

Jan
2021

समाचार पत्रों से चयित अंश Newspapers Clippings

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology

खंड : 46 अंक : 07 09-11 जनवरी 2021

Vol. : 46 Issue : 07 09-11 January 2021



रक्षा विज्ञान पुस्तकालय
Defence Science Library
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Ministry of Defence

Sun, 10 Jan 2021 5:15PM

Handing over of products developed by CVRDE to users

The handing over ceremony of Retractable Landing Gear Systems for Tapas and SWiFT UAVs and 18 types of filters for P-75 Submarine took place on 10th January 2021 at DRDO laboratory, Combat Vehicles Research and Development Establishment (CVRDE), Chennai, in the presence of Hon'ble Member of Parliament Dr. Kalanidhi Veeraswamy, Parliamentary Standing Committee Member for Defence, Dr G Satheesh Reddy, Secretary, DDR&D and Chairman DRDO and Shri PK Mehta, DG (ACE).

CVRDE has indigenously designed and developed Three Ton Retractable Landing Gear (RLG) Systems for Tapas UAV. The design, development and testing of this gear system is carried out in co-ordination with CEMILAC and DGAQA for certification. The tricycle nose wheel type multidisciplinary, hydro-electro-mechanical system is now being manufactured by an Industry at Coimbatore. First set of Retractable Landing Gear system developed by industry was handed over by Director CVRDE, Chennai to the Director, ADE Bengaluru.

CVRDE has also designed and developed One Ton Retractable Landing Gear System for a different class of UAV known as SWiFT. This system is designed and developed for accommodating the Landing Gears within the constrained bay volume. It is manufactured with the help of Indian industry with due inspection and certification of CEMILAC and DGAQA. This system was also handed over to ADE, Bengaluru.

Eighteen types of indigenously developed hydraulic, lubrication, seawater and fuel filters for P-75 Submarine were designed and developed by CVRDE. These filters are now being manufactured with the help of Indian Industries based at Hyderabad and Chennai. This indigenization project was funded by DRDO and Navy jointly and the technology is successfully transferred to the industry. Two sets of these filters, duly qualified by DQA (N), were handed over to Indian Navy.

Secretary DDR&D highlighted the importance of indigenous design efforts and complimented the industries who have established the manufacturing facilities for making these critical components.

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पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Sun, 10 Jan 2021 5:15PM

सीवीआरडीई द्वारा विकसित उत्पाद उपयोगकर्ताओं को सौंपे गए

तपस और स्विफ्ट यूएवी के लिए रिट्रैक्टिबल लैंडिंग गियर सिस्टम और पी-75 सबमरीन के लिए 18 प्रकार के फिल्टरों को सौंपे जाने का समारोह 10 जनवरी 2021 को डीआरडीओ प्रयोगशाला, कॉम्बैट व्हीकल रिसर्च एंड डेवलपमेंट इस्टैब्लिशमेंट (सीवीआरडीई), चेन्नई में माननीय सांसद व रक्षा संसदीय स्थायी समिति के सदस्य डॉ. कलानिधि वीरास्वामी, डीडीआरएंडडी के सचिव और डीआरडीओ के अध्यक्ष डॉ. जी सतीश रेड्डी और महानिदेशक (एसीई) श्री पी के मेहता की उपस्थिति में आयोजित हुआ।

सीवीआरडीई ने तपस यूएवी के लिए तीन टन के रिट्रैक्टिबल लैंडिंग गियर (आरएलजी) सिस्टम को स्वदेशी रूप से डिजाइन और विकसित किया है। इस गियर सिस्टम के डिजाइन, विकास और परीक्षण का प्रमाणन सीईएमआईएलएसी और डीजीएक्यूए के समन्वय में किया जाता है। ट्राइसाइकिल नोज व्हील प्रकार के बहु-विषयी, हाइड्रो-इलेक्ट्रो-मैकेनिकल सिस्टम का अब कोयंबटूर में एक उद्योग द्वारा विनिर्माण किया जा रहा है। उद्योग द्वारा विकसित रिट्रैक्टिबल लैंडिंग गियर सिस्टम के पहले सेट की सुपुर्दगी सीवीआरडीई, चेन्नई के निदेशक द्वारा एडीई बेंगलुरु के निदेशक को की गयी थी।

सीवीआरडीई ने यूएवी के एक अलग वर्ग जिसे स्विफ्ट के रूप में जाना जाता है, के लिए एक टन रिट्रैक्टिबल लैंडिंग गियर सिस्टम की रूपरेखा तैयार की है और विकास किया है। इस सिस्टम का डिजाइन और विकास कंस्ट्रैड बे वॉल्यूम के भीतर लैंडिंग गियर्स को समायोजित करने के लिए किया गया है। इसका विनिर्माण सीईएमआईएलएसी और डीजीएक्यूए के समुचित निरीक्षण और प्रमाणन के साथ भारतीय उद्योग की मदद से किया गया है। यह सिस्टम एडीई, बेंगलुरु को भी सौंपी गई थी। पी-75 सबमरीन के लिए स्वदेशी रूप से विकसित अठारह प्रकार के हाइड्रोलिक, लुब्रिकेशन, समुद्रीजल और ईंधन फिल्टरों का सीवीआरडीई द्वारा डिजाइन और विकास किया गया था। इन फिल्टरों का विनिर्माण अब हैदराबाद और चेन्नई में स्थित भारतीय उद्योगों की मदद से किया जा रहा है। यह स्वदेशीकरण परियोजना डीआरडीओ और नौसेना द्वारा संयुक्त रूप से वित्तपोषित की गयी थी और प्रौद्योगिकी को सफलतापूर्वक उद्योग को स्थानांतरित कर दिया गया था। डीक्यूए (एन) द्वारा विधिवत रूप से अर्हताप्राप्त इन फिल्टरों के दो सेट भारतीय नौसेना को सौंप दिए गए।

डीडीआरएंडडी के सचिव ने स्वदेशी डिजाइन प्रयासों के महत्व को रेखांकित किया और उन उद्योगों की सराहना की जिन्होंने इन महत्वपूर्ण कंपोनेन्ट के निर्माण के लिए सुविधा केन्द्रों की स्थापना की है।

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సివిఆర్డిఐ అభివృద్ధి చేసిన ఉత్పత్తులను వినియోగదారులకు అప్ప

గింత

తపస్ (TAPAS), స్విస్ట్ యుఎవిల కోసం రిట్రాక్టుబుల్ లాండింగ్ గేర్ వ్యవస్థలు, పి-75 జలాంతర్గామి కోసం 18 రకాల ఫిల్టర్లను అందించే కార్యక్రమం 10 జనవరి, 2021న డిఆర్డిఐ ల్యాబ్‌రేటరీ అయిన కాంబాట్ వెహికల్స్ రీసెర్చ్ అండ్ డెవలప్‌మెంట్ ఎస్టాబ్లిష్ మెంట్ (CVRDE), చెన్నైలో పార్లమెంటు సభ్యుడు, పార్లమెంటరీ స్టాండింగ్ కమిటీ ఫర్ డిఫెన్స్ సభ్యుడైన డాక్టర్ కళానిధి వీరాస్వామి, డిడిఆర్&డి కార్యదర్శి, డిఆర్డిఐ చైర్మన్ డాక్టర్ జి స తీప్ రెడ్డి, డిజి (ఎసిఇ) పి.కె. మెహతాల సమక్షంలో జరిగింది.

తపస్ యుఎవి కోసం సివిఆర్డిఐ దేశీయంగా రూపకల్పన చేసి మూడు టన్నుల రిట్రాక్టుబుల్ ల్యాండింగ్ గేర్‌ను అభివృద్ధి చేసింది. నమూనా తయారీ, అభివృద్ధి, ఈ గేర్ వ్యవస్థను పరీక్షించడం సిఇఎంఐఎల్ ఎసి, డిజిఎక్యూఎ స హకారంతో సర్టిఫికేషన్ కోసం జరిగాయి.

బహుళశాస్త్ర సంబంధ త్రిచక్ర నోస్ వీల్ టైప్ జల-విద్యుత్- మెకానికల్ వ్యవస్థను కోయంబత్తూర్‌లోని ఒక పరిశ్రమ ఉత్పత్తి చేస్తోంది. పరిశ్రమ అభివృద్ధి చేసిన రిట్రాక్టుబుల్ ల్యాండింగ్ గేర్ వ్యవస్థ తొలి సెట్‌ను బెంగళూరు ఎడికి సివిఆర్డిఐ, చెన్నై డైరెక్టర్ అందచేశారు.

స్విస్ట్ అనే పేరు కలిగిన భిన్న శ్రేణి యుఎవికి సివిఆర్డిఐ ఒక టన్ రిక్టాక్టుబుల్ ల్యాండింగ్ వ్యవస్థను రూపకల్పన చేసి, అభివృద్ధి చేసింది. నిర్బంధిత ఉపసాగర స్థాయి(బే వాల్యూం) పరిధిలో ఇమిడిపోయేలా ల్యాండింగ్ గేర్లను రూపకల్పన చేసి, అభివృద్ధి చేసేందుకు ఈ వ్యవస్థ పని చేస్తుంది. దీనిని సిఇఎంఐఎల్ ఎసి, డిజిఎక్యూఎ తగిన తనిఖీ, ధృవీకరణలు, భారతీయ పరిశ్రమ తోడ్పాటుతో ఉత్పత్తి చేశారు. ఈ వ్యవస్థను కూడా ఎడిఐ, బెంగళూరుకు అందజేశారు. పి-75 జలాంతర్గామి కోసం ద్రవచలిత, కందెన, సముద్రనీరు, ఇంధన ఫిల్టర్ల వంటి 18 రకాల ఫిల్టర్లను దేశీయంగా సివిఆర్డిఐ రూపకల్పన చేసి అభివృద్ధి చేసింది. ఈ ఫిల్టర్లను ప్రస్తుతం హైదరాబాద్, చెన్నైలోని భారతీయ పరిశ్రమల తోడ్పాటుతో ఉత్పత్తి చేస్తున్నారు. ఈ దేశీయ ప్రాజెక్టుకు డిఆర్డిఐ, నావికాదళం సంయుక్తంగా నిధులు సమకూరుస్తున్నాయి. సాంకేతికతను విజయవంతంగా పరిశ్రమకు బదలాయించారు. డిక్యూఎ(ఎస్) తగినట్టుగా ధృవీకరించిన రెండు సెట్ల ఫిల్టర్లను భారతీయ నావికాదళానికి అందజేశారు.

దేశీయ నమూనా, రూపకల్పన కృషి ప్రాముఖ్యతను పట్టి చూపుతూ, ఈ కీలక కాంపౌనెంట్లను ఉత్పత్తి చేసేందుకు ఉత్పాదక కేంద్రాలను ఏర్పాటు చేసిన పరిశ్రమలను అభినందించారు.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1687505>

DRDO develops products to help Indian army battle extreme cold in Eastern Ladakh

With over 50,000 Indian troops are deployed in Eastern Ladakh to fight against China, the Defence Research and Development Organisation has developed multiple products such the Him-Taapak heating devices and snow melters to help the soldiers fight the enemy in form of the extremely low temperatures

With over 50,000 Indian troops are deployed in Eastern Ladakh to fight against China, the Defence Research and Development Organisation (DRDO) has developed multiple products such the Him-Taapak heating devices and snow melters to help the soldiers fight the enemy in form of the extremely low temperatures.

