozzle Cleaner KC700

BST Korea Co., Ltd

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1. BST KOREA - Introduction

Technologies enhancing the value of life

Company: BST Korea Co., Ltd.

President: Jung, In-hwan

Tel : +82-55-262-0536

Fax : +82-55-262-0537

E-mail : bst@bstkor.com

Website: <http://www.bstkor.com>



Address: 74-28 #62-gil, Jeongdong-ro (Seongju-dong), Seongsan-gu, Changwon City, Gyeongnam Province, Korea

1. BST KOREA - History

2009's

- 11 Clean Wave is established
-

2010's

- 01 The company acquires ISO 9001: 2008 Quality Management Systems Certification
 - 08 The company acquires Patent No. 10-0975216 "Absorption nozzle cleaning device for installing electronic parts"
 - 12 The company makes a cooperation agreement with Kyungnam University
-

2011's

- 01 The research center is approved.
 - 09 The company completes the development of SMT nozzle cleaner KC 700 and produces.
 - 10 The company applies patents for SMT nozzle cleaner.
The company acquires Patent No. 10-1078534 "Device for recycling marine waste and how to recycle the marine waste"
-

2012's

- 04 The company acquires Patent No. 10-1135229 "Absorption nozzle cleaning device for installing elements."
The company acquires Patent No. 10-1135272 "Device for drying the organic waste".
The company acquires SMT nozzle cleaner KC700 CE certification.
 - 06 The company acquires Patent No. 10-1159497 "Absorption nozzle cleaning device for installing elements"
The company acquires Patent No. 10-1160205 "Waste treatment device and waste handling method"
The company acquires Patent No. 10-1161985 "Sludge drying device".
 - 10 The company is incorporated to BST Korea Co., Ltd.
The company acquires K Mark.
 - 11 The company moves to new building.
-

2013's

- 01 The company is certified as a venture company
- 05 The company acquires Q mark quality certification.



2. Introduction to product KC 700



Nozzle cleaner KC700






Specification of product

Item		Value
Dimension	Width	400mm
	Height	420mm
	Depth	400mm
Weight		31Kg
Allowable air pressure		7Kgf/cm ²
Rated voltage		AC 100-240V 50/60Hz,
Rated current		3A

2. Introductions of products – components

Introductions to products – components	
KC700	
Nozzle holder Class 1.	

Option	
Tower lamp	
Additional holder	
Detergent	

3. Certifications

Type	ID No.	Description	Date of registration	Related institute
Patent	10-0975216	Absorption nozzle cleaning device for mounting electronic parts	Apr. 3, 2012	Korea Intellectual Property Office
Patent	10-1159497	Absorption nozzle cleaning device for mounting element	Jun. 18, 2012	Korea Intellectual Property Office
CE	E122R-026 EN33226 M0A0	EMC DIRECTIVE (EMC) 2004/108/EC Low Voltage Directive (LVD) 2006/95/EC	Apr. 6, 2012	MET

4. Motives of development

- ◆ Line stoppage loss by nozzle clogging due to aged nozzle.
- ◆ Limitation of conventional cleaning method
 - Manual cleaning: It is difficult to clean the precision holes with the imported brush.
 - Ultrasonic cleaning: It is difficult to remove the coagulated contaminants and solder cream.
- ◆ Production cost is increased due to the incomplete cleaning maintenance of the nozzle and consequent short replacement cycle.
- ◆ Much line loss occurs as the operator spends much time for cleaning nozzle.
- ◆ The old and whitened nozzle causes a vision error

5. Technologies



◆ Patent No. 10-0975216: Absorption nozzle cleaning device for mounting electronic parts

It doubles the cleaning power by mixing high pressurized air and detergent and then spraying them in foamy condition.



◆ Patent 10-1159497: Absorption nozzle cleaning device for mounting elements.

- It is composed of detachable holder block to mount nozzle on the cleaning part..
- It is possible to mount different types of nozzle on the holder block to clean at the same time.



