



PROJECT COMPLETION REPORT

1. Project Number : P 8228
2. Title of the Project : Emergency Response Isolation Systems
3. Funding Agency Name : TRC
4. Project Reference Number provided by the Funding Agency:

Ref. No: TRC/8228/PSN dated 11 May 2020

5. Principal Investigator (Name & Address):

Sl. No	Name	Role	Address
1	Subhash N. N.	Principal Investigator	Scientist/Engineer C Division of Artificial Internal Organs, DMDE, BMT Wing, SCTIMST
2	Muraleedharan C. V.	Co- Principal Investigator	Scientist G (Sr. Grade) Division of Artificial Internal Organs, DMDE, BMT Wing, SCTIMST

6. Co-Investigators (Name & Address): Nil

7. Implementing Institution : SCTIMST along with industry partners

8. Collaborating Institutions :
 - 1) Industry Partner for UV-C disinfection devices: M/s VST Mobility Pvt Ltd
 - 2) Industry partner for co-development of portable and deployable field hospitals- M/s Modulus Housing, Start-up based on IIT Madras Research Park

9. Date of Commencement : 11 May 2020

10. Duration : 2 Months

11. Date of Completion : Technology transfer document to VST Mobility dated 12/06/2020

12. Objectives as approved:

Sl. No	Objective	Industry Partner	Commercialized Products
1	To develop UV-C based multipurpose disinfection device is intended for UV-C disinfection of microorganisms in (1) used face-mask prior to disposal, and (2) UV-C stable metal objects.	M/s VST Mobility Pvt Ltd	1) Bin 19 2) UV Spot
2	Co-development of four zone deployable MediCAB for covid19 management	M/s Modulus Housing Pvt Ltd	Four zone MediCAB

13. Deviation made from original objectives if any, while implementing the project and reasons thereof :

Nil

14. Field/Experimental work giving full details of summary of methods adopted, data collected supported by necessary tables, charts, diagrams and photographs :

Details may be referred from the published work given below

- Neelakandan Subhash N, Sukesan A, Jerard J, Uthaman VP, Vasudevan VD, Amma PK, Nandkumar MA, Vayalappil MC. Chitra Ultraviolet-C-Based Facemask Disposal Bin. Transactions of the Indian National Academy of Engineering. 2020 Jun 18:1-9. DOI: <https://doi.org/10.1007/s41403-020-00136-4>

Photographs of commercialised devices by industry partner Ms VST Mobility are given below



Figure 1. Bin19



Figure 2. UV Spot

Photographs of commercialised product by co-development industry partner Ms Modulus Housing are given below