The Him Tapak space heating device (Bukhari) has been developed for the Indian Army deployed in Eastern Ladakh, Siachen and high altitude areas and it has placed an order of more than ₹420 crores for these appliances, DRDO's Defence Institute for Physiology and Allied Sciences (DIPAS) Director Dr Rajeev Varshney told ANI. He said device will ensure that there are no deaths of jawans due to backblast and carbon monoxide poisoning.



The Him Tapak space heating device (Bukhari) has been developed for the Indian Army deployed in Eastern Ladakh, Siachen and high altitude areas

DIPAS, which conducts physiological and biomedical research to improve human performance in extreme and wartime environment has also developed 'Alocal cream' that helps in preventing frostbite chilblains and other cold injuries to soldiers deployed in extremely cold areas. It has also developed a 'flexible water bottle' and 'Solar Snow Melter' to address the issue of drinking water problems in freezing temperatures.

Dr Varshney said that the Army has placed orders worth ₹420 crores to the manufacturers of 'Him Taapak'.

"The Indian Army has placed orders worth ₹420 crores to the manufacturers of this device and they would be deployed in all new habitats of Army and Indo-Tibetan Border Police (ITBP), where the temperature is low," Varshney said.

He said the new heating device has three improvements from the earlier ones developed by DIPAS.

"We have developed one improved space heating device named Bukhari. It has three improvements. First is oil consumption in this device is almost half and as per our calculation, we will be able to save almost ₹3,650 crore in a year. Very soon it will be deployed all the deployment point of Army," he said.

"Second, at high altitude, the speed of the wind is also high. With that speed, there is a backblast. With this design, there is no backblast. Even if some air is coming to this, the device has three horizontal double-layered plates which can cut the air, so there be no blast. It is a blast-proof Bukhari. The third is that the device is 6 litres capacity device, and combustion is 100 per cent. So, there is no chance that it will produce carbon monoxide and other hazardous gas," he added.

Commenting upon the 'Alocal cream', Dr Varshney said, "DRDO-developed 'Alocal cream' that helps in preventing frostbite, chilblains and other cold injuries to soldiers deployed in extremely

cold areas. Every year, Indian Army orders 3 to 3.5 lakh jars of this cream for troops in Eastern Ladakh, Siachen and other areas. Recently we got order of 2 crore jars from Northern command."

Varshney said the 'flexible water bottle' developed by DIPAS can withstand temperature from minus 50 to 100 degree and the water inside the bottle won't freeze due to cold, if it is stored in liquid form.

"We have developed a flexible water bottle which has integrated detachable water filter into this. This can withstand temperature from minus 50 to 100-degree. The water in it will not freeze. You can remove the filter and you can use the bottle simply. It would not freeze. We have received an order for 400 bottles from CRPF," he said.

Satish Chouhan, a scientist at DRDO explained about the functioning of 'Solar Snow Melter'.

"To address the issue of drinking water problems in freezing temperatures in Eastern Ladakh and other similar areas, we provided Solar Snow Melter for trials at Siachen, Khardungla and Tawang areas. Equipment can provide 5-7 ltr of drinking water every hour," he said.

"It works on solar energy. The device tracking solar energy and use the energy to melt the snow and water is stored up to minus 40-degree centigrade in a five-litre water tank attached with the device. They can take water by using the tap attached in the tank. It is cost-effective," he added.

<https://www.hindustantimes.com/india-news/drdo-develops-products-to-help-indian-army-battle-extreme-cold-in-eastern-ladakh-101610278861375.html>



Mon, 11 Jan 2021

DRDO develops multiple products to help Indian Army battle sub-zero conditions at LAC

Due to the border dispute between India and China at the eastern Ladakh, over 50,000 Indian troops are currently deployed in the region battling sub-zero conditions

Edited By Namrata Agarwal

Highlights

- 1. DRDO has developed multiple products to help keep the soldiers warm at the LAC who are battling extremely low temperatures.**
- 2. Due to the border dispute between India and China at the eastern Ladakh, over 50,000 Indian troops are currently deployed in the region facing sub-zero conditions.**

New Delhi: Due to the border dispute between India and China at the eastern Ladakh, over 50,000 Indian troops are currently deployed in the region battling sub-zero conditions.

In its effort to help the Army, the Defence Research and Development Organisation (DRDO) has developed multiple products such as the Him-Taapak heating devices and snow melters to help keep the soldiers warm in the extremely low temperatures.

DRDO's Defence Institute for Physiology and Allied Sciences Director Dr Rajeev Varshney said that the Him Tapak space heating device (Bukhari) has been developed for the Indian Army deployed in Eastern Ladakh, Siachen and high altitude areas and it has placed an order of more than Rs 420 crores for these appliances.



"The Indian Army has placed orders worth Rs 420 crores to the manufacturers of this device and they would be deployed in all new habitats of Army and Indo-Tibetan Border Police (ITBP), where the temperature is low," Varshney was quoted as saying by ANI

"We have developed one improved space heating device named Bukhari. It has three improvements. First is oil consumption in this device is almost half and as per our calculation, we will be able to save almost Rs 3,650 crore in a year. Very soon it will be deployed all the deployment point of Army," he said.

"Second, as high altitudes with high wind speed there is a backblast. With this design, there is no backblast. Even if some air is coming to this, the device has three horizontal double-layered plates which can cut the air, so there be no blast. It is a blast-proof Bukhari. The third is that the device is 6 litres capacity device, and combustion is 100 per cent. So, there is no chance that it will produce carbon monoxide and other hazardous gas," he added.

DIPAS, which conducts physiological and biomedical research to improve human performance in extreme and wartime environment has also developed 'Alocal cream' that helps in preventing frostbite chilblains and other cold injuries to soldiers deployed in extremely cold areas. It has also developed a 'flexible water bottle' and 'Solar Snow Melter'

Further, Dr Varshney said, "DRDO-developed 'Alocal cream' that helps in preventing frostbite, chilblains and other cold injuries to soldiers deployed in extremely cold areas. Every year, Indian Army orders 3 to 3.5 lakh jars of this cream for troops in Eastern Ladakh, Siachen and other areas. Recently we got order of 2 crore jars from Northern command."

<https://zeenews.india.com/india/drdo-develops-heating-devices-snow-melters-to-help-indian-army-battle-extreme-cold-at-lac-2335171.html>



Mon, 11 Jan 2021

लद्दाख में कड़ाके की ठंड से जवानों को बचाएगी DRDO की 'बुखारी'

इस बुखारी को डीआरडीओ के डिफेंस इंस्टीट्यूट ऑफ फिजियोलॉजी एंड अलाइड साइंसेज (दिपास) के वैज्ञानिकों ने तैयार किया है। परंपरागत बुखारी की जगह नई बुखारी लगाने से रोजाना 10 करोड़ रुपये यानी सालभर में 3650 करोड़ रुपये की बचत होगी।

मंजीत नेगी

स्टोरी हाइलाइट्स

- इससे रोजाना 10 लीटर ईंधन की बचत होगी
- प्रदूषण घटाने में भी मददगार साबित होगी
- सेना ने 420 करोड़ रुपये के ऑर्डर दिए हैं

नई दिल्ली: लद्दाख में चीन सरहद पर तैनात भारतीय सेना के जवान दो दुश्मनों से मुकाबला कर रहे हैं। एक तरफ चीनी सेना है तो दूसरी तरफ जानलेवा मौसम। ऐसे में DRDO ने एक ऐसी बुखारी (Him Tapak) बनाई है जो विशेष तौर पर लद्दाख जैसे ठंडे इलाकों में सैनिकों के लिए है।

इससे रोजाना 10 लीटर ईंधन की बचत होगी। बुखारी मिट्टी के तेल से चलती है। इसके अलावा ये प्रदूषण घटाने में भी मददगार साबित होगी। इससे हानिकारक गैसों का उत्सर्जन भी नहीं होगा, जो अभी इस्तेमाल होने वाली बुखारी में होता है। यह नई बुखारी रूम हीटर की तरह काम करेगी, जो सैनिकों को ठंडे इलाकों में राहत देगी। इन ठंडे इलाकों में बिना हीटर के रहना संभव नहीं है।

डॉक्टर राजीव वाष्णोय (निदेशक दीपास, DRDO) ने बताया कि इस बुखारी को डीआरडीओ के डिफेंस इंस्टीट्यूट ऑफ फिजियोलॉजी एंड अलॉइड साइंसेज (दिपास) के वैज्ञानिकों ने तैयार किया है। सेना के पास इस समय 20 हजार बुखारी हैं। परंपरागत बुखारी की जगह नई बुखारी लगाने से रोजाना 10 करोड़ रुपये यानी सालभर में 3650 करोड़ रुपये की बचत होगी। सेना ने हाल ही में इस नई बुखारी के लिए 420 करोड़ रुपये के ऑर्डर दिए हैं।

5 लीटर पानी बना सकता है मेल्टर

डीआरडीओ के सतीश चौहान ने बताया कि कि इसी तरह जानलेवा सर्दों से निपटने के लिए एक खास क्रीम भी तैयार की गई है। एलोकल नाम की ये क्रीम फोस्ट बाइट और कोल्ड इंजरी से बचाने का काम करेगी। इसी तरह डीआरडीओ ने बर्फ से पानी पिघलाने के लिए सोलर स्नो मेल्टर तैयार किया है। ये सोलर स्नो मेल्टर एक घंटे में बर्फ से 5 लीटर पानी बना सकता है।

<https://www.aajtak.in/india/news/story/drdo-developed-him-tapak-new-space-heating-devices-for-the-indian-army-deployed-in-eastern-ladakh-1190101-2021-01-10>



बुखारी मिट्टी के तेल से चलती है



Mon, 11 Jan 2021

DRDO ने बनाया Him Tapak, सियाचिन की ठंड में जवानों का बनेगा साथी

रक्षा विज्ञान संस्थान के निदेशक की ओर से बताया गया कि यह एक ऐसी डिवाइस होगी, जिसे Space Heating device के तौर पर जाना जाएगा। इसके कारण बर्फीले ऊंचाई वाले क्षेत्रों में बैकब्लास्ट और carbon monoxide के कारण होने वाली विषाक्तता से जवानों की मौत नहीं होगी।

खास बातें

1. भारतीय सेना ने Him Tapak उपकरण के निर्माताओं को 420 करोड़ रुपये के ऑर्डर दिए हैं
2. सियाचिन सेक्टर में तैनात जवानों की इयूटी सबसे कठिन मानी जाती है