◆ Other technologies for enhancing the cleaning power

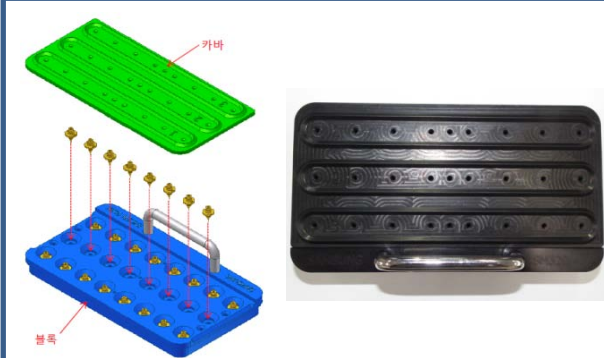
-Special spraying nozzle is mounted on the bottom of the cleaning bath to improve the efficiency of cleaning when cleaning nozzle and outside.

6. Features

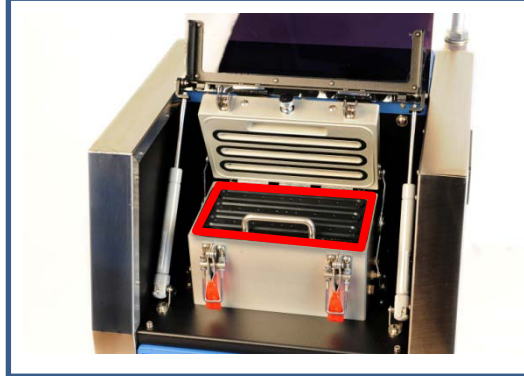
- **Twenty four nozzles** are mounted to the nozzle holder block for simultaneous cleaning.
- Fast cleaning: It takes only **4 minutes and 40 seconds** to clean twenty four nozzles. (11.7 seconds/nozzle)
- Simultaneous cleaning both internal **hole of nozzle and external nozzle tip**.
- It is possible to control cleaning time and drying time depending on the work condition.
- **Both distilled water and detergent** can be used.
- Various kinds of nozzles can be cleaned.
- Convenient control through LCD window

