TEST REPORT

(Pathogenic Bacteria)

KSD
ENVIRONMENT CONSULTANT

KSD Co., Ltd.
SUNG DAE Env'l Science R&D

Certificate Authority

KSD
ENVIRONMENT CONSULTANT

FINAL REPORT
KSD0223

PERFORMANCE TESTING FOR 'Wellis'

KSD Co., Ltd.
SUNG DAE Env'l Science R&D

KSD
ENVIRONMENT CONSULTANT

TSET OUTLINE

TEST TITLE : 'Wellis' air germ purifier Pathogen-reducing efficacy test

TEST NO. : ksd0223190717

TEST ITEM: Performance test for pathogenic bacteria reduction test

TEST PURPOSE : This experiment was conducted to evaluate the efficacy of bactericidal OH function and to compare the pre- and post-sterilization status with respect to the ability to purify pathogenic bacteria.

TSET METHODS : This test was conducted according to the test standard of indoor air quality process on Dec. 21, 2018 of the Ministry of Environment according to Article 6, Paragraph 1, Article 3 of the 「Act on Environmental Testing and Inspection」.

Test Requester :

NAME: RE-CO PLANT Co., Ltd.
Location: 174-10, Chilgari-ro, Eumam-myeon, Seosan-si, Chungnam, Korea
CEO: Hyun Ho, JI
CONTACT: 041-665-9153
www.rcp.co.kr

Testing Institution:

NAME : KSD Co., Ltd. SUNG DAE Env'l Science R&D (Certificate Authority)
Location : 86 Hakhyeon-ro, Uiwang-si, Gyeonggi-do
CEO : Hyun Jo, LEE
CONTACT: Tel)1577-4446 Fax)031-624-4968
www.ksdpf.com

TEST SCHEDULE:

Primary measure, Before installation : 2019.07.17-10:00 ~16:00
Secondary measure, After installation : 2019.07.18-10:00 ~16:00
TEST DATE : 2019.07.19-07.20
TEST END DATE : 2019.07.20

KSD
ENVIRONMENT CONSULTANT

Test Method

1) measurement location : SAHMYOOK MEDICAL CENTER (intensive care unit)

2) Inspection Date : Jul. 17. 2019 /10:00 – Before construction 2 hours interval 3 measurements (Pathogenic Bacteria)
Jul. 18. 2019 /10:00 – After construction 2 hours interval 3 measurements (Pathogenic Bacteria)

3) Inspection Item Pathogenic Bacteria

4) Inspection & Analysis Method :	Pathogenic bacteria were measured according to the "Indoor Air Quality Process Test Method". WeLLis bactericidal performance test was followed by the average of 2 hours interval 3 measurements.
(1) Pathogenic Bacteria:	Take 1 mL of each test solution and 1 mL of 10–fold dilution solution in aseptical petridish and dispense 15 mL of standard agar medium maintained about 35 ℃ to 45 ℃. Be careful not to turn the petridish quietly. And carefully inclining right and left to mix and solidify the specimen and agar medium. In order to suppress the occurrence of diffusion bacterial colony, 3–5 mL of standard agar medium is re–added and overlapped. In this case, the time from taking a specimen to adding the medium should not exceed 20 minutes. The coagulated petridish is inverted and incubated at 35 ~ 37 ℃ for 24 ~ 48 hours (72 ± 3 hours depending on the sample). 1mL of the same dilution that is not adding test liquid is used as a control test solution to check whether asepsis or not.
(2) Pathogenic Bacteria:	It is a method of collecting pathogenic bacteria in indoor air and measuring the concentration by using the principle that microorganisms in the air collide with the medium that Use a harvesting machine equipped with a bacterial medium.
(3) Cultured Pathogenic Bacteria	staphylococcus aureus Streptococcus pneumoniae Escherichia Coli

KSD
ENVIRONMENT CONSULTANT

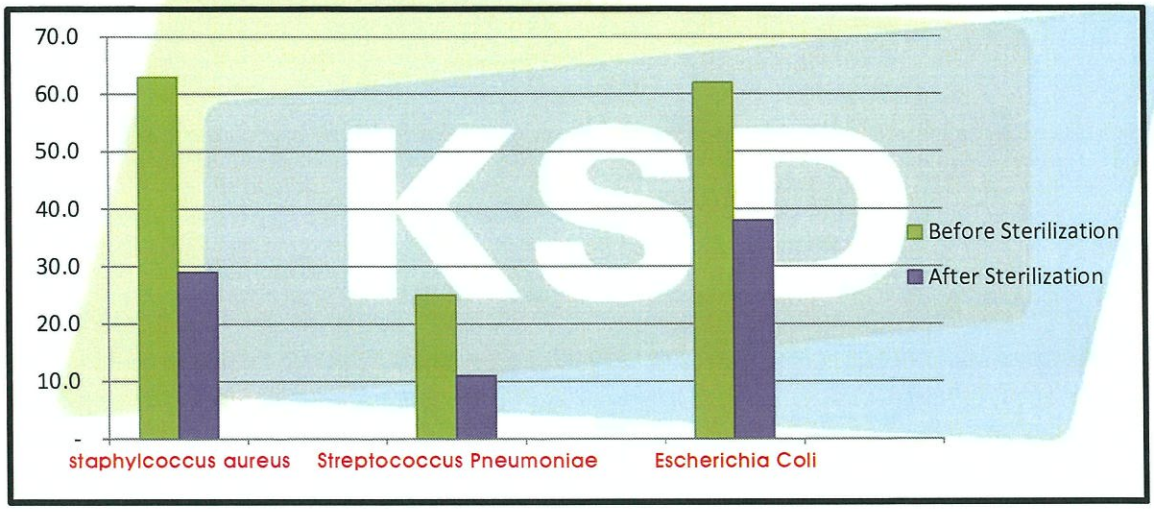
Result

1) Pathogenic bacteria: TAB Legal Baseline 800(CFU/㎥), Bacterium has none.

