

99.99% inactivation of airborne SARS-CoV-2 in indoor environments

A patent-pending indoor electric heater that has been experimentally shown to deactivate airborne SARS-CoV-2

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Spread of COVID-19

COVID-19 spreads faster during
winter months
as people are mostly indoors

The Problem

How to stop the spread of airborne SARS-CoV-2 indoors in the winter?

The Approach

Inactivation of airborne SARS-CoV-2
with the energy used to heat
interior spaces in winter

The Solution

Heating the air to very high temperatures in seconds flowing through an electric heater

The Solution



An electric heater that inactivates airborne SARS-CoV-2

The membrane of airborne SARS-CoV-2 is damaged and becomes ineffective as the air passing through the electric heater is exposed to high temperatures within seconds.

The electric heater consumes the same amount of energy as a standard electric heater and inactivates SARS-CoV-2 in the air, as well as heating the interior.

Your Project Title Here

The Competitors

Air Purifier Devices for SARS-CoV-2

- **UV-C filters**
- **HEPA filters**

The primary limitations of UV-C and HEPA filters are:

UV-C is not safe for human exposure

HEPA filter needs to be replaced within a certain time of period

The Competitors

Conventional electric heaters cannot inactivate airborne SARS-CoV-2, due to low heating temperature (40-45 °C) and short residence time in the heater.

Therefore, standard electric heaters with fans are not competitors for the proposed system.

Competitive Advantage

- First to market
- Does not use any additional energy to inactivate SARS-CoV-2
- Entering the existing electric heater market
- Use as an electric heater with the ability to inactivate airborne SARS-CoV-2
- Inactivation of airborne SARS-CoV-2 as well as other viruses and bacteria
- Does not emit harmful electromagnetic radiation
- Does not release toxic substance into the air
- Easy to use

Market Opportunities

Places to use:

- Home use
- Hospitals, shopping malls, etc.
- Commercial building such as restaurants, cafes, and offices.
- Public vehicles such as subways, trains and buses

Initial Market Target

- Portable electric heater market
 - Market size for 2021
\$10.2 Billion

<https://www.statista.com/statistics/899117/electric-heater-market-value-worldwide/>

Business Model

- OEM production in Turkey
- In-house quality control and packaging
- Sales to Turkey and European Market
- Distributorships in Turkey and Europe

Prototypes

Model 1



Model 2



Technology Validation

Inactivation of airborne SARS-CoV-2 was demonstrated in experiments performed by a private laboratory accredited by the Turkish Ministry of Health

Test Experiment 1

Inactivation of airborne SARS-CoV-2 passing through the device

Device outlet air temperature (°C)	COVID-19 inactivation rate
150	99.9%
220	99.999%