नई दिल्ली: अब सियाचिन, पूर्वी लद्दाख और ऐसी ही बर्फ से ढंके ऊंचाई वाले सीमा क्षेत्रों में सैनिकों जान यूं ही जाया नहीं जाएगी। DRDO ने उनकी सुरक्षा के लिए खास उपकरण विकसित किया है। भारतीय रक्षा अनुसंधान संगठन ने इस विकसित उपकरण को हिम तापक का नाम दिया है। सामने आया है कि यह उपकरण ऊंचाई वाले क्षेत्रों में जवानों के शरीर का तापमान सामान्य बनाए रखेगा, साथ ही सुनिश्चित करेगा कि अब High altitude वाले ऐसे क्षेत्रों में किसी जवान की मौत न हो।

DRDO ने बनाया उपकरण

एक तरफ देश की सुरक्षा में सीमाओं पर जवान तो जुटे ही हुए हैं, दूसरी ओर DRDO भी लगाकार उन्नत रक्षा उपकरण बनाकर सीमाओं की दुरुस्त चौकसी को सुनिश्चित कर रहा है। इसी क्रम में DRDO ने हिम तापक (Him Tapak) को विकसित किया है।



रक्षा विज्ञान संस्थान के निदेशक की ओर से बताया गया कि यह एक ऐसी डिवाइस होगी, जिसे Space Heating device के तौर पर जाना जाएगा। इसके कारण बर्फीले ऊंचाई वाले क्षेत्रों में बैकब्लास्ट और carbon monoxide के कारण होने वाली विषाक्तता से जवानों की मौत नहीं होगी।

दुर्गम इलाका और अधिक ऊंचाई होने की वजह से जम्मू-कश्मीर में स्थित सियाचिन सेक्टर में तैनात जवानों की इयूटी सबसे कठिन मानी जाती है। सीमा चौकसी जरूरी होने के कारण यहां जवानों की तैनाती होती है, लेकिन कई बार यहां से दुखद खबरें भी आती हैं।

सेना ने दिए उपकरण के लिए आदेश

भारतीय सेना ने इस उपकरण के निर्माताओं को 420 करोड़ रुपये के ऑर्डर दिए हैं। उन्हें सेना और आईटीबीपी के सभी नए आवासों में तैनात किया जाएगा, जहां तापमान कम है। उन्होंने यहां भी बताया कि DRDO ने 'अलोकल' क्रीम (Alocal cream) भी डवलप की है, जो अत्यधिक ठंड वाले क्षेत्रों में तैनात सैनिकों को frostbite, chilblains और ठंड की वजह से लगने वाली अन्य चोटों को रोकने में मदद करती है।

हर साल, भारतीय सेना पूर्वी लद्दाख, सियाचिन और अन्य क्षेत्रों में सैनिकों के लिए इस क्रीम के 3 से 3.5 लाख जार का ऑर्डर देती है।

DRDO लगातार बनाता रहा है उपकरण

DRDO ने इसके पहले भी सेना के लिए रक्षा संबंधी उपकरण के साथ उनके Wellness के लिए भी जरूरी उपकरण बनाता रहा है। इसके अलावा Corona काल में भी DRDO ने काफी योगदान दिया था। इस दौरान DRDO की हैदराबाद स्थित रिसर्च सेंटर ने कोरोना वायरस के संक्रमितों की स्क्रीनिंग करने के लिए खास मोबाइल लैब को तैयार की है थी।

मेडिकल, पैरामेडिकल और अन्य कर्मियों के लिए खास बायो सूट भी बनाया था। इस सूट में टेक्सटाइल, कोटिंग और नैनो तकनीक का उपयोग हुआ है। इसके अलावा इस सूट को सिंथेटिक ब्लड की सुरक्षा के लिहाज से तैयार किया गया था।

<https://zeenews.india.com/hindi/zee-hindustan/national/drdo-developed-him-tapak-new-space-heating-devices-for-the-indian-army/825106>



Sun, 10 Jan 2021

India's 'Super 50' plan to power next generation military R&D

A group of about 50 young and brilliant scientists working in five 'niche' and advanced defence laboratories in the country are powering India's thrust to usher in the next generation of military research and development

By Sanjib Kr Baruah

New Delhi: With India set to leapfrog to be among the world's most powerful countries in the near future, a group of about 50 handpicked Scientists, all under 35 years of age, are working overtime in R&D to develop futuristic weapon systems, platforms and equipment for the armed forces.

These 50 young scientists have been divided into five laboratories that are each dealing with a specific specialisation that will have vital military connotations in five key niche 'cutting-edge' areas. A DRDO spokesperson told ETV Bharat: "They have been given all the powers of the director of a lab which are normally given after an experience of about 25 years. They have no

direct interference from the existing structure of DRDO so that they can evolve the work and their own style of functioning.”

Begun a year ago under the Defence Research and Development Organisation (DRDO), these five labs are in Bengaluru, Mumbai, Chennai, Kolkata and Hyderabad with artificial intelligence (AI), quantum technologies, cognitive technologies, asymmetric technologies and smart materials being the core areas of research respectively in each of the labs.

An apex committee of seniors and experienced scientists and academicians guide the scientists directly.

“The scientists working in each of these labs are working in advanced defence technologies like face recognition system and Internet of Battle Things (IoBT), new shape memory alloys, smart actuators for soft robotics, smart materials-based actuators for flapping wing air vehicles, development of quantum random numbers, quantum key distribution, cognitive surveillance technologies and many advanced technologies and tasks,” the DRDO spokesperson said.

“These scientists are supported by an administration and allied staff for day-to-day operations. The scientific strength will be augmented based on the requirement.”

While the young scientists will keep on working in the labs even after they cross 35 years of age, initially all of them have been appointed for a period of five years to work on the advanced technologies. “The plan of continuation thereafter will be based on the recommendations of the review committee,” the spokesperson said.

Entrusted with leadership roles at a very young age, in addition to the general privileges of being a DRDO scientist, the young scientists have access to the opportunities, experience, infrastructure and autonomy that are needed for a creative scientific environment.

Nor is the DRDO averse to attracting global talent. “At DRDO we have a large talent pool of scientists from within the country. However, 25 per cent of the vacancies are earmarked for lateral entry which is published not only on DRDO website and portals of academic institutes of high repute for attracting international talent. DRDO will encourage talent from anywhere,” added the DRDO official. DRDO is the R&D wing of Ministry of Defence, with more than 52 laboratories and establishments.

<https://react.etvbharat.com/english/national/bharat/indias-super-50-plan-to-power-next-generation-military-r-and-d/na20210109165713836>



Sun, 10 Jan 2021

ADE steps into new decade with planeloads of critical projects

By Anantha Krishnan M

Bengaluru: The Aeronautical Development Establishment (ADE) is warming up to undertake a series of missions in the year 2021, leaving behind the uncertainties of a pandemic year that also saw minor setbacks.

ADE which celebrated its 62nd Raising Day recently has been given the mandate of developing variants of subsonic missiles and unmanned platforms.

According to sources, ADE scientists are now gearing up for the second test of the Nirbhay variant – the Indigenous Technology Cruise Missile (ITCM).



Nirbhay missile's (in pic) variant ITCM will be ready for another flight with a desi engine soon.

The ICTM-02 with the Small Turbo Fan Engine (STFE) will undertake another flight trial in the next few months. The first mission of ICTM with STFE wasn't a complete success.

ADE is also poised to hand over the first Full Mission Simulator (FMS) for Light Combat Aircraft Tejas to the Indian Air Force (IAF).

IAF Test Pilots have been using the FMS at ADE facilities for some years now, and based on their feedback ADE made several upgradations to its systems.

Sources said that the FMS from ADE requires minimum maintenance and offers long and realistic flight training options on ground for squadron pilots.

A new facility has been earmarked for housing FMS systems, which is likely to be inaugurated this year.

Rustom-II

On the unmanned front, the scientists are burning the midnight oil to meet the IAF requirements for Rustom-II (Tapas), the medium-altitude long-endurance (MALE) unmanned aerial vehicle (UAV).

Rustom-II has achieved eight-hour flight endurance at 22,000 feet and efforts are now on to take the endurance closer to 24 hours at 30,000 feet, as per the user mandate.

Last year, Rustom-II had flown in the Satellite Communication (SATCOM) mode for the first time. It had also flown with the long range electro optical payload.

Rustom-II has already flown with a 250-km line of sight, sources said.

A proposal for a high-altitude long-endurance (HALE) UAV is likely to be sent to the government this year, for which the engine will come from Hindustan Aeronautics Limited (HAL).

On Abhyas – the High-speed Expendable Aerial Target (HEAT), sources said that the open and closed loop trials have been completed. The Transfer of Technology (ToT) for Abhyas is expected to happen this year.

Abhyas can be launched from a zero-length launcher by two 68 mm rockets, and fly up to an altitude of 5 km at a speed of 180 met/sec. The platform has a maximum endurance of 45 minutes and weighs around 70kg. This low cost platform has modular construction, is easy to handle, is equipped with auto-pilot and a simple launcher, and can be deployed in a decoy role as well.

Work on the submarine-launched cruise missile too is in progress, with several systems under production now.



More flight trials of Rustom-II this year to prove various endurance, range and altitude requirements set by users.



Transfer of Technology for Abhyas expected this year.



DRDO DG (Aero Clusters) Dr Tessa Thomas and ADE Director Dr S Venugopal have their tasks cut out with multiple projects on mission mode.

Flagship Mission

ADE was nominated to undertake work on India's ambitious and less-talked-about unmanned combat aerial vehicle (UCAV) last year. A small team of scientists has been working on a mini-variant of the mission for the last one year.

The Stealth Wing Flying Testbed (SWiFT) UAV, which is the precursor technology demonstrator project of UCAV, will see some development flights this year.

Interestingly, the name 'Ghatak' given to the UCAV, seems to have been dropped now.

Sources confirm that UCAV is likely to become a flagship programme for India, with the government completely banking on the capabilities promised by the DRDO top brass.

The Cabinet Committee on Security (CCS) nod for the UCAV too is expected this year, based on the results of SWiFT.

The Indian Navy too is keen on a deck-based UCAV, sources said.

Armed roles for Rustom-I (R-I) too are being looked at currently and the scientists would begin testing of new systems and payloads for the same this year.

The Border Security Force (BSF) and the Central Reserve Police Force (CRPF) have shown interest in such systems.

ATR expansion

The Aeronautical Test Range (ATR) at Challakere in Chitradurga, which is under the command of ADE, will see some upgradation activities this year.

The runway length is likely to be extended from 2 km to 3 km, in addition to the setting up of a high-power computing facility.

Defence Research and Development Organisation Chairman Dr G Satheesh Reddy, Director-General (Aero Cluster) Dr Tessa Thomas and ADE Director Dr S Venugopal are said to have spelt out their vision for the lab during their Foundation Day addresses.

Established in 1959, ADE began its journey as an independent DRDO lab, with aeronautical projects such as Nandi hovercraft and Dart target.

As reported by Onmanorama during Defence Expo 2020, ADE scientists have already begun work on the LRLACM (Long Range Land Attack Cruise Missile), which will have a range of over 1,000 km.

The Defence Acquisitions Council (DAC) had cleared the proposal for LRLACM in July last year.

ADE steps into a new decade with loads of exciting and challenging missions. While the top brass wants unique products that can work miracles for the armed forces, ADE scientists are hoping to get their act together and do the right things, the right way at the right time.