※ The mean value is for three tests. Pathogenic Bacteria(CFU/㎥)

classification	staphylcoccus aureus	Streptococcus Pneumoniae	Escherichia Coli
Legal Baseline			
Before Sterilization	63.0	25.0	62.0
After Sterilization	29.0	11.0	38.0
Removal Efficiency	53.96%	56.00%	38.70%

Table1.



※This test is the result before and after weLLis is monitored for airborne sterilization.

KSD
ENVIRONMENT CONSULTANT

Discussion & Conclusion

The indoor environment problem is a phenomenon caused by indoor pollution, that is, various pollutants generated by human activities are released into the room and pollute the indoor environment.
There is the potential for physical, chemical and biological contaminants among indoor air, which are caused by complex sources such as inflow of outside air, tobacco smoke, heaters, oven cookware, cement, cleaners, building materials and paints.
Therefore, the emission is also known to show a significant deviation depending on the pollutant. Indoor air pollution refers to the polluted air of various indoor spaces such as houses, schools, offices, public buildings, hospitals, underground facilities, and transportation. It's not life threatening, but it must be bad for your health in the long term.
Recently, in order to analyze the health effects of indoor air pollution more accurately, the amount of exposure to pollutants according to personal activities is measured during 24 hours a day.
Research is also expanding and is a health threat due to bacteria, fungi and fine dust from high temperature and humidity.
In modern society, where the importance of the environment is increasing, the research on indoor air quality is expanding, and in accordance with attention is being paid to the processing method.
As a result, it is up to the wise consumer to decide which method they choose.

Wellis air purification has demonstrated the degradation of pollutants due to odor neutralization and strong chemical reactions. In addition, it has a strong bactericidal antimicrobial effect of pathogenic bacteria remaining in air conditioners and indoors.

KSD
ENVIRONMENT CONSULTANT

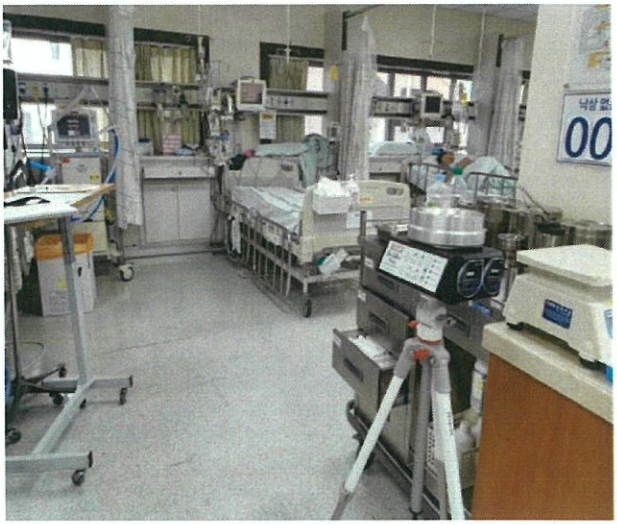


Photo for before and after sterilization treatment

Photo for before and after sterilization treatment

Photo for before and after sterilization treatment

KSD
ENVIRONMENT CONSULTANT

Ministry of Environment Gyeonggi-do Office Registration No. 24

Certificate NO. : ksd0223190717

Indoor Air Quality Process Test Report

Testing Institution Info.	TEST ITEM	Pathogenic Bacteria	TEST PURPOSE	wellis air germ purifier pathogen-reducing efficacy test
	TEST DATE	Jul. 17-18. 2019	RESEARCHER	SUND DAE KIM
	TEST LOCATION	ICU, Sahmyook Medical Center Seoul Hospital	Reception Date	Jul. 14. 2019
Testing Requester Info.	N A M E	RE-CO PLANT Co., Ltd.	Representative	General Manager JUNG IN HAM
	PRODUCT NAME	Wellis Air Disinfection Unit (WADU-02)		
	LOCATION	174-10, Chilgari-ro, Eumam-myeon, Seosan-si, Chungnam, Korea		

According to Article 6, Paragraph 1, Article 3 of the 「Act on Testing, Inspection, etc. of Environmental Sector」.
Certificate of inspection is issued in accordance with environmental pollution process test standards.

TEST ITEM	Inspection Point	Before Sterilization	After Sterilization	Removal Efficiency%
staphylcoccus aureus	3	63	29.0	54.0
Streptococcus Pneumoniae	3	25	11.0	56.0
Escherichia Coli	3	62	38.0	38.7

Judgment: The effect of disinfecting sterile volatilized contaminants demonstrates excellent functionality.

July. 28. 2019

KSD Co., Ltd.
SUNG DAE Env'l Science R&D

Quality Director : In Hak, YEO

Technology Director : Sung Dea, KIM

Note: This test report is the result of the sample and sample name suggested by the sponsor, so it cannot be used for any other purpose.
This test report shall not be used as a commercial advertising or legal solution.