7. Cleaning Process

No. 1. Nozzle mounting



No. 2. Insertion of nozzle holder



No. 3. Setting up cleaning



No. 4. Start cleaning

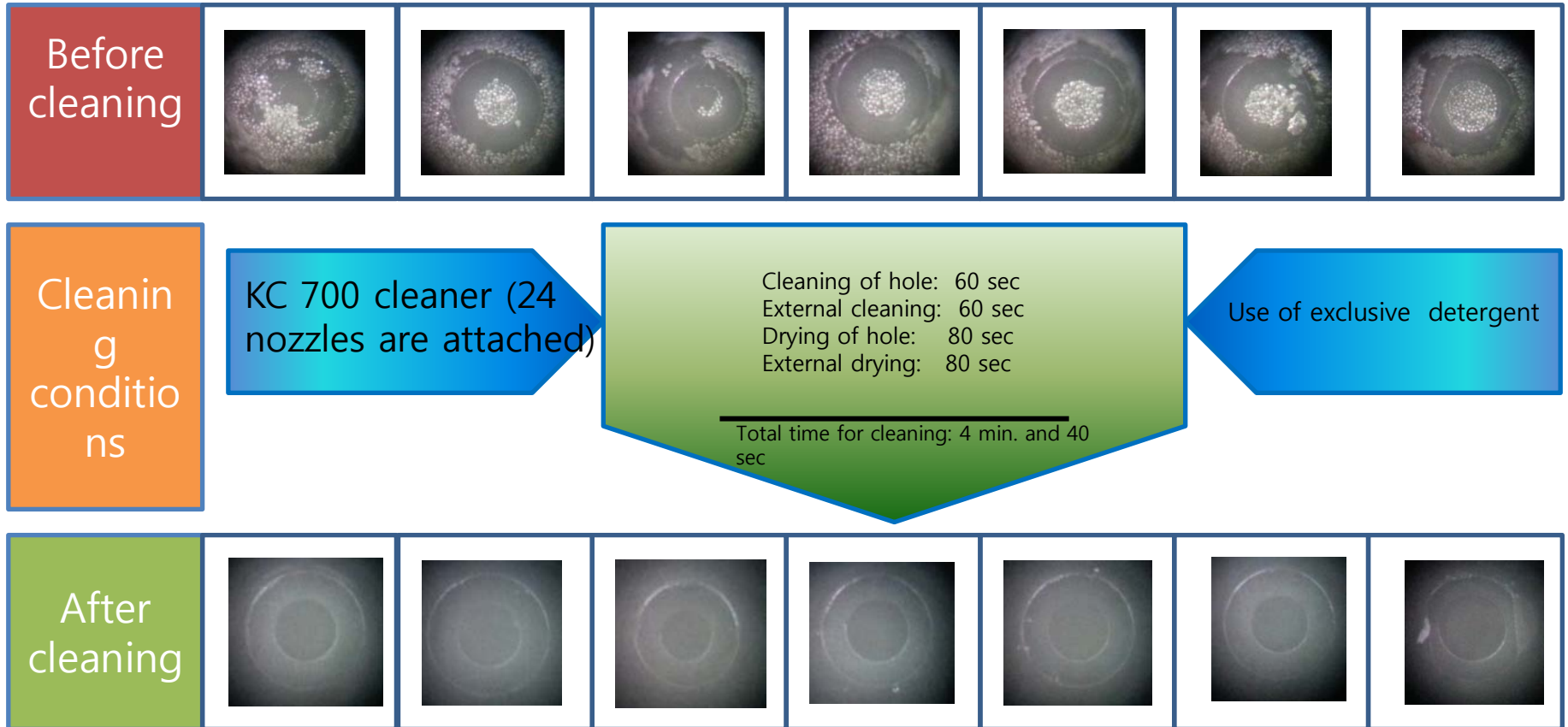


Process	Setting time (sec)	Time consumption (sec)
Cleaning (hole and outside)	20 seconds (top) 20 seconds (bottom)	120 seconds (= 40 seconds x 3)
Preliminary drying	120 seconds (fixed)	120 seconds
Drying (hole and outside)	20 seconds (top) 20 seconds (bottom)	40 seconds
Total		280 seconds (4 min. and 40 sec.)

