

ISTANBUL MEDENIYET UNIVERSITY
FACULTY OF ENGINEERING AND NATURAL SCIENCES
MECHANICAL ENGINEERING DEPARTMENT



ISTANBUL MEDENIYET
UNIVERSITY

ANALYSIS REPORT

Project: AIRCLEANER DEVICE TEST

Objective: Aircleaner Devices Indoor Air Quality Particle Measurement

Assoc. Prof. Dr. Hasan KÖTEN



ISTANBUL MEDENIYET UNIVERSITY
MECHANICAL ENGINEERING DEPARTMENT
2010

Assoc. Prof. Dr. Hasan KÖTEN
Istanbul Medeniyet University
Head of Mechanical Engineering Department
F Building - 34700 Uskudar / Istanbul
GSM: 0505 5230146

28.05.2020

Contents

1	General	3
2	Introduction	3
3	Objective	3
4	Location.....	3
5	Person.....	3
6	Device Specifications	3
7	Test Method	4
7.1	Test Measuring Instrument.....	4
8	Test Results	5
8.1	Test Graphics.....	5
9	Result.....	6
10	Annex	7
10.1	Annex-1 Test Pictures	7



1 General

This document contains the particle test details that Aircleaner products produced by Cvsair improve the indoor air quality.

2 Introduction

The procedures described in this document have been implemented in the laboratory of Medeniyet University to demonstrate the required specifications, including tests.

3 Objective

The ambient quality test was performed for the product / products listed below.

- Aircleaner-L
- Aircleaner-M

4 Location

The tests were carried out in the laboratory of Medeniyet University.

5 Person

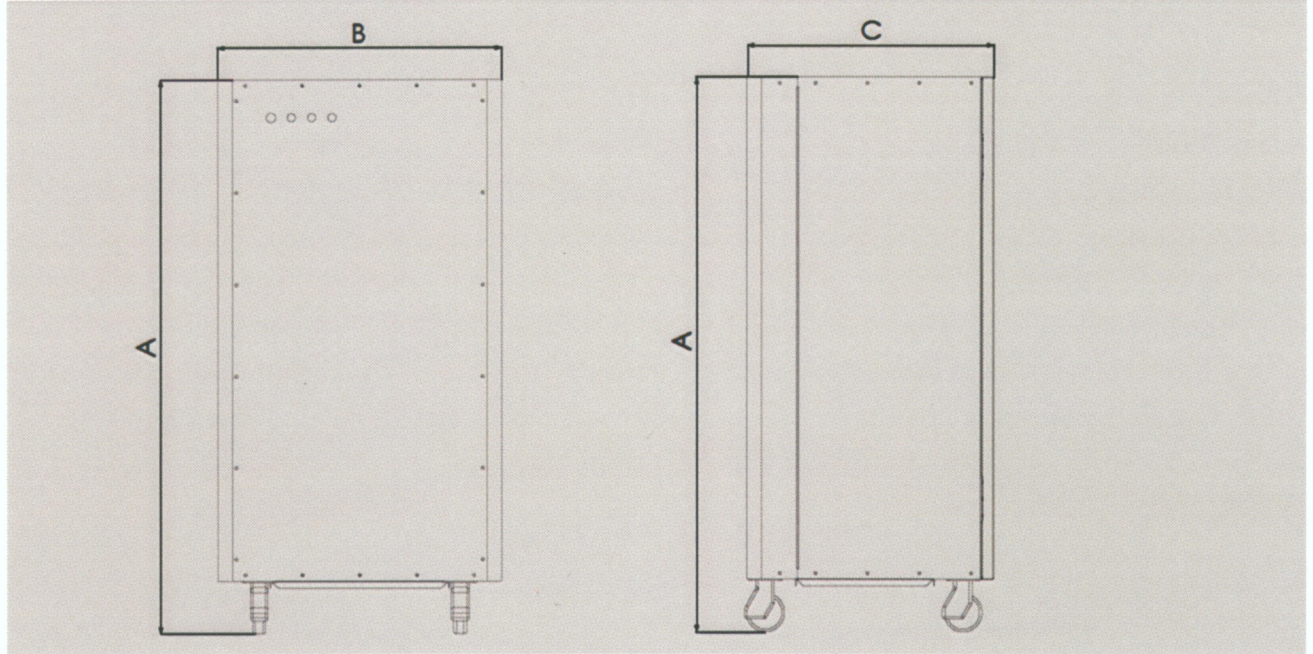
The tests were carried out by Assoc. Prof. Dr. Hasan KÖTEN at Medeniyet University.

6 Device Specifications

Parameters	Aircleaner-L	Aircleaner-M
Voltage	230 V	230 V
Frequency	50 Hz	50 Hz
Electrical Power	360 W	400 W
Wavelength	254 nm	254 nm
Air Flow	900 m ³ /h	1000 m ³ /h
Lamp Life	9000 hours	9000 hours
Effect Area	300 m ²	350 m ²
Weight	120 kg	110 kg

Table 1: Mechanical Properties of Aircleaner Devices





A	B	C
1300mm	575mm	485mm

Figure 1: Aircleaner Device Dimensions

7 Test Method

Aircleaner devices were operated continuously in the test laboratory and ambient particle measurements were performed in 3 different time intervals, starting, 1st hour and 3rd hour.

