



Tue, 14 April 2020

DRDO at the forefront of fighting Covid-19

In a bid to fight against the deadly coronavirus pandemic, the DRDO (Defence Research and Development Organisation), using its scientific endeavour, has developed a host of protective equipment, ventilators and sanitisation equipment for helping the frontline workers.

The DRDO has developed 11 such products to combat the coronavirus. These products include visor-based full-face shield, isolation shelter, mobile area sanitisation system, advanced N99 masks, personal sanitisation equipment, portable backpack area sanitisation equipment, advanced PPEs (Personal Protection Equipment) for doctors and frontline health workers, ventilators and sanitisers.

With an anticipation of a growing need for ventilators in the coming days for patients fighting the coronavirus, the DRDO's Defence Bioengineering and Electromedical Laboratory in Bangalore, in partnership with Bharat Electronics Limited (BEL) and Scanray Pvt Ltd in Mysuru, will develop modern and portable ventilators at the earliest.

And, according to sources in the DRDO, works on the development of such ventilators are progressing and each scientist and technician is working to come up with the best and most advanced form of ventilator. Apart from this, a personal sanitisation equipment which is a full body disinfection chamber has been developed by the DRDO's Vehicle Research and Development Establishment laboratory in Ahmednagar. This personal sanitisation equipment, which is currently being used at the entrance of many markets across the country, is a walk-through full body disinfection chamber. It is a portable system equipped with sanitiser and soap dispenser.

The decontamination is started using a foot pedal at the entry. On entering the chamber, an electrically operated pump creates a disinfectant mist of hypo sodium chloride for disinfecting. The mist spray is calibrated for an operation of 25 seconds and stops automatically, indicating completion of operation.

<https://www.defenceaviationpost.com/2020/04/drdo-at-the-forefront-of-fighting-covid-19/>



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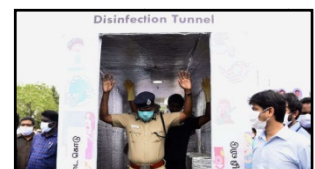
Coronavirus pandemic: Creative innovations in India to fight Covid-19

Disinfection Chamber

In an attempt to boost the fight against coronavirus, DRDO designed a full-body disinfection chamber they are calling the personnel sanitization enclosure. Reportedly, a walkthrough enclosure is capable of disinfecting 650 persons until the next refill.

Robots on the Job

As health workers, researchers and governments struggle to contain the spread of the pandemic, robots are being deployed to administer treatment and provide support to quarantined patients.



A Bodysuit to Safeguard Frontline Warriors

The bodysuit is a critical requirement for doctors, medical staff, sanitation workers so that they do not contract the virus during their work; DRDO has designed a full bodysuit to stop contamination through coronavirus.

A Mobile App to Locate Virus Suspects

IIT Roorkee has developed a mobile tracking application with state-of-the-art features to boost government efforts for the surveillance of coronavirus suspects. The application can track COVID-19 suspects who have been quarantined, using geofencing technology, which marks a virtual geographic area and triggers a response if an individual exits or enters the boundary.

Low Cost Ventilators

IIT Roorkee has also developed a low-cost portable ventilator that can be useful for COVID-19 patients. Named 'Prana-Vayu,' the closed-loop ventilator is equipped with state-of-the-art features.

<https://economictimes.indiatimes.com/news/politics-and-nation/coronavirus-pandemic-creative-innovations-in-india-to-fight-covid-19/disinfection-chamber/slideshow/75116886.cms>



live**mint**

Tue, 14 April 2020

ITI surges on plan to make portable ventilators

By Ashwin Ramarathinam

- *ITI is poised to fast-track production and plans to undertake manufacturing at its Bengaluru facility*
- *It will be able to produce portable ventilators within the next 30 to 60 days,*

Mumbai: ITI Ltd's shares on Monday hit the upper circuit of 20% at ₹ 87.35 as the company is likely to ink a deal with the Defence Research and Development Organisation (DRDO) soon to produce portable ventilators, a first of its kind in India.

"DRDO wants ITI to manufacture portable ventilators and is transferring technology to us. Once we come up with a final product and after due test procedures, we'll be able to produce such ventilators," ITI chairman Rakesh Mohan Agarwal said in an exchange filing on Thursday.