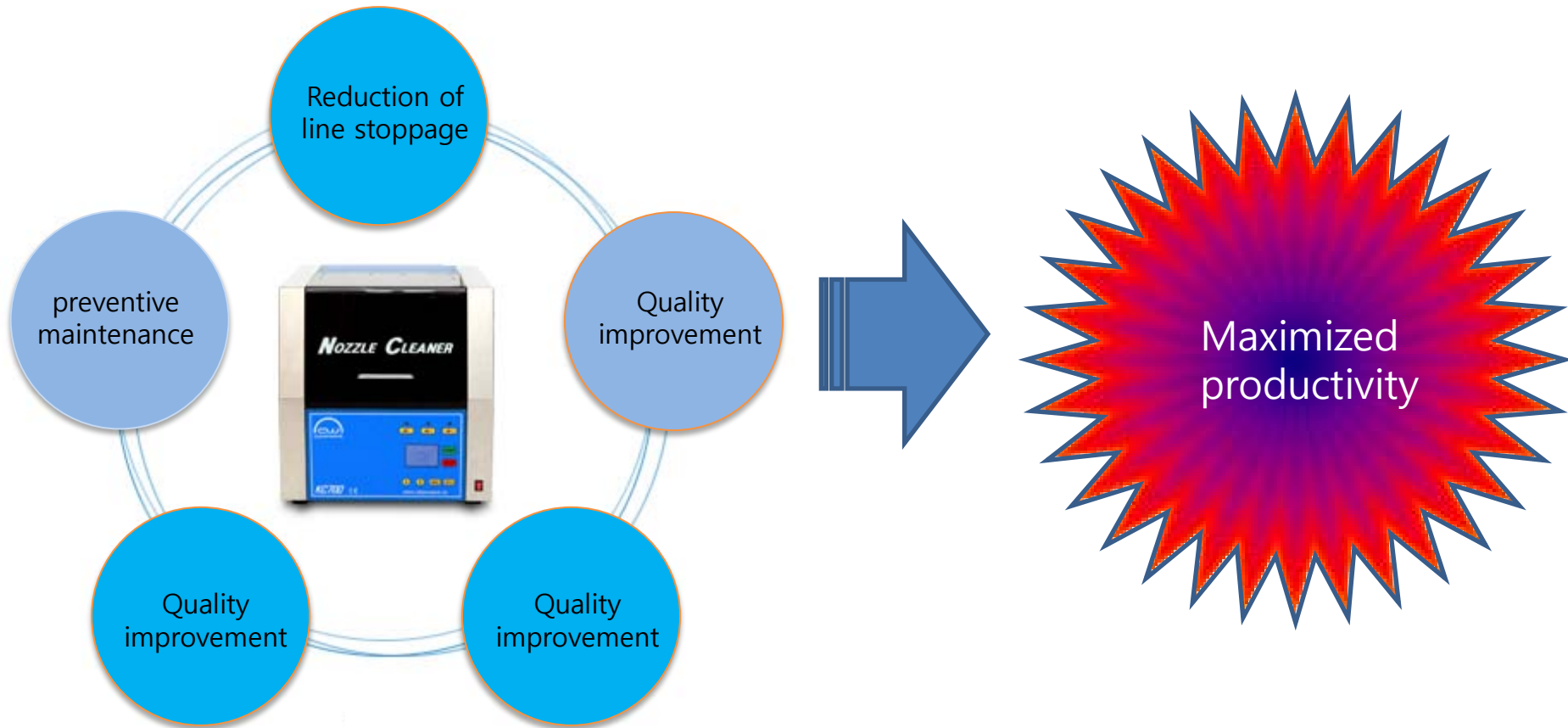
8. Comparison between before and after cleaning

※ Test conditions

- Nozzle for cleaning test: Samsung SM (0603)
- Nozzle condition: Ten months old after applying solder cream to the nozzle hole and tip.