"Two hundred per cent commitment is the key," says an official.

(The writer is an independent aerospace and defence journalist, who blogs at Tarmak007 and tweets @writetake.)

<https://www.onmanorama.com/news/india/2021/01/09/ade-steps-into-new-decade-with-planeloads-of-critical-projects.html>

Mon, 11 Jan 2021

Gear system for Tapas, SWiFT drones handed over at DRDO lab in Chennai

The handing over ceremony of Retractable Landing Gear Systems for Tapas and SWiFT drones and 18 types of filters for P-75 Submarine took place on Sunday at the Combat Vehicles Research and Development Establishment (CVRDE), Chennai

Chennai: The handing over ceremony of Retractable Landing Gear Systems for Tapas and SWiFT drones and 18 types of filters for P-75 Submarine took place on Sunday at the Combat Vehicles Research and Development Establishment (CVRDE), Chennai.

The ceremony was held in the presence of Dravida Munnetra Kazhagam (DMK) MP Kalanidhi Veeraswamy and Parliamentary Standing Committee Member for Defence and DRDO chief Dr G Sathesh Reddy.

Tactical Airborne Platform for Aerial Surveillance-Beyond Horizon-201 or Tapas BH-201 is a long-endurance unmanned aerial vehicle which used to be previously referred to as Rustom-II. (ANI)



Retractable Landing Gear Systems were handed over for Tapas and SWiFT drones and 18 types of filters for P-75 Submarine at CVRDE, Chennai. Image Credit: ANI

(This story has not been edited by Devdiscourse staff and is auto-generated from a syndicated feed.)

<https://www.devdiscourse.com/article/headlines/1400765-gear-system-for-tapas-swift-drones-handed-over-at-drdo-lab-in-chennai>

Indigenously developed landing gear systems for UAVs handed over to Navy by CVRDE

Chennai: Retractable landing gear systems for unmanned aerial vehicles, indigenously built by the Combat Vehicles Research and Development Establishment here, a unit of the DRDO, were handed over to the [Navy](#) on Sunday.

The CVRDE, engaged in design and development of armoured vehicles and combat systems, said it designed and built the three tonne Retractable Landing Gear Systems for TAPAS Unmanned Aerial Vehicle and a one tonne landing gear system to the SWiFT UAV under the Centre's 'Atmanirbhar' programme.

The gear systems were developed at CVRDE facility in suburban Avadi, a press release said.

Defence Research and Development Organisation (DRDO) Chairman G Satheesh Reddy, speaking on the occasion, said it was an important achievement and extended his congratulations to the CVRDE.

Besides the landing gear systems, as many as 18 types of state-of-the-art indigenously developed hydraulic lubrication and fuel filters were also handed over to the Navy at the event.

The filters, also designed and developed at CVRDE, were manufactured with support from industries under the Centre's 'Make in India' initiative while the funding was from the DRDO and the Navy, the release said.

Later, Reddy reviewed the various projects of CVRDE and appreciated the efforts of the establishment for the progress achieved, the release added.

(This story has not been edited by Devdiscourse staff and is auto-generated from a syndicated feed.)

<https://www.devdiscourse.com/article/headlines/1400764-indigenously-developed-landing-gear-systems-for-uavs-handed-over-to-navy-by-cvrde>



Representative image Image Credit: ANI

DRDO lab hands over landing gear systems, 18 types of filters for P-75 Submarines to Indian Navy in Chennai

While the retractable landing gears were handed over to the Aeronautical Development Establishment (ADE), another laboratory of the Defence Research and Development Organisation (DRDO), the filters were handed over to the Indian Navy, the defence ministry's statement noted

New Delhi: The CVRDE, a laboratory of the DRDO, on Sunday handed over retractable landing gears for Tapas and Swift unmanned aerial vehicles (UAVs) as well as 18 types of filters for P-75 submarines to its users, an official statement said. While the retractable landing gears were handed over to the Aeronautical Development Establishment (ADE), another laboratory of the Defence Research and Development Organisation (DRDO), the filters were handed over to the Indian Navy, the defence ministry's statement noted.

The handing over ceremony took place in Chennai in the presence of Lok Sabha MP Kalanidhi Veeraswamy, member of Parliamentary Standing Committee on Defence, and G Satheesh Reddy, Chairman, DRDO, said the statement. The aforementioned products have been designed and developed by Combat Vehicles Research and Development Establishment (CVRDE), the statement noted.

The CVRDE has developed three-ton and one retractable landing gear for Tapas and Swift, respectively, it mentioned.

"Eighteen types of indigenously developed hydraulic, lubrication, sea water and fuel filters for P-75 Submarine were designed and developed by CVRDE. These filters are now being manufactured with the help of Indian Industries based at Hyderabad and Chennai," it stated.

<https://www.news18.com/news/india/drdo-lab-hands-over-landing-gear-systems-18-types-of-filters-for-p-75-submarines-to-indian-navy-in-chennai-3269879.html>



The handing over ceremony took place in Chennai in the presence of Lok Sabha MP Kalanidhi Veeraswamy, member of Parliamentary Standing Committee on Defence, and G Satheesh Reddy, Chairman, DRDO. (Image: Twitter)

Pune: Army Chief General Naravane visits Bharat Forge, ARDE

During his visit to Bharat Forge, the Army chief General MM Naravane was updated on several defence-related projects in progress, including the Aerospace Manufacturing Factory, Ultra-Light Howitzers, protected vehicles, small arms and ammunition

Pune: As part of his three-day visit to Pune, Chief of Army Staff (COAS) General MM Naravane, on Saturday, visited the Bharat Forge and the Armament Research and Development Establishment (ARDE) in Pashan, a Defence Research Development Organisation (DRDO) facility, to observe various research and development projects aimed at the modernisation of the Indian Armed Forces.

During his visit to Bharat Forge, the Army chief was updated on several defence-related projects in progress, including the Aerospace Manufacturing Factory, Ultra-Light Howitzers, protected vehicles, small arms and ammunition. The COAS also visited the Kalyani Centre of Technical and Manufacturing Innovation, where he was briefed on 3D printing, Unmanned Ground Vehicles (UGVs), nanotechnology, artificial intelligence and thermal imaging, among other innovations.



Army Chief MM Naravane.

General Naravane also visited the ARDE, a DRDO facility working to equip the Armed Forces with various armament systems. At ARDE, General Naravane was briefed on the latest initiatives, research and progress regarding various trials conducted of the equipment and the ammunition being developed by the ARDE. These included the DRDO's Advanced Towed Artillery Gun System (ATAGS), Pinaka rocket system, 10-metre foldable bridge, laser guided anti-tank guided missile systems and new families of munitions.

<https://indianexpress.com/article/cities/pune/pune-army-chief-general-naravane-visits-bharat-forge-arde-7139995/>



Pune: Army Chief General Naravane Visits ARDE, Bharat Forge

Pune: The Chief of Army Staff, General MM Naravane visited the Bharat Forge and Armament Research & Development Establishment (ARDE), Pune to witness their Research and Development efforts towards modernising the Indian Armed Forces.

The Army Chief during his visit to Bharat Forge was updated on the various defence-related projects underway, including the Aerospace Manufacturing Factory, Ultra-Light Howitzers, protected vehicles, small arms and ammunition.

The COAS also visited the Kalyani Centre of Technical and Manufacturing Innovation where he was briefed on 3D Printing, Unmanned Ground Vehicles, Nano Technology, AI, Thermal Imaging etc.

ARDE is a premium institution of the Defence Research Development Organisation (DRDO) working to equip the Armed Forces with world-class armament systems. The Army Chief during his visit to ARDE was briefed regarding the latest initiatives, research and progress on various trials conducted of equipment and ammunition being developed by them including the ATAGS, PINAKA, 10 metre foldable bridge, Laser guided anti-tank guided missile systems and new family of munitions.



This visit of General MM Naravane is seen as a push towards making the Armed Forces self-reliant in consonance with the Aatma Nirbhar Bharat initiative by the Government.

<https://www.punekarnews.in/pune-army-chief-general-naravane-visits-arde-bharat-forge>



Sun, 10 Jan 2021

Government's defence-related policies & declarations in Budget are likely to be positive: Siddharth Mishra, CMD, Bharat Dynamics

By Jitesh Kumar

Siddharth Mishra, Chairman and Managing Director, Bharat Dynamics Limited, talks about the government's approval for export of Akash Missile system, expectations about defence systems that can be approved for export purposes, new order related to ATGM, order book, revenue visibility, 101 negative lists of defence products, business outlook and budget expectations during an exclusive interview with Swati Khandelwal, Zee Business. Edited Excerpts:

Q: The government has allowed export of Akash Missile system to other countries. How big this development for you is and what kind of opportunities do you see in it? Also, have you started discussions with some other countries as export partners?

A: Cabinet Committee on Security (CCS) has just approved the export of Akash Missile system and this is a very big opportunity for Bharat Dynamics at the same time it is national pride. So far, we were just buying the weapon systems and now, we have this contemporary weapon system, which is a surface-to-air missile system and is made of very good technology in this category. So, we will export this system. The government has now allowed us to work with many countries and discussions have started with many countries. I am very hopeful that in a few days we will be successful in it. There are some channel partners from other countries in this and after having talks with them discussions with the MoDs of other countries have started. We are very hopeful that we very soon we will get some orders too. Actually, we have also supplied this Akash Missile system in large numbers to the Indian Army and Indian Air Force. Based on good performance and reports from the Indian defence forces, it is a good opportunity to export them to foreign countries.



"We have started exporting. Our segment is anti-tank guided missiles, torpedoes, surface-to-air missiles, air-to-air missiles. And we have already taken clearance of many systems from the stakeholders and we have grown significantly. "

Q: Is there a possibility of some other defence exports being cleared? Are you looking at any developments here and how soon it will take place?

A: We have started exporting. Our segment is anti-tank guided missiles, torpedoes, surface-to-air missiles, air-to-air missiles. And we have already taken clearance of many systems from the stakeholders and we have grown significantly. The next weapon system that we are seeing is the Astra Missile system, which will be displayed to people during the Aero Show. We will also try that Astra weapon system is also cleared for export. Apart from this, we are already started selling the light-weight torpedoes to other countries and we have won many contracts and have also completed several contracts. We also want to sell anti-tank guided missile (ATGM) and CMDS systems to other countries and they are also likely to be cleared for export purposes. Recently, we also received orders to integrate some missiles from Israel Aerospace Industries (IAI). Ever since India made the policy to export the weapon system, we are very encouraged and are ready to export it. So, a very big opportunity is visible to us.

Q: You have received the orders of Rs 633 crore. What are the details here and what is the execution timelines for it?

A: We have received these orders for anti-tank guided missile (ATGM) and we are supposed to complete it within a year. We are almost ready for it and it is likely to be completed by this year's end. We are expecting a greater number of orders related to these missiles. Interestingly, this anti-tank guided missile (ATGM) has indigenized by about 96% and this is a good opportunity and we also specialized in making it and can make it in big numbers. So, we will be able to complete this order by the end of this year.

Q: What are the current order book and the revenue visibility from it? What kind of new orders do you expect to get in the coming quarters?