7.1 Test Measuring Instrument

Trotec-BQ20 Particle Measuring Device

The BQ20 simultaneously detects the numerical concentrations of E dust (PM10) and A powder (PM2.5) flying in the air, where the mass of particles of particles, in micrograms per cubic meter, is displayed as mass fraction of air. In addition, a bar graph indicator gives information about the status of the instantaneous particle load with the colored bar. In order to protect human health, many countries have set legal limit values for particle content concentrations. The fine powder consists of a complex mixture of different particles and is divided into different fractions depending on its size. The powder that reaches the nasal cavity by inhalation is called E powder and all dust particles with an aerodynamic diameter of less than 10 microns are defined as the PM10 powder size fraction.

The PM2.5 powder size fraction also includes all alveolar fine powder particles known as A powder. These can reach the bronchial ducts and air vesicles. These dust fractions can be determined as PM10 and PM2.5 according to the international PM standard (Particulate Matter) with BQ20, and fraction rates per cubic meter of room air can be displayed directly on the color display of the BQ20. In addition, the air load factor is displayed graphically with the help of a graphic bar.



8 Test Results

Time	Ambient Particle Measurements(ppm) (2,5 μ m)		Ambient Particle Measurements (ppm) (10 μ m)	
	Aircleaner-M	Aircleaner-L	Aircleaner-M	Aircleaner-L
Start	170	156	7	7
First Hour	28	0	1	0
Third Hour	0	0	0	0