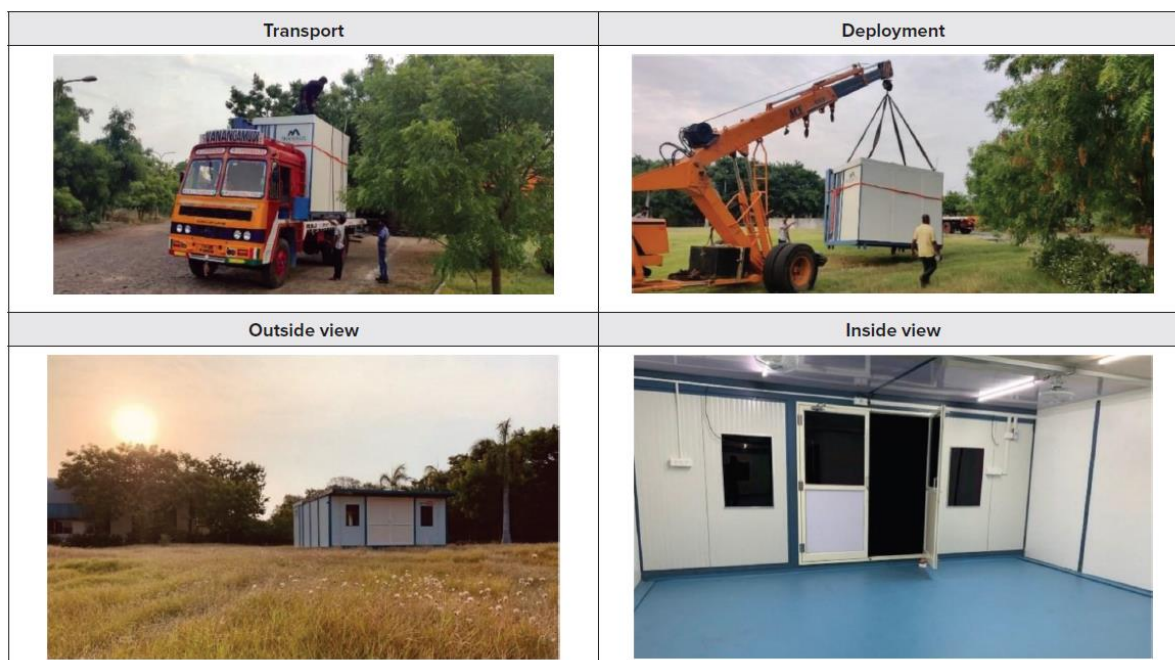


Figure 3. Four zone MediCAB

15. Detailed analysis of results :

Details may be referred from the published work given below

- 1) Neelakandan Subhash N, Sukesan A, Jerard J, Uthaman VP, Vasudevan VD, Amma PK, Nandkumar MA, Vayalappil MC. Chitra Ultraviolet-C-Based Facemask Disposal Bin. Transactions of the Indian National Academy of Engineering. 2020 Jun 18:1-9. DOI: <https://doi.org/10.1007/s41403-020-00136-4>
- 2) Subhash N N, Muraleedharan CV and Shreeram R; Four Zone deployable MediCAB for COVID 19management, 5th World Congress on Disaster Management; 25 Nov 2021.

**16. Summary sheet of not more than 2 pages under following heads:
(Title, Introduction, Rationale, Objectives, Methodology, Results, Translational Potential)**

The technology has been transferred to industry partner.

Details may be referred from the published work given below

- 1) Neelakandan Subhash N, Sukesan A, Jerard J, Uthaman VP, Vasudevan VD, Amma PK, Nandkumar MA, Vayalappil MC. Chitra Ultraviolet-C-Based Facemask Disposal Bin. Transactions of the Indian National Academy of Engineering. 2020 Jun 18:1-9. DOI: <https://doi.org/10.1007/s41403-020-00136-4>
- 2) Subhash N N, Muraleedharan CV and Shreeram R; Four Zone deployable MediCAB for COVID 19management, 5th World Congress on Disaster Management; 25 Nov 2021.

17. Contributions made towards increasing the state of knowledge in the subject :

Details may be referred from the published work given below

- 1) Neelakandan Subhash N, Sukesan A, Jerard J, Uthaman VP, Vasudevan VD, Amma PK, Nandkumar MA, Vayalappil MC. Chitra Ultraviolet-C-Based Facemask Disposal Bin. Transactions of the Indian National Academy of Engineering. 2020 Jun 18:1-9. DOI: <https://doi.org/10.1007/s41403-020-00136-4>
- 2) Subhash N N, Muraleedharan CV and Shreeram R; Four Zone deployable MediCAB for COVID 19management, 5th World Congress on Disaster Management; 25 Nov 2021.

18. Conclusions summarising the achievements and indication of scope for future work :

Achievements and social media traction in National level are given below:

Kerala Startup Mission
28,856 followers
20h • 🌐

Thank you, **VST Mobility Solutions**

#KSUM #Kerala #Startup #Startups #India #Invention #covid #Covid19India #Innovation Startup India Invest India

COVID-19 INNOVATORS
TOP INNOVATIONS FROM KERALA TO HELP TACKLE COVID-19

STARTUP VST MOBILITY SOLUTIONS	PRODUCT BIN-19
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FUNCTION
AUTOMATED MASK DISPOSAL MACHINE. BIN-19 FACILITATES DROPPING USED MASKS TO A CHAMBER INSIDE IT, CARRYING OUT DISINFECTION IN THE PROCESS.

VISIT : WWW.VSTMObILITY.COM

WE ARE GRATEFUL FOR YOUR SERVICE!

KERALA STARTUP MISSION

 **Dr Harsh Vardhan** ✓
@drharshvardhan

Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), Trivandrum an institute under @IndiaDST, has developed IoT (Internet of Things) based used mask disposal smart bin & UV light-based disinfection device to beat #COVID19.

@MoHFW_INDIA @sctimst_tvm

Kerala Start-ties up with SCTIMST to launch IoT based used mask disposal smart bin & UV



The used masks dropped inside a container of the bin will be first disinfected by a process. The disinfected masks will be transferred to another container inside the Bin. The person dropping the mask can sanitize his hands with the help of the automatic sanitizer dispenser attached to the Bin-19.



[@drharshvardhan](#) [@drharshvardhanofficial](#)
[@drharshvardhanofficial](#) [www.drharshvardhan.com](#)

 DSTIndia and 7 others

11:56 AM · Jun 12, 2020 · Twitter Web App

 **DSTIndia** ✓
@IndiaDST

Kochi-based #startup VST Mobility launches automated #mask disposal #Machine .

@drharshvardhan @Ashutos61 @IndiaDST @sct_hos_res

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Kochi-based startup VST Mobility launches automated mask disposal machine
VST Mobility Solutions, a Kochi-based startup, has launched an automated mask disposal machine to help combat the Covid-19. The device, named BIN-19, ...
[thehindubusinessline.com](#)

11:18 AM · Jun 10, 2020 · Twitter Web App



Kerala based Startup ties up with SCTIMST to launch IoT (Internet of Things) based used mask disposal smart bin, named BIN-19 & UV light-based disinfection device, named UV SPOT, to beat #COVID19

Details here: pib.gov.in/PressReleasePa...