A: As of today, the order book of the company stands at around Rs 8100 crore and many negotiations have reached an advanced level. Talks related to anti-tank guided missiles and Akash missile systems are at advanced levels and we are expecting the same with Astra. We have also developed a new weapon system Smart Anti-Airfield Weapon (SAAW) in collaboration with DRDO and are expecting orders for the same. Plus, you would have heard that we along with DRDO have completed the trials of Nag and are expecting orders for it well. So, we are expecting orders worth Rs 25,000 crore in the next 3-4 years, which will be executed in the 4-5 years. Of the current Rs 8,100 crore orders, we are expecting to complete orders of Rs 3,200 crore this year and balance will be completed in the next 2-3 years. Meanwhile, we will also keep adding new orders. We are expecting to complete orders worth Rs 3,600-4,200 crore next year and in the next-to-next year in 2022-23, our growth will be more than 10%.

Q: Government is likely to add more items to the negative list for defence soon. How big an opportunity this can be for you?

A: Recent policies of the government of India are very encouraging and several new policy and directives have been issued, which is improving the defence sector. And, the 101 negative list that was released was a very big decision of the government that says that these items will not be sourced/ imported from the foreign market. Our very important item was listed in this list of 101 items and they are Akash Weapon System, Astra Weapon System and few torpedoes. The next list that will come out and the government is working it and has also taken advice from us. In our recommendation, we have named other weapon systems that we are making and those, which are at the advanced stage of trials. When the new list will be out, it is likely to include more ATGMs, Torpedoes, air-to-surface missiles and their inclusion will increase our opportunities for us. Besides, we are also working with many big companies to bring new technologies and will bring them to India under Transfer of technology (ToT) and manufacture them in India and also export them. Few declarations will be made at the Aero Show and negotiations have been reached for those, which are at advanced stage and talks have advanced. The Aero Show is scheduled in the first week of February in Bangalore.

Q: Please give growth plans & business outlook for 2021?

A: As I have said that we have an order book of Rs 8,100 crore and we will get a few more orders by the end of this year. In 2021, I expect that we will be able to reach to the last year's level and good growth is expected in 2022. Also, because we will have order book and executions, so, we are expecting that will try to keep the profit level near the last year's level. So, our margins will be good, execution will also be good and the order book will also improve.

Q: What are your expectations, specifically for defence, from this year's budget 2021-22?

A: As you know the government of India has started Atmanirbhar Bharat campaign, so we are expecting some policies related to it. At the same time, we also expect that if the defence budget is increased, certainly there will be an improvement in our orders. I am quite confirmed that the government's defence-related policies and declarations will be very positive.

<https://www.zeebiz.com/companies/news-government-s-defence-related-policies-declarations-in-budget-are-likely-to-be-positive-siddharth-mishra-cmd-bharat-dynamics-145545>

Defence News

Defence Strategic: National/International



Press Information Bureau
Government of India

Ministry of Defence

Fri, 08 Jan 2021 1:10PM

Raksha Mantri Shri Rajnath Singh launches online portal for items to be purchased against firm demand from CSD

Raksha Mantri Shri Rajnath Singh today launched the Online Portal <https://afd.csdindia.gov.in/> for purchase of items Against Firm Demand (AFD) from CSD Canteens. The objective of the launch of this Online Portal is to enable about 45 Lakh CSD beneficiaries including Serving & Retired persons from Armed Forces and Serving Civilian Defence employees to purchase AFD-I items (like Cars, Motorcycles, Washing machines, TVs, Fridges etc) from the comfort of their home.

Appreciating the launch of this portal, Raksha Mantri conveyed the commitment of the Govt towards the welfare of all Jawans and Officers of Armed Forces and the Veterans. He complimented the entire team for the successful completion of this project. Shri Rajnath Singh said that the project was in line with the vision of Digital India, enunciated by Prime Minister Shri Narendra Modi. The ceremony was held at New Delhi. Live streaming of delivery of Cars/ Motorcycles was done from Mumbai, New Delhi, Ahmedabad and Jaipur for those who booked them during the trial run of the portal afd.csdindia.gov.in, which has been formally launched now and will facilitate faster and hassle-free experience to all the beneficiaries.

Chief of Defence Staff General Bipin Rawat, Chief of the Naval Staff Admiral Karambir Singh, Chief of the Air Staff Air Chief Marshal RKS Bhaduria and Defence Secretary Dr. Ajay Kumar along with other dignitaries attended the function.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1687045>



पत्र सूचना कार्यालय
भारत सरकार
रक्षा मंत्रालय

Fri, 08 Jan 2021 1:10PM

रक्षा मंत्री श्री राजनाथ सिंह ने 'अगेंस्ट फर्म डिमांड' खरीदी जाने वाली वस्तुओं के लिए कैंटीन स्टोर्स डिपार्टमेंट-सीएसडी के ऑनलाइन पोर्टल का उद्घाटन किया

रक्षा मंत्री श्री राजनाथ सिंह ने कैंटीन स्टोर्स डिपार्टमेंट-सीएसडी से अगेंस्ट फर्म डिमांड (एएफडी) की वस्तुओं की खरीद के लिए आज ऑनलाइन पोर्टल <https://afd.csindia.gov.in/> का उद्घाटन किया। इस ऑनलाइन पोर्टल की शुरुआत का उद्देश्य लगभग 45 लाख सीएसडी लाभार्थियों को ऑनलाइन खरीद के प्रोत्साहित करना है, जिसमें सशस्त्र बलों के सेवारत और सेवानिवृत्त व्यक्ति तथा सिविल डिफेंस कर्मचारी शामिल हैं। सभी लाभार्थी इस पोर्टल के जरिये 'अगेंस्ट फर्म डिमांड' की श्रेणी में आने वाले उत्पाद जैसे कार, मोटरसाइकिल, वाशिंग मशीन, टीवी और फ्रिज आदि की खरीद कर सकते हैं।

इस पोर्टल के शुभारंभ की सराहना करते हुए, रक्षा मंत्री ने सभी जवानों और सशस्त्र बलों के अधिकारियों तथा सेवानिवृत्त व्यक्तियों के कल्याण के प्रति सरकार की प्रतिबद्धता को व्यक्त किया। उन्होंने इस परियोजना के सफल कार्यान्वयन के लिए पूरी टीम की सराहना की। श्री राजनाथ सिंह ने कहा कि, यह परियोजना प्रधानमंत्री श्री नरेन्द्र मोदी के दृष्टिकोण डिजिटल इंडिया की सोच के अनुरूप थी।

इस समारोह का आयोजन नई दिल्ली में किया गया था। कारों और मोटरसाइकिलों की डिलीवरी की लाइव स्ट्रीमिंग मुंबई, नई दिल्ली, अहमदाबाद और जयपुर से उन लोगों के लिए की गई थी, जिन्होंने सीएसडी पोर्टल afd.csindia.gov.in के ट्रायल रन के दौरान अपनी बुकिंग कराई थी। इस पोर्टल को अब औपचारिक रूप से शुरू कर दिया गया है और यह तेजी से खरीद की सुविधा उपलब्ध कराएगा। यह पोर्टल सभी लाभार्थियों को तेज और परेशानी मुक्त अनुभव प्रदान करेगा।

इस समारोह में चीफ ऑफ डिफेंस स्टाफ जनरल बिपिन रावत, चीफ ऑफ नेवल स्टाफ एडमिरल करमबीर सिंह, चीफ ऑफ द एयर स्टाफ एयर चीफ मार्शल आरकेएस भदौरिया और रक्षा सचिव डॉ. अजय कुमार सहित अन्य गणमान्य लोग भी शामिल हुए।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1687088>

India considers lease options to upgrade army as military budget set to be cut in 2021

India's Defence Ministry modified its procurement coverage final 12 months, paving method for leasing of army tools. In the previous few months, New Delhi has rented drones and naval weapons from Washington.

India will equip its warships with three 127-mm medium calibre naval gun from the US navy. Final month, New Delhi additionally inducted two American Sea Guardian high-altitude, lengthy endurance drones into its navy on lease.

What's extra, India's Defence Ministry has confirmed that six Airbus A320 passenger jets – previously operated by the nation's nationwide airliner Air India – shall be upgraded into early warning and management (AEW&C) plane. These planes detect plane, ships, and automobiles at lengthy ranges.

These army upgrades come as a part of the nation's Defence Procurement Plan, which got here into impact in October 2020.

Consultants see this alteration in coverage as a short-term measure to plug gaps in India's forces.

"I believe the latest choice to lease a number of the American weapons is pushed extra by the disaster on the jap Ladakh and the necessity to plug the gaps within the operational preparedness," says Laxman Kumar Behera, affiliate professor on the Particular Centre for Nationwide Safety Research, Jawaharlal Nehru College.

Sputnik reported final 12 months that India's Defence Ministry is predicted to chop its funds by over 30 % in March 2021. "The federal government's precedence will bear a serious change... This isn't restricted to this 12 months ... Well being will obtain precedence... Defence will take a extreme hit," an Indian authorities finance official informed Sputnik.

India's new defence acquisition programme describes leasing as a "means to own and function (a army) asset with out proudly owning the asset," including that it offers a helpful method "to substitute enormous preliminary capital outlays with periodical rental funds." "Leasing offers a level of cushion to amass sure capabilities with out having to personal them by way of the life-cycle," Behera continued, alluding to the restricted defence funds because of the pandemic-induced financial slowdown.

India's Air Pressure can be going through a scarcity of air-to-air refuelling plane and is predicted to lease extra as as quickly as potential. New Delhi can be anticipated to lease mild utility helicopters and coach plane. Deputy Chief of India's Air Pressure Air Marshal Sandeep Singh confirmed in November 2020 that coach jets will be procured for 4 to 5 years till the state-run Hindustan Aeronautics Restricted completes its ultimate trials of HTT-40 jets.

"So far as leasing is anxious, this feature needs to be used solely to evaluate a given platform previous to acquisition and for pressing induction avoiding possession of untested methods," Rahul Okay Bhonsle, defence analyst and retired Indian Military Brigadier, suggested.

India beforehand leased a Russian Chakra nuclear sub versus shopping for one, so it might afford to spend its cash on different army upgrades. Indian Navy officers have confirmed ongoing efforts to get its palms on one other nuclear-powered submarine from Moscow after India signed a \$three billion deal in 2019. The brand new submarine is predicted to reach by 2025.



“Leasing isn’t at all times financially helpful within the long-term. Thus the army of main powers like India, which is investing in strategic capabilities, ought to quite go in for leasing as cease hole,” Bhonsle emphasised.

The Huge Query?

Presently, the Indian Air Pressure is going through a scarcity of round 200 fighter jets as its present fleet is all the way down to 30 squadrons – method beneath the sanctioned energy of 42 squadrons (18 fighters in every squadron). A parliamentary panel estimates that India would want all 42 squadrons if battle broke out on two fronts, particularly with China and Pakistan. Regardless of efforts to handle the shortfall, the Indian authorities has solely concluded one tender prior to now decade – shopping for 36 Rafale fighter jets from France in 2016.