In the wake of the covid-19 pandemic, medical experts say India would require several thousand ventilators and their absence may impair the ability of the country's healthcare system to respond to rising epidemic cases. With a population of 1.33 billion, India has nearly 50,000 ventilators.



Agarwal said ITI is poised to fast-track production and plans to undertake manufacturing at its Bengaluru facility.

ITI is a state-owned electronics product manufacturer under the Department of Telecommunications (DoT) that produces radio modems, optical networks, smart metres, and Wi-Fi access points, with the defence sector contributing to nearly 35% of its overall revenue.

“Once we come up with the product prototype, ITI will be able to produce portable ventilators within the next 30 to 60 days,” the top official said and added that the apparent challenge would be on the component sourcing front.

The state-controlled telecom technology company is set to sign a memorandum of understanding (MoU) with DRDO this week.

"The only thing that worries us is component sourcing. We will require components locally as well as from other countries, which appears to be a cumbersome task during the current lockdown," he added.

Agarwal said portable ventilators could be used during the current crisis and also in the future by the army and paramilitary forces and defence hospitals.

With a strong order book worth about ₹ 20,000 crore, the state-owned ITI is expecting to continue with a growth momentum of nearly 35%. In October-December 2019, the public sector firm posted a turnover of ₹ 979 crore, up 53% over the same quarter last year.

ITI's consolidated net profit surged 1,139% to ₹ 168.25 crore on a 47% jump in net sales to ₹ 827.95 crore in October-December 2019 over the same quarter a year ago.

<https://www.livemint.com/market/stock-market-news/iti-surges-on-plan-to-make-portable-ventilators-11586769549666.html>



DEFENCE AVIATION POST

Your Connect To The World Of Defence And Aviation

Tue, 14 April 2020

Artificial Intelligence in the fight against Covid-19

There is a race against time around the globe to manufacture ventilators in large quantities so as to face the onslaught of COVID-19 infection, with India being no exception in this effort. Defence PSUs, Ordnance Factory Board (OFB) and Defence Research and Development Organisation (DRDO) and academia have joined hands with the private sector to ensure that the ventilators are available and are in working conditions in the hospitals across the country.

What are Ventilators?

Ventilators help a patient in getting more oxygen into their lungs and take the carbon dioxide out. The demand for more ventilators in today's COVID-19 pandemic is high not because they are a cure but to assist lung function while the patient is critically infected and recovering.

What are WHO Specifications?

There should be a flexible breathing circuit, a control system, monitors, and alarms. There should be specialized breathing circuits, oxygen accumulators.

Should have humidifiers or heat and moisture exchangers (HMEs).

The devices use positive pressure to deliver gas to the lungs at normal breathing rates.

There is also an endotracheal tube, a tracheostomy cannula, or a mask.

Power supply is through a line from an internal or external battery.

Predictive Artificial Intelligence Model

In the midst of the global pandemic University of Copenhagen have innovatively used Artificial Intelligence (AI) technique to create models to calculate and forecast the requirement of intensive care and ventilator support for patients in early stages of COVID-19 infection. The effort at Copenhagen is to predict cases requiring ventilator within a week etc. This makes it feasible to



optimise the use of ventilators, especially when their availability is limited and with more patients to be tended to.

Milind Kulshreshtha, C4I expert says, “Various efforts to optimise the ventilator machines are being explored including trials of mechanical distributors to link up more ventilators to a source etc.”

<https://www.defenceaviationpost.com/2020/04/artificial-intelligence-in-the-fight-against-covid-19/>

hindustantimes

Tue, 14 April 2020

AIIMS shuts sanitisation unit after complaints of skin irritation

By Anonna Dutt and Rhythma Kaul

New Delhi: A sanitisation unit at the emergency department of the All India Institute of Medical Sciences (AIIMS) in Delhi was shut four days after it was installed, due to reports of skin irritation. The unit was installed, on a trial basis, to disinfect staff dealing with coronavirus disease (Covid-19).

“The unit is still very much here. But its use has been stopped, for the time being, keeping in mind the scientific evidence. A study of the literature shows that the sodium hypochlorite solution used in the sprays is not very effective for disinfection of personnel and can, sometimes, cause dermatitis (itching), if open skin is exposed,” said Dr DK Sharma, medical superintendent of the hospital.

What is effective, he says, is following hand and cough hygiene while taking care of general patients and using personal protective gear properly while screening or taking care of Covid-19 patients.