9. Effects

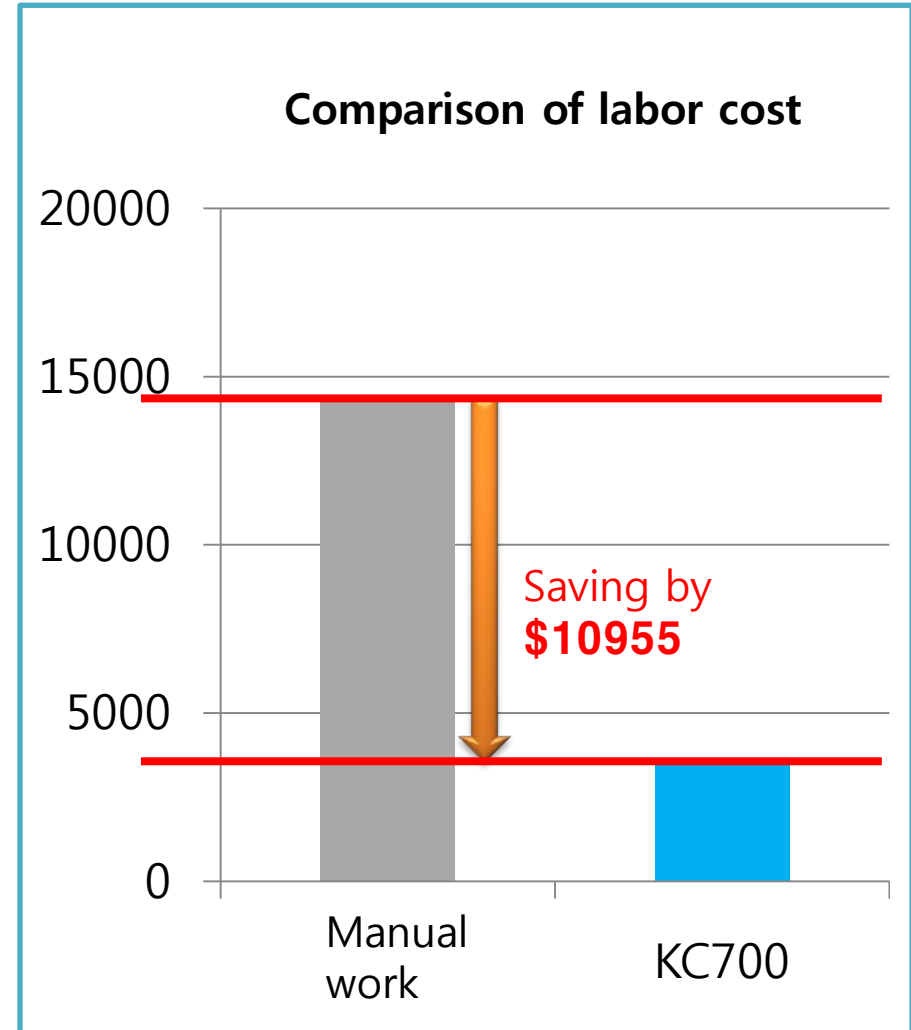


9. Effects

1. Cleaning cost: saved by 75%
2. Cleaning man-hour: saved by 80%

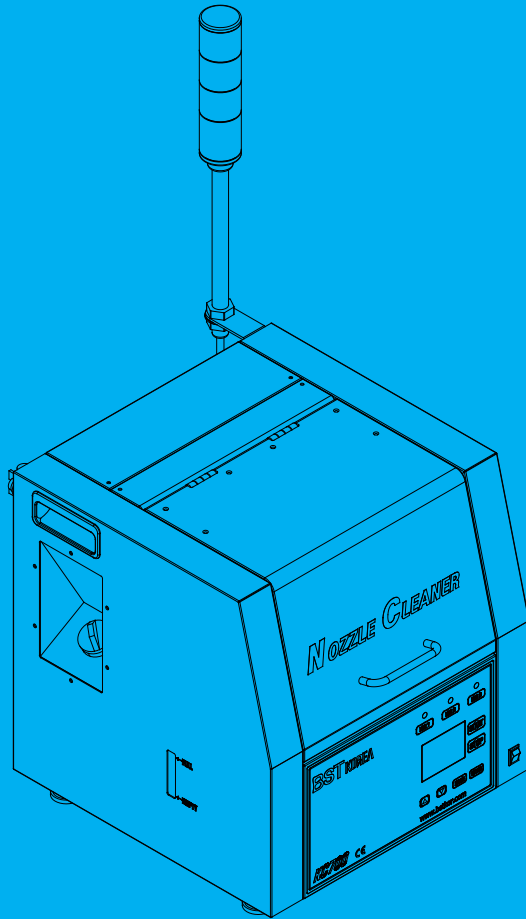
◆ Manual cleaning (10 lines)
- Labor: 5 workers (overtime work)
- Cleaning time: 4 hours/1 line
- Labor cost: \$60 x 5
- Cleaning frequency: 4 times a month
- **Annual cost: \$14400**
It is hard to clean the hole of 1 mm or less in diameter.

◆ Cleaning of nozzle cleaner KC 700 (10 lines)
- Labor: 1 worker (overtime work)
- Cleaning time: 6 min./1 line
- Labor cost: 60\$ x 1
- Cost of detergent: \$565/year
- Cleaning frequency: 4 times a month
- **Annual cost: \$3445**



Manix Manufacturing, Inc.
Tel: 215-953-9797 / Fax: 215-953-9399
email: sales@manixmfg.com
web: www.manixmfg.com

Thank you.



BST Korea Co., Ltd.

Tel. : 055-262-0536
FAX : 055-262-0537
Home Page : www.bstkor.com

Sales : 070-4373-0748
E-mail : sales@bstkor.com