In October 2020, the then US Defence Secretary Mark Esper stated throughout a 2+2 ministerial degree dialogue in New Delhi that the US deliberate to promote extra fighter planes and drones to India, whereas India has proven curiosity in Boeing’s twin engine multi-role fighters F-15EX, contradicting America’s proposal of F-16 and F-18. Boeing Vice President Pratyush Kumar said in February 2020 that the corporate was looking for a license to export the F-15EX to India.

Amit Cowshish, former finance advisor to the Indian Defence Ministry, agreed that leasing may also help to beat the growing scarcity of fighter plane within the Indian Air Pressure (IAF), however it relies on not less than three elements.

The primary issue is the provision of the requisite variety of plane for dry lease with the leaser. Secondly, it’s extraordinarily unlikely, if not inconceivable, that India’s Defence Ministry would go for a moist lease, which requires the leaser to supply each the plane and crew with the IAF retaining operational management; Cowshish defined.

“That being the case, the plane to be taken on dry lease for making up the scarcity must be of a kind that’s already being flown by the IAF pilots, or with which they’re acquainted, in order that they may function them right away with out having to undergo any coaching. That is additionally vital from the purpose of sustaining the fleet of the leased plane,” Cowshish underlined.

Thirdly, whereas leasing doesn’t entail massive capital funding, like an outright acquisition, the lease quantity and different related expenditures on upkeep, for instance, might add as much as a considerable quantity, relying on the variety of plane taken on lease. Subsequently, the affordability of exercising this feature may even need to be assessed, the previous finance advisor concluded.

<https://www.defencenews.in/article/India-Considers-Lease-Options-to-Upgrade-Army-as-Military-Budget-Set-to-be-Cut-in-2021-1033393>



Sun, 10 Jan 2021

India’s 2021-22 Defence budget needs honest financial reckoning, not empty rhetoric

Over the decades, successive finance ministers have routinely promised that there will be no shortage of funds for the armed forces, but the reality remains otherwise

By Amit Cowshish

India’s military faces a massive financial predicament in the fiscal year 2021-22, as it remains locked in a costly faceoff with China’s People’s Liberation Army (PLA) along the Line of Actual Control (LAC) in eastern Ladakh.

To meet this forbidding challenge, that shows no sign of abating, all three services are believed to have already executed emergency purchases of over \$2 billion since June 2020 to plug enduring equipment and ammunition shortages, adversely upsetting budgetary calculations. It is undeniable

that the services will require vast sums of money in the upcoming budget on February 1 to operationally sustain them in the faceoff with China that could conceivably continue for years.

The military's financial demands come at a time when India is deep in recession, following the serious financial downturn due to the COVID-19 pandemic. Though some green shoots are visible in the economy, these are unlikely to shore up government revenues in the coming fiscal in any substantial measure. Besides, to revive the economy, funds will need to be invested across several sectors from manufacturing to infrastructure, placing the government in a quandary over where it can possibly source funds to adequately finance the military.



Indian army officers stand on vehicles displaying missiles during the Republic Day parade in New Delhi, India, January 26, 2016. REUTERS/Altaf Hussain

Pompous pronouncements

Over decades, successive finance ministers have routinely promised that there will be no shortage of funds for the armed forces, and all additional monies which they may require will be provided. Totally disregarding reality, then defence minister Nirmala Sitharaman had unbelievably declared in July 2018 that there was neither a shortage of funds nor of ammunition, when there was a paucity of both. The minister's optimism, in fact, was in direct contrast to the Defence Parliamentary Standing Committee on Defence (SCoD) that had publicly affirmed a shortage of funds for the military.

Sitharaman's declaration was as ironic as it was surprising, as in the financial year 2018-19 there was a yawning gap of Rs 1,12,137 crore between the requirement projected by the services and the funds allotted to them. Of this, Rs 76,766 crore was the shortfall in allocation for capital expenditure that largely caters for force modernisation. What the then Indian Army's vice-chief Lieutenant General Sarath Chand had told the SCoD that year is more telling.

"It (the budget) is barely enough to cater to the rise in expenses on account of inflation and does not even cater for taxes," Lieutenant General Chand had told the Committee. He had stated that Rs 21,338 crore capital allocation for the army's modernisation was "insufficient to cater for the committed payment" of Rs 29,033 crore for 125 ongoing schemes and for ammunition and equipment procurement".

The vice chief had further revealed that 68% of the army's equipment was in the 'vintage category', 24% in the current and 8% in the state of art grouping, and consequently, insufficient funds were certainly not going to remedy this worrying state of affairs.

The Committee's prescient warning that the shortage of funds could lead to a default in payment for equipment to vendors, proved true in January 2019. This was when the ministry of defence (MoD) withheld payment of about Rs 20,000 crore to the state-owned Hindustan Aeronautics Limited (HAL) in order to pay overseas vendors and obviate punitive contractual provisions. Nobody asked, and no explanations were given, as to how the situation was managed the following year when the allocation to the services again fell short of their requirement by Rs 92,412 crore.

The recurring financial crisis to sustain the country's military is as much on account of the government's inability to meet the services' financial requirement, as on account of the failure to acknowledge that finances will always be finite. Therefore, financially unviable, and disjointed expenditure plans continue to be made, with each service independently pursuing its own vision of the future.

The Chief of Defence Staff (CDS) General Bipin Rawat appointed exactly a year ago as head of the all-powerful department of military affairs (DMA) was expected to ensure service jointness and prioritisation in defence planning, especially with regard to financing, but the situation remains unaltered.

In fact, the DMA has floated ideas like a short tour of duty for military service and a graded pension structure to save on salaries and pensions which collectively account for almost half the

annual defence outlay. But these are contentious proposals, which even if implemented, can in no way provide any immediate financial relief. Therefore, as things stand, the endless tussle by each individual service to secure a larger share of the defence budget is likely to continue unabated.

The resultant emasculation of the department of defence (DoD) too will have repercussions and add to the overall financial disarray. The DoD, for its part, continues to labour under the misconception that delegating more financial powers to the services, tweaking procurement procedures and enforcing indigenisation by banning defence imports will somehow magically solve the problem.

Reality check

The reality, however, is that procedures and policies can only produce results provided there are sufficient funds available to secure the desired military capabilities which too remain somewhat undefined and amorphous. This is also true of *atmanirbharta* or indigenisation, which in theory is desirable, but not always a cost-effective alternative to imported materiel.

Over decades, watchdog bodies like the Comptroller and Auditor General (CAG) have detailed how costly it is to indigenously license-build platforms like fighters, light utility helicopters, main battle tanks and even assault rifles compared to directly importing them.

Indian defence planners somehow fail to realise that creating industrial facilities domestically to manufacture these platforms and equipment needs massive and sustained investment by the manufacturers and large budget outlays to buy the indigenously manufactured material. Both of these are problematic.

This continuing financial crisis has been further exacerbated by the lack of an efficacious financial management system in the MoD to ensure that funds needed for material acquisitions, alongside recurring expenditure on salaries, rations, ammunition and maintenance of infrastructure and equipment are indeed available.

This drawback is responsible for the growing mismatch between the financial requirement projected by the armed forces and the outlays allocated to them. This gap has widened from Rs 23,014 crore in 2010-11 to Rs 1,03,535 crore in 2020-21 after reaching its peak in 2018-19.

However, unfazed by this shortfall, the services formulated a five-year plan in July 2017 that envisaged an outlay of a whopping Rs 26.84 lakh crore. This projected astronomical amount would have necessitated doubling the annual defence budget that was – and remains – a virtual impossibility, considering that the decadal average increase in the country's military outlay is merely eight to 10%. It is incomprehensible to imagine what goals are served by such outlandish planning that will, for decades, remain in the realm of fantasy.

Defence analysts argue that it is not for the government to meet the services' requirement as security is critical and of paramount importance. That is true; but only partially, as the government is also responsible for other equally vital sectors like health, education, internal security, and infrastructure. This, in turn, will continue to compel all governments to walk a tightrope between the needs of all these other sectors and defence in the foreseeable future.

In conclusion, this can only mean that while there may be an above average hike in the defence budget for the financial year 2020-21, it is bound to fall short of the services' desired requirement.

For this to be reversed or somewhat mitigated, financial realities need to be acknowledged and furthermore implemented practically in defence planning. The title of the 1968 Jerry Lewis Hollywood hit could provide a clue to its resolution: *Don't Raise the Bridge, Lower the River*.

(Amit Cowshish is a former financial advisor (acquisitions), Ministry of Defence.)

<https://thewire.in/security/india-defence-budget-military-spending-honest-recognition>

Additional coastal radar stations to be completed by November 2021

*Strengthening coastal surveillance can prevent a
repetition of terror attacks such as Mumbai 26/11*

By Dinakar Peri

New Delhi: The establishment of 42 additional radar stations along the coast to strengthen coastal surveillance and prevent a repetition of terror attacks such as that on 26/11 (2008) in Mumbai is likely to be completed by November 2021, according to the Defence Ministry. The project is being implemented by Bharat Electronics Limited (BEL) for the Indian Coast Guard.

“Post implementation of Phase-I and Phase-II of the chain of Static Sensors, the Indian coastline will be under the surveillance of 104 radar stations being one of the largest of such network,” the Defence Ministry said in its annual report. The contract with BEL was concluded on January 15, 2020 with a cost of ₹1,814.32 crore.

In November 2020, BEL concluded a deal with Denmark-based company Terma to make their SCANTER 2001 radars in India under a transfer of technology agreement. “Continuing our well-established partnership from Phase I into Phase II, Terma will be providing additional technology transfer to BEL for manufacturing the radars required for Coastal Surveillance System (CSS) Phase II project. Most of the modules and spares etc. will be made by BEL and its vendors in India. The complete installation, commissioning and life cycle support of the radars is also going to be undertaken by BEL,” Anupam Mathur, vice president and general manager, Terma Asia Pacific, had said at the time of the deal.



Representational image | Photo Credit: G. Krishnaswamy

The Indian Navy’s Gurugram-based Information Management and Analysis Centre (IMAC), which was set up after the 26/11 Mumbai terror attacks, is the nodal agency for maritime data fusion. The IMAC, which became operational in 2014 at a cost of ₹450 crore, is the nodal centre of the National Command Control Communication and Intelligence System (NC3I), which was established to link the operational centres and lower echelons of the Navy and Coast Guard spread across the country’s coastline, including the island territories.

Under Phase-I of the CSS, 46 coastal radar stations have been set up, and under Phase-II, 38 static radar stations and four mobile radar stations are being set up. Plans are also afoot to convert the IMAC into a multi-agency National Maritime Domain Awareness centre. Some of the Indian Ocean littoral states such as Mauritius, Sri Lanka and Seychelles have also been integrated into the CSS, and discussions are on with several more countries.

<https://www.thehindu.com/news/national/additional-coastal-radar-stations-to-be-completed-by-november-2021/article33537915.ece>



Sun, 10 Jan 2021

Goa Shipyard – India’s key security partner – scaling new heights in warship building

Goa Shipyard Limited (GSL) was established by the Portuguese, on 26th November 1957 as ‘Estalérios Navais de Goa’. It started functioning under its own Board of Directors since September 26, 1967. Over the years, this public sector shipyard has been consciously shaped, developed and upgraded to become one of the country’s premier defence shipbuilding hubs catering for maritime security requirements of the country and its friendly neighbours. Backed by a strong design house and superior quality ships, it has emerged as the fastest growing shipyard of the country.