The disinfection chamber was developed by the Defence Research and Development Organisation (DRDO) and was being “evaluated for utility” at the hospital.

Each unit is in the form of a small chamber that can be used for disinfection of personnel at the areas of controlled entry and exit in hospitals, malls, office buildings and other critical installations.

The decontamination is started by using a foot pedal at the entry. On entering the chamber, an electrically operated pump creates a disinfectant mist of hypo sodium chloride for disinfecting through a set of at least 20 nozzles. The mist spray is calibrated to operate for 25 seconds and stops automatically, indicating completion of the process. People undergoing disinfection need to keep their eyes shut inside the chamber.

The dimensions of the enclosure are approximately 8 feet (length) x 4 feet (width) x 8 feet (height), with a drainage mechanism, a mounted roof and tanks, with a total capacity of 700 litres, at the bottom.

Approximately 650 persons can pass through the chamber for disinfection until a refill is required, and about 80-100 persons can undergo the process every hour. The price of a unit is about ₹ 1.48 lakh.

“A single unit that has been given to us by DRDO was installed at AIIMS, for the time being, to see whether it works well. It is meant for all hospital staff members who are dealing with Covid-19 management. It is a part of the hospital’s infection control practice that the staff will be disinfected before entering and exiting the hospital premises,” said Dr Sharma.

If the trials proved successful, the institute had also proposed to install such units in other areas of the hospital, especially the trauma centre, which has been turned into a dedicated ward to treat Covid-19 cases.

<https://www.hindustantimes.com/delhi-news/aiims-shuts-sanitisation-unit-after-complaints-of-skin-irritation/story-V37uk5ryvjuKaluvswDCZI.html>

पूर्व मध्य रेल ने सैंपल पीपीई किट मंजूरी के लिए डीआरडीओ को भेजा

पूर्व मध्य रेल ने प्राप्त की महत्वपूर्ण उपलब्धि

पीडीडीयू नगर (चंदौली): पूर्व मध्य रेल के दानापुर मंडल में जगाधारी कारखाने से प्राप्त पीपीई सामग्री से अब तक दो पीपीई किट तैयार किया गया है। शीघ्र ही इस सैंपल को कार्य के लिए अधिकृत संस्था डीआरडीओ के पास इंस्पेक्शन, टेस्टिंग, सर्टिफिकेशन और मंजूरी के लिए भेजा जाएगा।

डीआरडीओ द्वारा सैंपल की मंजूरी के पश्चात उत्तर रेलवे से प्राप्त दस हजार किलो पीपीई निर्माण सामग्री से रेलवे चिकित्सालय के चिकित्सक, नर्स एवं अन्य पैरामेडिकल स्टाफ के प्रयोग के लिए पीपीई का निर्माण पूर्व मध्य रेल के पांचों मंडलों में किया जाएगा। कोविड-19 महामारी से लड़ने के लिए चिकित्सक, नर्स, पैरामेडिकल स्टाफ के स्वास्थ्य सुरक्षा के लिए पीपीई का होना नितांत आवश्यक है। इतने कम समय में पीपीई का निर्माण करना पूर्व मध्य रेल के लिए एक महत्वपूर्ण उपलब्धि है। बाजार में अनुपलब्धता को देखते हुए रेलवे का यह प्रयास है कि पीपीई ड्रेस का उत्पादन स्वयं किया जाए। जगाधारी में प्रथम बार पीपीई तैयार किया गया था जिसे डीआरडीओ ने भी अपनी स्वीकृति प्रदान कर दी है। इसी के मद्देनजर भारतीय रेल के अन्य कारखानों को भी इसके निर्माण की जिम्मेवारी दी गई है। पूर्व मध्य रेल की यह उपलब्धि कोविड-19 के मरीजों के इलाज के दृष्टिकोण से मील का पत्थर साबित होगा।

<https://www.jagran.com/uttar-pradesh/chandauli-east-central-rail-sent-sample-ppe-kit-to-drdo-for-approval-20187558.html>

DRDO Technology



Tue, 14 April 2020

DRDO seizes mislabeled autoclave from a Chinese ship: A nuclear opportunity for India