Test Experiment 2

Airborne SARS-CoV-2 inactivation experiment in a
30 m³ test chamber: **Model 1**

Operation time : 80 minutes

COVID-19 inactivation rate : 99.6%

Test Experiment 2

Airborne SARS-CoV-2 inactivation experiment in a
30 m³ test chamber: **Model 2**

Operation time : 75 minutes

COVID-19 inactivation rate : 99.99%

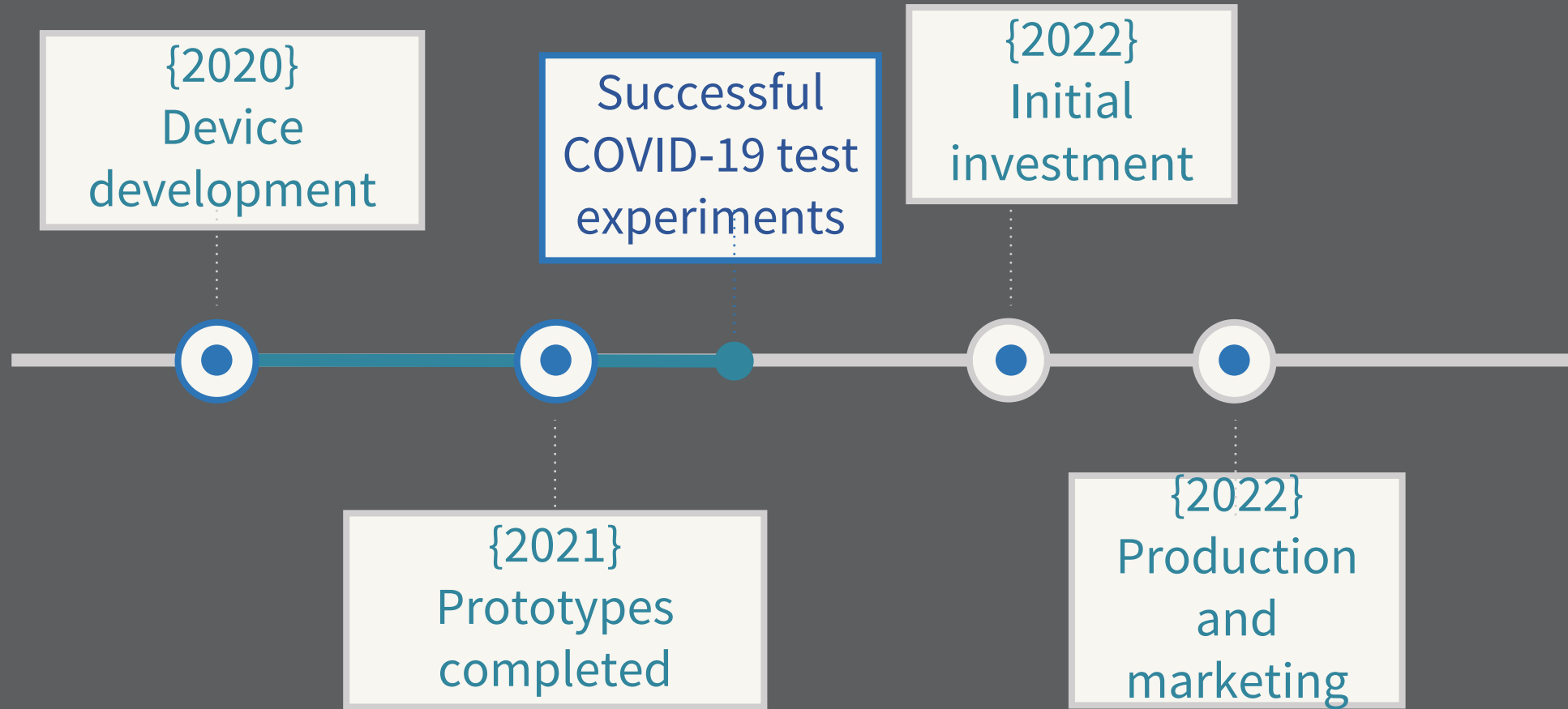
Customer Validation

Customer (restaurant) currently performing due diligence

&

Customer (university) currently performing due diligence

Timeline



Approvals Received

- CE certification
- Turkish Ministry of Health, General Directorate of Public Health: **Notification Registration Certificate for Biocidal Products Not Containing Active Substrate**

Approvals Received

CE

UYGUNLUK ONAYI
ATTESTATION OF COMPLIANCE

Reference No: TRM-21-2335/01
Referans Nu.:

Applicant: MCC Medikal Özel Sağlık Hiz. End. Mak. Bilg. Elek. Ar-Ge Dan. Tar. Anal. Lab. San. ve Tic. Ltd. Şti.
Başvuru Sahibi: Akdeniz Üniversitesi Dumlupınar Bulv. Uluğbey Ar-ge Binası Bodrum Kat No: 1/L Konyaaltı / Antalya / TÜRKİYE
MCC Medikal Özel Sağlık Hiz. End. Mak. Bilg. Elek. Ar-Ge Dan. Tar. Anal. Lab. San. ve Tic. Ltd. Şti.
Üretici: Akdeniz Üniversitesi Dumlupınar Bulv. Uluğbey Ar-ge Binası Bodrum Kat No: 1/L Konyaaltı / Antalya / TÜRKİYE

Product: Coronavirus Termal İnaktivatörü
Ürün: Coronavirus Thermal Inactivator

Type/Model: Coronavirus-001
Tip/Model:

Reference Directive(s): Low Voltage Directive (LVD) 2014/35/EU
Referans Yönetmelik(lar): Belirli Gerilim Sınırları İçin Tasarlanan Elektrikli Ekipman İle İlgili Yönetmelik (2014/35/AB)

Reference Standard(s): EN 60335-1:2012/AC:2014
Referans Standart(lar):

Base of attestation: File of technical documentation, test report Ref. No. TRM-21-2335/01
Onay Dayanağı: Teknik Dökümantasyon, TRM-21-2335/01 numaralı test raporu

Issue Date: 21.06.2021
Yayın Tarihi:

Expiry Date: 20.06.2022
Geçerlilik Tarihi:

Integra96, has inspected the documentation presented concerning the product of the company whose name and address mentioned above according to the reference directive and/or reference standards. Suitability of product and documentation to the directive and standards are under the responsibility of the company. However, in case the product is subject to more than directives and standards which are mentioned above when the company fulfills conditions of other directives and standards, then it can attach CE conformity marking and arrange conformity declaration. This attestation has been issued as per company required. This attestation does not abrogate the compulsory obligation of the manufacturer to issue the declaration of conformity.