Perspective

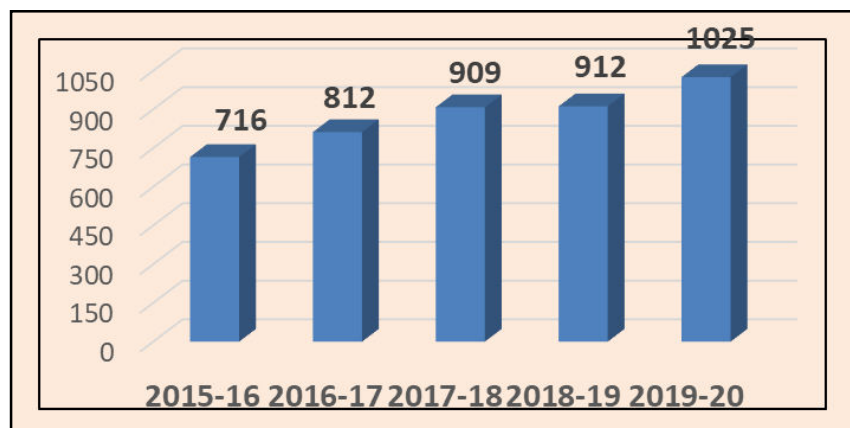
Having built and delivered 214 ships and 157 GRP boats to various customers, primarily Indian Navy, Coast Guard and a few foreign navies, till date, GSL is a ‘Miniratna’ company with state of the art infrastructure. Its products include Advanced Missile Frigates, Offshore Patrol Vessels, Fast Patrol Vessels, Survey Vessels, Landing Crafts, Missile Crafts, Sail Training Ships, Fast Interceptor Boats and various other marine products.



Though the Company has come a long way since inception in terms of capability, infrastructure and expertise, it has made exceptional progress in the last few years to turnaround the fortunes of the Company.

In the last few years, the Shipyard has delivered three NOPVs to the Indian Navy, eight AOPVs to Coast Guard, two FPVs to & 11 interceptor boats to Mauritius, two AOPV to Sri Lanka, one damage control simulator each to Myanmar and Indian Navy, which amounts to delivery of 36,000 gross tonnage in the last five years. Sustained momentum of growth has led to increased production and the financial year 2019-20 saw the company’s Net worth touching an all-time high of Rs 1025 Cr.

In spite of the dampening effect of the pandemic, GSL has done exceedingly well in its production activities by delivering two OPVs to the Coast Guard ahead of schedule. The Yard also commenced the construction of the Advanced Missile Vessel Project during the pandemic. Execution of this project is expected to yield a Value of Production close to Rs. 3000 Cr by 2022.



Net Worth

As regards the New Generation Missile Vessel (NGMV) Project of the Navy is concerned, though the formal announcement of the Shipyard is yet to be announced by the Navy, apparently GSL has emerged as the overall least bidder.

GSL's success has catapulted it into a league of its own with good order books and excellent execution capabilities.

Low Build Periods with Timely Deliveries

Owing to the shipyard's modern in-house design capabilities, GSL competes with the best shipyards in its product range for fixed cost, timely deliveries and customer satisfaction. GSL has established benchmarks in terms of 'Build Period', which are minimum in the industry, resulting in very competitive prices. The yard has shown remarkable progress by developing the capability to undertake four to five major projects, concurrently. Delivery ahead of schedule of all ships in the last couple of years is a testimony to the Shipyard's capabilities.

Infrastructure Modernisation

GSL has undertaken a massive modernization drive in the last few years to increase its capacity multifold and set up infrastructure for indigenous construction of technologically advanced Vessels for the Nation's security requirements. With consistent yearly CAPEX close to Rs 100 Crore (approx), the Shipyard has created an enviable modern infrastructure boasting of 6000 T Ship lift, dry berths, outfitting jetties, outfitting workshops and storage facilities, besides unique specialized facility for construction of advanced Mine Counter Measure Vessels (MCMVs) constructed with niche FRP technology. It is the only Shipyard in South Asia to have this unique capability of construction hulls for MCMVs in FRP. Along with modernization work, the Yard has the capacity of constructing 14 ships at various stages of fabrication and outfitting at any time.

Diversification

GSL has optimized utilization of its resources and capabilities by diversifying its products range and services. The yard has successfully designed and constructed technology intensive products such as training simulators, Glass Reinforced Plastic (GRP) Boats, Damage Control Simulator, Sea Training Facility and Shore Based Test Facility (for certification of Naval combat aircraft fighters).

GSL has focused on emerging diversified business opportunities like Inland Waterways Authority of India, commercial shipbuilding, ship repairs, tourism etc. The Company endeavours to grow in each of its verticals by expanding its product profile aligning with the market requirements. The Company has submitted bids for many projects to maximise indigenization content, few of them being Passenger Ferry Craft for Uttar Pradesh Rashtriya Nirman Nigam, Tugs for Assam Inland Waterways under the World Bank Project and LPG Cylinder Carriers for Lakshadweep Administration.

Seeking a totally new line of business in the field of Pollution Response, GSL has won the contract for construction of two Pollution Control Vessels for the Indian Coast Guard. Yard will be commencing the construction soon.

The recent award of contract by the Indian Army to GSL for construction of 12 Advanced Fast Patrol Boats through competitive bidding is a yet another prestigious project that will further diversify this Yard's product portfolio.

Exports

GSL has made significant inroads into global market with the export of smaller vessels to Middle East, Africa and South East Asia and presently recognized as the largest exporter of Defence Vessels in India. The recent exports include 11 FIBs and two FPVs to Mauritius, one OPV to Sri Lanka and Damage Control Simulator to Myanmar with all deliveries before contracted schedule. A few future projects are also in advanced stages of finalisation.

Make in India

GSL was the first DPSU to introduce "Procurement Preference Policy" in July 2015 to encourage domestic vendors for promoting indigenous manufacturing. In order to bring world class technology to India and manufacture equipment/ systems in India with significant indigenous content, GSL has collaborated with various leading OEMs such as Nevskoe Design Bureau (Russia), DCNS (SA France) and Wartsila (France SAS). GSL has also entered into MOUS with various Industry and Academic Institutions such as BEL, NBCC, L&T and IIT Goa to further boost its indigenisation and research efforts.

R&D/ Artificial Intelligence

GSL has a well-established R&D centre, which has been recognized and registered as in-house R&D unit by the Department of Scientific and Industrial Research (DSIR), Ministry of Science and Technology, Government of India. Presently, GSL is the first shipyard to have this unique distinction of having this recognition. The Yard's capability to innovatively design seafaring platforms has been gainfully utilized over the years to produce most potent platforms.

In keeping with the Government's thrust for adoption of Artificial Intelligence into Defence Systems and processes, GSL has embarked upon a strategy for building a vibrant AI ecosystem with intelligent machines enabling high-level cognitive processes in its shipbuilding products and processes. As part of digital strategy, GSL in collaboration with an Industry partner, has developed a Condition Monitoring System (CMS) using Artificial Intelligence (AI) for Main Engine On-Board for Offshore Patrol Vessel (OPV). The system brings together best of engineering and data science expertise to solve the complex problem of engine health prediction. The Yard retains a continuous focus on safety and security of operations.

Prognosis

GSL has been entrusted with the construction of advanced missile Frigates and Mine Counter Measure Vessels with the most advanced weaponry and systems.

As a Defence Public Sector Undertaking, Goa Shipyard Limited has over the years played a significant role in the specialised field of shipbuilding, contributing in no small measure towards meeting the requirements of Indian Navy and Indian Coast Guard for sturdy and dependable vessels that would effectively safeguard the nation's extensive territorial waters and shipping lanes.

GSL's considerably big order books include two Advance Missile Frigate Project, six NGMVs for the Indian Navy and the envisaged MCMV project, ship refits and a few export orders in the pipeline. Commendable execution and planning skills harnessed over the years, endows GSL with the ability to continuously upgrade its infrastructure and undertake challenges that come along the way.

(The article is based on inputs received from the company)

<https://bharatshakti.in/goa-shipyard-indias-key-security-partner-scaling-new-heights-in-warship-building/>

THE ECONOMIC TIMES

Sat, 09 Jan 2021

Chinese expansionist designs curbed by Indian Army with deterrence from Indian Air Force

Provocative actions

The "unilateral and provocative" actions by the Chinese military to change the status quo by force in more than one area on the Line of Actual Control (LAC) were responded to in a "firm" and "non-escalatory way", the Defence Ministry has said in an annual report. The report said Indian troops are well entrenched to counter any "misadventure" by Chinese forces and that the Indian Army is prepared for any eventuality, adding talks are also progressing to resolve the issue in an amicable manner.

Expansionist designs

Terming the Chinese actions as "expansionist designs", the report said Indian troops took pre-emptive action in end-August to occupy strategic heights along the southern bank of Pangong Tso and continue to be deployed there despite harsh weather conditions. "On August 28-



29, 2020, own troops in a precautionary deployment, preempted Chinese expansionist designs and occupied heights along the southern bank of Pangong Tso,” it said.

Accretionary forces

“Indian Army, with assistance from IAF, mobilised troops, including accretionary forces, in a very short duration, including heavy equipment like guns, tanks as also ammunition, rations and clothing,” the report said, adding that advance winter stocking for troops has been carried out for the enhanced number of troops on the border.

Air force deterrent

The report noted the significant role played by the air force in ensuring a rapid response, which included the quick deployment of aircraft, choppers and fighters to the Ladakh sector. “The heavy airlift assets of the transport Fleet of IAF proved their mettle by mobilising huge quantum of war waging machinery along with battle-ready troops in the northern sector in quick time frames, thereby altering the dynamics of the force posturing,” it said.

Troops deployed

As reported, talks between India and China to resolve the border dispute have stalled, with the PLA unwilling to budge from the border, particularly the ‘finger’ area along the northern bank of Pangong Tso. Thousands of troops remain deployed at high altitude posts along the LAC through the harsh winter months, with the assumption that the border standoff will continue at least till the summer season. As things stand, there is little possibility for military action by either side, given the weather conditions in eastern Ladakh.

<https://economictimes.indiatimes.com/news/defence/chinese-expansionist-designs-curbed-by-indian-army-with-deterrence-from-indian-air-force/accretionary-forces/slideshow/80168982.cms>

Business Standard

Sat, 09 Jan 2021

Fewer flying displays as Covid-19 pandemic curbs Aero India 2021

The show website indicates that only 75 foreign firms are participating this year, compared to 165 companies that attended the previous edition of the biennial air show in 2019

By Ajai Shukla

New Delhi: The defence ministry’s flagship air show, Aero India 2021, scheduled to be held in Bengaluru next month, has run into the headwinds of the Covid-19 pandemic, with major defence multinationals deciding not to participate. Companies that are attending are doing so on a low key and flying displays – the staple of air shows – will be sharply curtailed.