Table 2: Test Results

8.1 Test Graphics

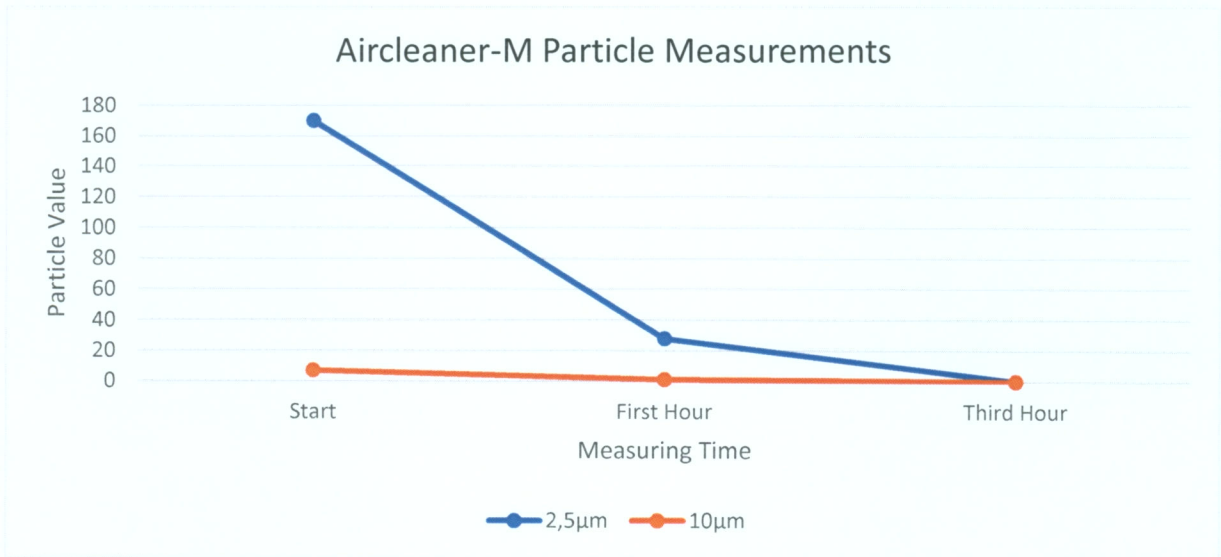


Figure 3: Aircleaner-M Particle Measurements

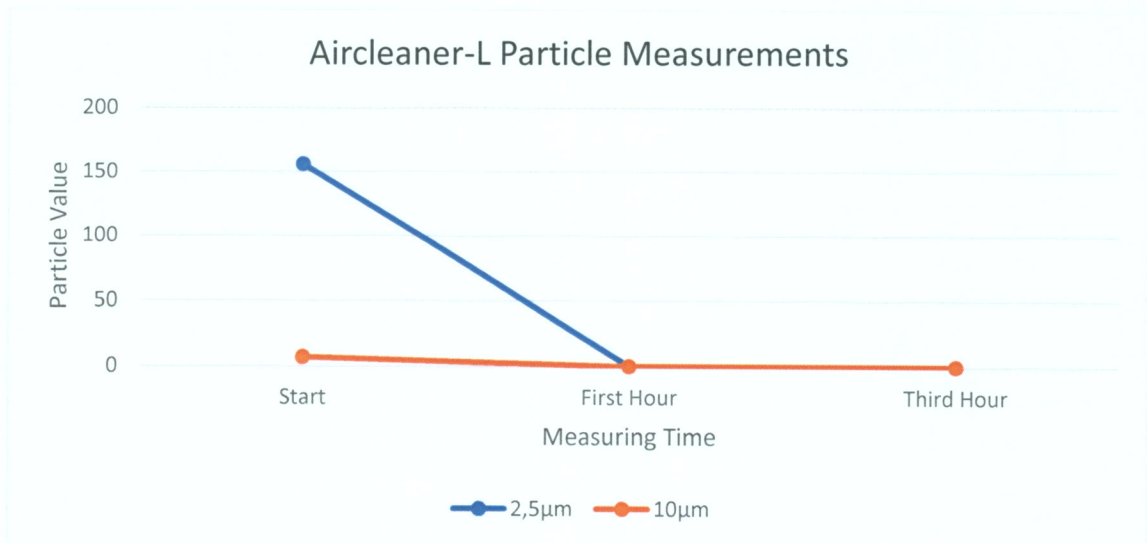


Figure 4: Aircleaner-L Particle Measurements

9 Result

As a result of the test measurements, Aircleaner-L and Aircleaner-M devices were found to be successful in increasing the air quality by reducing the amount of particles in the environment.

10 Annex

10.1 Annex-1 Test Pictures

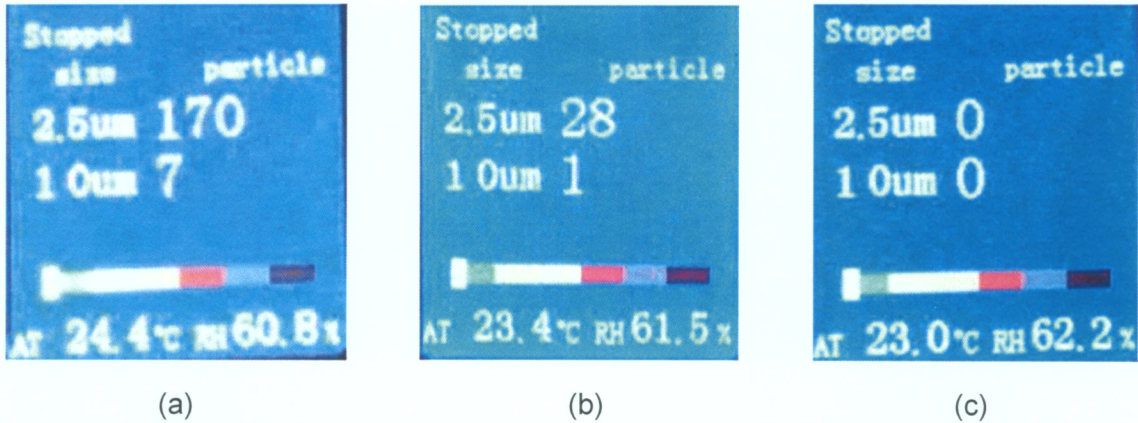


Figure 1: Aircleaner-M Particle Measurements (a) Starting Measurement, (b) First Hour (c) Third Hour

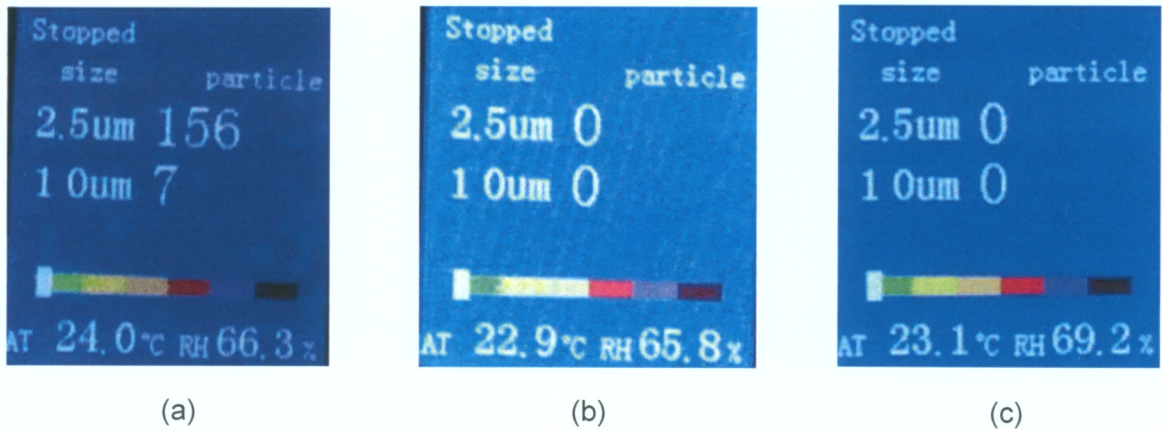


Figure 2: Aircleaner-L Particle Measurements (a) Starting Measurement, (b) First Hour (c) Third Hour

Assoc.Prof.Dr. Hasan KÖTEN
Istanbul Medeniyet University
Engineering and Physical Science Faculty
Head of Mechanical Engineering Department
Göztepe Campus, E-5 Yan Yol Sokak,
Kuzey Yerişke, Üsküdar, İstanbul, 34700
Phone: +902128032012 Fax: +90212803232