4:58 PM · Jun 11, 2020 · Twitter Web App

44 Retweets 6 Quote Tweets 163 Likes



Dr. Harsh Vardhan

55m ·

SCTIMST, Trivandrum, under DSTIndia, in collaboration with 'Modulus Housing' - a start-up incubated by IIT Madras - has come up with a solution using decentralised approach to detect, manage & treat #COVID19 patients in local communities thro portable micro structures

It can be easily transported and installed anywhere in any geographic location & can be erected in just 2 hrs with the help of 4 persons. The cabins in the #MediCAB are tightly sealed & are dust-proof. MediCAB can withstand harsh weather & heavy rains.

As of now, a 30-bedded hospital at a cost of Rs 34 lakhs at Chengalpet, #Chennai & another 12-bedded hospital in Wayanad, Kerala at a cost of Rs 16 Lakh at Primary Health Care, Varadoor have been successfully installed as four-zone hospitals



**SCTIMST & IIT Madras
start-up set up
portable
hospital
infrastructure
for COVID -19**



[@drharshvardhan](https://twitter.com/drharshvardhan) [@drharshvardhanofficial](https://www.instagram.com/drharshvardhanofficial) [@drharshvardhanofficial](https://www.facebook.com/drharshvardhanofficial) www.drharshvardhan.com

MyGov India
21,938 followers
21h · 🌐

SCTIMST and IIT Madras start-up set up Portable Hospital Unit - 'MediCAB' for COVID-19. [#IndiaFightsCorona](#)
[#AatmaNirbharBharat](#)

Fighting COVID-19 with AatmaNirbhar Solutions
SCTIMST & IIT Madras Start-Up Set Up Portable Hospital Unit for Covid -19

Portable microstructure named as "MediCAB", can be easily transported and installed in any geographic locations in just 2 hours

Composed of 4 zones - a doctor's room, an isolation room, a medical room & a twin-bed ICU, maintained at negative pressure

Tightly sealed & dust-proof cabins with in-built electricals, can withstand harsh weather conditions

30 bedded hospital at Chengalpeta, Chennai & 12 bedded hospital in Wayanad, Kerala successfully installed so far

19. Science and Technology benefits accrued :

a. List of research publications with complete details :

- 1) Neelakandan Subhash N, Sukesan A, Jerard J, Uthaman VP, Vasudevan VD, Amma PK, Nandkumar MA, Vayalappil MC. Chitra Ultraviolet-C-Based Facemask Disposal Bin. Transactions of the Indian National Academy of Engineering. 2020 Jun 18:1-9. DOI: <https://doi.org/10.1007/s41403-020-00136-4>
- 2) Subhash N N, Muraleedharan CV and Shreeram R; Four Zone deployable MediCAB for COVID 19 management, 5th World Congress on Disaster Management; 25 Nov 2021.

b. Manpower trained on the project :

- i. Research Scientists or Research Fellows : Nil
- ii. No. of PhD's produced : Nil
- iii. Other Technical Personnel trained : Nil

c. Patents taken, if any : Patent filed.

- 1) Face masks sanitization bin, Indian patent filed on 31.03.2020, No. 202041014200, by Subhash NN, Muraleedharan CV.
- 2) Deployable field units for emergency response, Indian Patent filed on 31.03.2020, No. 202041014164, by Subhash NN, Muraleedharan CV

d. **Products developed, if any** : Products commercialised by industry partner M/s VST Mobility are

- 1) Bin 19
- 2) UVspot
- 3) Four zone MediCAB

20. Abstract: (In 300 words for possible publication in Bulletin)

Details may be referred from the published work given below

- 1) Neelakandan Subhash N, Sukesan A, Jerard J, Uthaman VP, Vasudevan VD, Amma PK, Nandkumar MA, Vayalappil MC. Chitra Ultraviolet-C-Based Facemask Disposal Bin. Transactions of the Indian National Academy of Engineering. 2020 Jun 18:1-9. DOI: <https://doi.org/10.1007/s41403-020-00136-4>
- 2) Subhash N N, Muraleedharan CV and Shreeram R; Four Zone deployable MediCAB for COVID 19management, 5th World Congress on Disaster Management; 25 Nov 2021.

21. Procurement/Usage of Equipment:

a. **Details of Equipment:**

Sl. No.	Name of Equipment	Make/ Model	Cost (Rs.)	Date of Installation	Utilisation	Remarks regarding maintenance breakdown
1	TABLE DRILLING MACHINE	(Item No-909/1822, Item code; EQDRIL0133/8228)	24982.00	20/06/2020	Being used in polishing lab	Nil

b. **Suggestions for disposal of equipment(s):**

Not applicable



Subhash N. N.
8 Nov 2023

(Name and Signature of PIs with date)

Routing: Signed copy of "Project completion Report" by PI → root@sctimst.ac.in, rpc@sctimst.ac.in