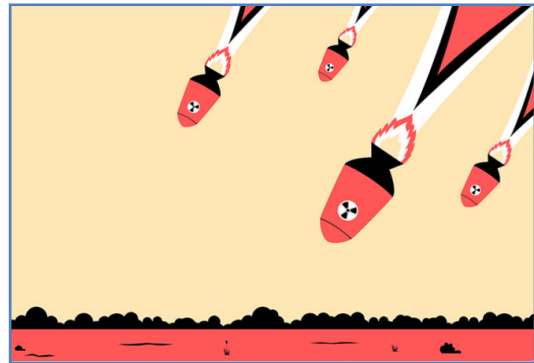
*The relationship between China and Pakistan has been a major
hurdle in India's membership to the Nuclear Suppliers Group*

By Pulkit Mohan

On 3 February, an Indian customs team at India's Kandla Port detained a Chinese ship *Dai Cai Yun* en-route to Karachi, Pakistan. The team operated on the basis of an intelligence tip-off. The ship was allowed on 20 February, to proceed to the aforementioned destination once dual-use (civilian and military) equipment mislabeled as an industrial autoclave was seized. Technical experts from the Defence Research and Development Organisation (DRDO) confirmed that the seized autoclave was a "dual use industrial autoclave, which was misdeclared as an industrial dyer." Beijing denied that the material seized is "neither military supplies nor dual use items under non-proliferation and export control." Given the DRDO's confirmation and further analysis, it is

important for New Delhi to raise serious concerns about the incident at a bilateral level as well as in the international context to expose China on its dubious activities.

This incident once again highlights the continuing and strong nexus between China and Pakistan in the area of weapons of mass destruction (WMD). It is well-known that Pakistan's nuclear programme is not indigenous and that China has had a critical role in the development and sustenance of the Pakistani nuclear weapons programme. China has grown as Pakistan's all-weather ally and provided significant support in terms of expertise and material in the last several decades. New Delhi has been apprehensive about this



alliance between Beijing and Islamabad, specifically in the nuclear and military domain. These uncertainties are not unfounded as is displayed by the autoclave incident. New Delhi should acknowledge the opportunity this incident brings in addressing this matter at an international platform for its benefit as well as in strengthening the non-proliferation mechanism.

It is well-known that Pakistan's nuclear programme is not indigenous and that China has had a critical role in the development and sustenance of the Pakistani nuclear weapons programme.

The seizure demands an appropriate response from India's national security planners due to the clear violation of international frameworks. Given the rarity of such incidents being intercepted by Indian authorities, it is important that India looks into possible responses through multiple channels. The falsification of information provided by China and Pakistan presents New Delhi with a couple of avenues to pursue this in the international context. In this situation, India can invoke the Weapons of Mass Destruction and Their Delivery Systems (Prohibition of Unlawful Activities) Act 2005. The Act provides legislation on unlawful activities in relation to WMDs. In this specific context, the Act may be invoked on the grounds of unlawful "transportation of a nuclear explosive device or a nuclear weapon and their means of delivery." However, the more pertinent instrument available to the Indian government is the United Nations Security Council (UNSC) Resolution 1540 (2004). This UNSC resolution reiterates the concern of "the threat of illicit trafficking in nuclear, chemical, or biological weapons and their means of delivery, and related materials, which adds a new dimension to the issue of proliferation of such weapons and also poses a threat to international peace and security."

The relationship between China and Pakistan has also been a major hurdle in India's membership to the Nuclear Suppliers Group (NSG). China has repeatedly blocked India's entry on the grounds that only signatories to the Non-Proliferation Treaty (NPT) can be a member of the NSG. China has reiterated that it is not singling India out specifically and it is purely adhering to the rules and regulations of the NSG. Indian experts on the matter have observed that it is likely that China has blocked India's entry into the NSG, in a show of solidarity with its ally, Pakistan. With the seizure of the autoclave, India can raise the issue at international platforms to hold China and Pakistan and put them on the defensive. India must call upon its friends and partners such as the United States and France to pursue this case.

The seizure of the autoclave has reaffirmed New Delhi's stance that Pakistan's nuclear programme is further strengthened by China. India, therefore, also needs to be mindful of the increasingly deepening alliance and take into account the two-front threat the country faces in New Delhi's security calculations. Given the rare occasion where India has substantial evidence to hold Beijing accountable, it is important that India uses this opportunity to bring international attention to the matter. New Delhi is confronted with an opportunity to justify national security interests at a domestic and international context and must do so in order to further its position in the nuclear world order.

<https://www.orfonline.org/expert-speak/drdo-seizes-mislabeled-autoclave-from-chinese-ship-nuclear-opportunity-india-64523/>