

ACADEMICS

FIGHTING PANDEMICS

#NUSTonTheFrontlines

NUST
Defining futures



NCRA
NATIONAL CENTRE OF
ROBOTICS & AUTOMATION

N-ROVER
The Difference is Technology

TELE-OPERATED DECONTAMINATION ROBOT



Recognising the need to adopt preventive measures as the world sails through uncharted waters of COVID-19, scientists at the Robot Design & Development Lab, National Centre of Robotics & Automation (NCRA), at the NUST College of Electrical & Mechanical Engineering (CEME), have indigenously developed **N-Rover** – tele-operated decontamination robot. It is designed with the exclusive feature of finding its course through hard terrains to decontaminate localities without physical human intervention. *The sophisticated unmanned ground vehicle is engineered so that technology makes a difference.*

TECHNICAL & PERFORMANCE SPECIFICATIONS

Parameters	Description
Control Mode	Wireless
Drive Options	Wheels/Track
Range	300m in Line of Sight (LOS)
Travelling Speed	8 km/hr

Parameters	Description
Turret Rotation	360 Degrees
Battery Backup	1.5 hrs
Camera Feedback	2 cameras
Spray Fluid Tank	16 ltrs

BENEFITS

- Modular design
- Reduces risk of human exposure to virus due to remote operation
- Remotely controlled from 500 metres

APPLICATIONS

- Disinfection of closed spaces such as airports, hospitals, quarantine camps, malls, office and residential buildings, and other public places
- Disinfection of open spaces such as open-air quarantine camps, railways stations, bus stations, commercial areas, neighbourhoods, and more

N-ROVER

DECONTAMINATION SERVICES

Call us for decontamination of all types of open and closed spaces.

To access off-road and difficult terrains, tracked version of N-Rover is also available

Contact

Corporate Advisory Council (CAC) - NUST

Tel: +92-51-90856240

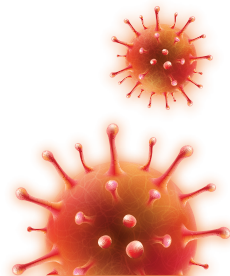
E-mail: gmcac@ric.nust.edu.pk

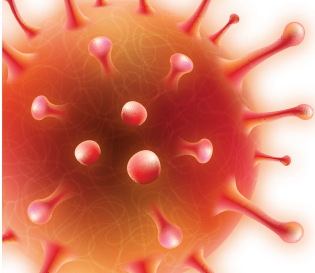


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AERIAL SPRAYING
UNIT FOR
DECONTAMINATION



Assessing the gravity of situation that has unfolded due to the pandemic COVID-19, and to contain its spread without human exposure to high-risk areas and localities, a team of scientists at the Robot Design & Development Lab, National Centre of Robotics & Automation (NCRA), at the NUST College of Electrical & Mechanical Engineering (CEME), have assembled and deployed **AeroN** – a tele-operated aerial spray unit, retrofitted for fighting the virus's outbreak by disinfecting critically important surroundings and locations. *The tele-operated drones are designed such that the flight is characterised by precision.*

TECHNICAL & PERFORMANCE SPECIFICATIONS

Parameters	Description	Parameters	Description
Control Mode	Wireless	Travelling Speed	5 km/hr
Flight Options	Tele-operated/Autonomous	Area Coverage	2 acres/15 minutes
Flying Time	18 minutes	Spray Fluid Tank	10 ltrs

BENEFITS

- High precision spraying capability
- Effective coverage of large and small spaces (both opened & closed)
- Reduces risk of human exposure to virus due to remote operation
- Smart & portable design

APPLICATIONS

- Disinfection of public places such as open-air quarantine camps, railway stations, bus stations, commercial areas, neighbourhoods and more
- Pest control for sustainable agriculture
- Industrial fumigation



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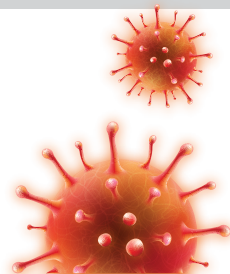
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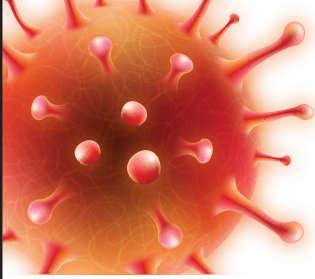


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Breathe Easy

As the pandemic outbreak of COVID-19 is wreaking havoc globally, there is a mounting concern vis-à-vis availability of ventilators to cater for critical patients battling with the disease. In Pakistan, the estimated figure for active ventilation devices falls around 2900 units, which is potentially low amidst soaring number of people contracting the virus. With a view to coping with this imminent threat, and to help our country to become self-sufficient in the development and manufacturing of ventilators, our team at NUST Medical Devices Development Centre (MDDC) is developing **N-Saviour** – a low cost ventilator that is in accordance with Acceptance Testing Procedure (ATP) issued by Pakistan Engineering Council (PEC), also followed by Drug Regulatory Authority of Pakistan (DRAP). **N-Saviour** provides the ultimate care for critical patients to breathe easy.

TECHNICAL & PERFORMANCE SPECIFICATIONS

- Volume Control Ventilation (VCV)
- Assist Control Ventilation- Volume Control (AC-VC)
- Pressure Support Ventilation (PSV)
- Synchronised Intermittent Mandatory Ventilation (SIMV)

Adjustable Parameters:

- Tidal Volume (TV)
- Breaths Per Minute (BPM)
- Inspiratory to Expiratory Ratio (I:E)
- Positive End Expiratory Control (PEEP)

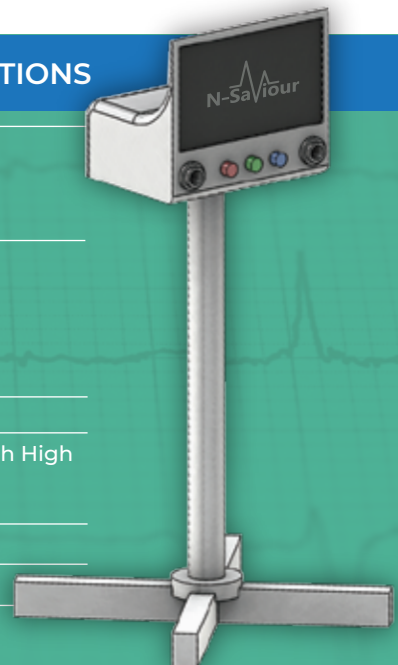
Microcontroller-based Ventilation Control System

Inspiration / Expiration Pressure & Air Flow Regulation with High Accuracy Sensors and High Speed Real-Time Feedback to Microcontroller

Display: Touch LCD Panel

Alarms regarding Electrical & Gas Supply Interruptions

Integrated Air & Oxygen Mixing System



KEY FEATURES

- User Interface: Real-time parameter feedback with touch-based parameter input
- Alarm System for indication of sensor errors, system failures and parameter fluctuation
- Bacterial / Viral Air Filter to prevent cross-contamination

A medical device with a large touchscreen display showing various physiological waveforms and numerical data. The device is light blue and has several physical buttons on the right side. A white ECG line graphic is overlaid on the screen.

N-Saviour

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