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Halk Sağlığı Genel Müdürlüğü

AKTİF MADDE İÇERMİYEN BİYOSİDAL ÜRÜNLER BİLDİRİM KAYIT BELGESİ

Bildirim No	078	Bildirim Tarihi:	26.07.2021
İmalatçı veya İthalatçı Adı	MCC MEDİKAL ÖZEL SAĞLIK HİZMETLERİ ENDÜSTRİYEL MAKİNE BİLGİSAYAR ELEKTRONİK AR-GE DANIŞMANLIK TARIMSAL ANALİZ LABORATUVARI SAN. TİC. LTD. ŞTİ.		
İmalatçı veya İthalatçı Adresi	Akdeniz Üniversitesi Dumlupınar Bulv. Uluğbey AR-GE Binası Bodrum Kat No:1/L Konyaaltı/ANTALYA		
İmalat Yeri Adı ve Adresi	MCC MEDİKAL ÖZEL SAĞLIK HİZMETLERİ ENDÜSTRİYEL MAKİNE BİLGİSAYAR ELEKTRONİK AR-GE DANIŞMANLIK TARIMSAL ANALİZ LABORATUVARI SAN. TİC. LTD. ŞTİ. Akdeniz Üniversitesi Dumlupınar Bulv. Uluğbey AR-GE Binası Bodrum Kat No:1/L Konyaaltı/ANTALYA		
Vergi Dairesi	Antalya Kurumlar		
Vergi No	6130728770		

S/N	MARKA	MODEL	TEMAS SÜRESİ	HEDEF ORGANİZMA
1	Coronavirus Termal İnaktivatörü	Coronavirus-0001	Cihaz içerisinden geçen havaya; 150 °C'de toplam 5 dakika maruziyette	SARS-CoV-2 (COVID-19) (%99.9)
			220 °C'de toplam 5 dakika maruziyette	SARS-CoV-2 (COVID-19) (%99.999)

*Havanın cihaz içerisinden geçme süresi yaklaşık 1.5 saniyedir. Cihaza verilen havanın debisi Q=10 Litre/Dakika =0.1666 Litre/Saniye

02.08.2013 tarihli ve 28726 sayılı Resmi Gazete'de yayımlanarak yürürlüğe giren "Aktif Madde İçermeyen Biyosidal Ürünler Tebliği" gereği yukarıda adı geçen ürünlerin bildirim kaydı kabul edilmiştir.

Uzm. Dr. Bekir KESKİNKILIÇ
Bakan a.
Genel Müdür Yardımcısı

Patent Applications

- Turkish Patent Office (2020/10/02)
- European Patent Office (2020/11/11)
- International Patent Office (2021/08/19)

Execution Team

Murat Canpolat, CEO

İlhami Uğur Sevimli, CFO

Yaşar Balbaşı, Design and Production Manager

Aziz Serçe, Sales Manager

Murat Canpolat, Ph.D. : Developed the device and conducted test experiments. Academician, works on developing biomedical optical devices.

İlhami Uğur Sevimli: He has been working as a freelance accountant since 1997.

He continues his activities as an independent auditor since 2013

Yaşar Balbaşı: Mechanical engineer, lecturer at Akdeniz University Vocational School of Technical Sciences; took part in the design and production stages of several projects put into practice .

Aziz Serçe: Holds a master's degree in marketing. He worked as a manager and regional representative at Roche, Bilim Pharmaceuticals, Farmed Pharmaceutical companies.

5 Year Projection

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Revenue	\$500,000	\$3,500,000	\$12,000,000	\$35,000,000	\$80,000,000
Expense	\$1,000,000	\$2,500,000	\$5,000,000	\$15,000,000	\$30,000,000
Net Profit	(\$500,000)	\$1,000,000	\$7,000,000	\$20,000,000	\$50,000,000

What, How and Why



What?

Reducing the spread of COVID-19 indoors in winter



How?

Inactivating airborne SARS-CoV-2, using the heat used to warm indoor spaces



Why?

COVID-19 will be with us for the foreseeable future