The show website indicates that only 75 foreign firms are participating this year, compared to 165 companies that attended the previous edition of the biennial air show in 2019.

Amongst the notable absentees is Swedish firm Saab, which is staying away even though its Gripen E fighter is a contender in an Indian Air Force (IAF) tender for 114 medium fighters and possibly a Navy tender for 57 carrier-deck aircraft.

A company spokesperson told Business Standard that the decision was taken on health grounds, even though Aero India is one of the most important events on its calendar. “Due to the current



situation and the travel advisories in different countries for the Covid pandemic, Saab will not be participating in the Aero India 2021 exhibition,” he said.

Other firms with equally high stakes in India, such as US giant Boeing, are scaling back their presence. There is uncertainty about whether Boeing’s F/A-18E/F Super Hornet, which is competing in both the IAF and navy tenders, will participate in the flying displays.

Meanwhile, Boeing has decided against bringing to India a flight simulator of its F-15EX Strike Eagle fighter, which it is likely to field in the IAF tender for 114 fighters.

A company spokesperson stated: “Boeing will be at Aero India 2021, and we look forward to engaging with customers and the industry safely in this current environment, as we showcase a broad range of aerospace and defence capabilities.”

Aerospace company executives, speaking off-the-record, point to the lack of clarity on what regulations will govern issues such as quarantining. Since they have little appetite for Covid testing and no time for voluntary quarantining, multinational firms are considering sending their India office executives to show presence at Aero India 2021.

This was inevitable, says a senior executive of an international aerospace firm. The Paris Air Show, one of the world’s most prestigious, has been cancelled on health grounds, seven months before its scheduled date.

A statement on its website reads: “In light of the uncertainty linked to the Covid-19 health crisis, the Paris Air Show must sadly announce the cancellation of its 2021 edition, due to be held on 21-27 June.”

The Aero India 2021 website acknowledges that “the Covid-19 pandemic has put an impasse on business in its erstwhile format and few aerospace and defence (A&D) exhibitions have been witnessed in the year 2020.” Then it bravely continues: “Aero India 2021 heralds the new year and adapts itself to the new normal and aims to provide the much needed platform for decision makers and A&D businesses from around the world to forge new partnerships.”

The website encourages anti-Covid-19 norms such as social distancing and spacing between exhibits. “A conscientious approach has already been put in place whilst drawing up the floor plans for the event and two halls have been omitted and open area display has been de-cluttered to provide adequate free-flow for participants”, says the website.

For the defence ministry, Aero India 2021 is an opportunity to show its commitment to the prime minister’s “Atmanirbhar Bharat” (self-reliant India) initiative. The “record-breaking” participation of 457 Indian firms has been achieved through multiple participation by government and public sector entities, each subsidiary or division entering separately. Hindustan Aeronautics Ltd has entered as 24 separate entities, the Directorate General of Quality Assurance as 61 entities and Bharat Electronics as 21 entities. Tens of Defence R&D Organisation (DRDO) laboratories have all entered separately.

https://www.business-standard.com/article/current-affairs/fewer-flying-displays-as-covid-19-pandemic-curbs-aero-india-2021-121010801521_1.html

On Rafale and deadly Panther choppers, India gets a huge offer from France

France has accepted the Indian request that defence technologies shared with the Indian military should not be given to New Delhi's adversaries. France's relationship has already reached a new low with Pakistan after PM Imran Khan attacked President Macron

By Shishir Gupta

India and France have decided to intensify defence cooperation with Paris offering to shift 100 per cent assembly line for Panther medium utility helicopters as well as 70 per cent of the assembly line for Rafale fighters under "Make in India" rubric with full transfer of technology, people familiar with the matter said on Saturday.

The offers were made in the course of conversations between Indian leaders and Emmanuel Bonne, Diplomatic Advisor to French President Emmanuel Macron who was in the country for the 34th India-France strategic dialogue this week.

Officials said there was a real possibility that India, which has a contract for 36 omni-role fighters, could buy more Rafale jets in light of the French offer to bring 70 per cent of the assembly line including local vendor development. This would reduce the cost of subsequent acquisition of the fighter jets.

The French offer to make the Panther choppers in India also works well with the government which has been looking to buy medium helicopters for the Indian Navy. The Airbus' AS565 MBe is an all-weather, multi-role medium helicopter designed for operation from ship decks, offshore locations and land-based sites.

According to South Block sources, the India-France strategic dialogue this week has led to forward movement over 9,900 MW Jaitapur nuclear power plant over reactor pricing issues with state-run Electricite de France (EDF) and Nuclear Power Corporation of India (NPCIL). The strategic dialogue was headed by National Security Advisor Ajit Doval and Emmanuel Bonne, Diplomatic Advisor to French President Emmanuel Macron.

According to senior officials, India has decided to consider the French offer of six Airbus 330 multi-role transport tankers on lease while making it clear that French defence technologies shared with Indian military should not be given to its adversaries. To this, the French have informed India that their relationship particularly in the defence sector has reached a new low with Pakistan after Prime Minister Imran Khan attacked President Macron personally over a terrorist incident.

It is understood that France will no longer either supply or upgrade French weapon platforms or ammunition with Pakistan. This includes repairs of Mirage III/V fighters as well as Augusta submarines. The same thumb rule will apply to Turkey too, whose authoritarian leader R Erdogan had gone out of his way to launch vitriolic attacks on President Macron.

While India and France discussed China and its role in the Indo-Pacific and Indian Ocean, Paris has invited Indian Navy to participate in European Maritime Awareness in the Straits of Hormuz (EMSOH) as well as use facilities at the French base in Djibouti on the Horn of Africa. On China, the two sides have decided to build maritime capabilities to ensure that international maritime law is followed in both Indo-Pacific and Indian Ocean through joint surveillance and sharing of intelligence. France's Chief Military Advisor also accompanied envoy Bonne. France has also



France has offered to shift manufacture of Panther helicopters and 70 per cent of assembly line to make Rafale fighter jets to India(Reuters)

offered India to join in trilateral naval exercises with UAE, Singapore, Malaysia, Indonesia and Australia.

Although Doval and Bonne had restricted conversation on India-France strategic issues, Paris has offered help in development of engine for twin engine LCA or AMCA with the Defence Research and Development Organization (DRDO) as well as making Rafale fighter engines (M-88) under the “Make in India” initiative.

At a political level, the French envoy made it clear that it would support India in the UN Security Council and ensure that Beijing’s move to put India in a dock either on cooked up charges of terrorism or Kashmir are stymied. This assurance Bonne made before Prime Minister Narendra Modi as India joins the UNSC for two years.

<https://www.hindustantimes.com/india-news/france-offers-to-shift-panther-chopper-assembly-line-to-india-rafale-too-101610181121676.html>



Sun, 10 Jan 2021

Deep-sea skullduggery: China may be using its submarine drones for undersea recce in Indonesian waters

China’s alleged expansionist activities in the disputed South China Sea and extensive oceanographic research in regions believed to be of military significance are increasingly becoming a concern for major seafaring nations

By Saikiran Kannan

Singapore: China’s alleged expansionist activities in the disputed South China Sea and extensive oceanographic research in regions believed to be of military significance are increasingly becoming a concern for major seafaring nations.

Over a fortnight ago, Indonesian fishermen found an underwater drone near Selayar Island in Indonesia’s Flores Sea which according to experts appears to be a Chinese Sea Wing unmanned underwater vehicle (UUV). This news soon spread like wildfire among the Indonesian media as well as social media.



The UUV that was found near Selayar Island in South Sulawesi, far away from Chinese waters, points to Beijing’s active surveillance of shipping lines in Indonesian waters.

These are also the only deep-water channels that connect the South China Sea to the strategic Indian Ocean, which also brings India into the picture.

Even though Indonesia does not see itself as a party to the list of disputes related to the South China Sea, Beijing has in the past claimed rights to parts of the sea overlapping Indonesia’s exclusive economic zone (EEZ). The other significant point is that these waters are also close to critical shipping lanes linked to the north of Western Australia.

These are waters through which oil tankers from the Middle East carry oil to China. These are also waters through which Singaporean refined fuels flow to Australia.

This is not the first instance though. In March 2019, a similar underwater drone was found in the world’s busiest shipping line of the Strait of Malacca between Indonesia and Singapore. The next drone was found on January 2020 near the Sunda Islands belonging to southern Indonesia and the

latest one on December 20, 2020, has been found in the Lombok Strait of Indonesia (a strait connecting the Java Sea to the Indian Ocean).



Images obtained from locals show that the drone is shaped like a tube with wings. History suggests that these drones come packed with multiple sensors and long-range transmitters to relay recorded data back to the monitoring stations.



If the drones indeed belong to China, these may be a complete reconnaissance activity carried out in order to gather vital information for their navy submarines.

The architecture of the underwater drone

Experts opined that these drones are mostly unpowered and hence must be working on a principle called as the “variable-buoyancy propulsion”. This is a mechanism where a balloon-like device filled with pressurised oil inflates and deflates repeatedly. This causes the device to sink and rise, thereby moving forward with the help of the wing-like structures.

The Indonesian media has released the dimensions of the captured drone: It is 225cm in length having a 50cm wingspan and a 93cm-long trailing antenna.

An open-source intelligence (OSINT) researcher based in Indonesia, @Jatosint, tweeted about the latest capture in a series of tweets. He also tweeted that this captured underwater drone resembled the Chinese-made Sea Wing glider.

Underwater drones or gliders like these are manufactured by nations like the USA, China, France and a few others. Naval experts, however, feel that the captured drone carries certain characterisable features that make it seem like a Chinese-manufactured device. The key differentiator is said to be the vertical stabiliser of the drone which is like a tail fin underneath the drone. Normally, such gliders would have these fins pointed upwards.



The images and the architectural descriptions obtained from local experts point towards the nose cone housing three sensors and the wings built with a folding mechanism. The antenna extends directly out of the centre of the tail cone.

The sensors can gather data ranging from temperature, turbidity, salinity, chlorophyll and oxygen levels. This data can be valuable to naval planners supporting submarine operations and can be vital to enable hiding of submarine movements from the enemy's eyes.

India Today reached out to HI Sutton who is a defence analyst specialising in submarines and naval warfare. Talking about the design of these UUVs found in Indonesian waters, he said, "The design is broadly similar to other variable-buoyancy propelled gliders. The cutaway is based on inferring the internal layout from photographs of the exterior and general knowledge of other gliders."



Figure: HSU001 series of UUVs with the capability to launch multiple smaller drones;
Source: Getty Images

“Sea Wing can carry conductivity, temperature, depth (CTD) sensors, as well as turbulence meter, turbidimeter, chlorophyll sensor, dissolved oxygen sensor, nitrate and other biochemical sensors. It can also carry acoustic sensors such as ADCP (acoustic doppler current profile), underwater acoustic communication and hydrophones,” Sutton explained.

“These UUVs can play different roles such as scientific research, dynamic ocean process observation, acoustic detection, comprehensive exploration of the deep-sea environment. Naturally, these have naval/military relevance and are helpful in civilian research,” he added.

The latest catch

Indonesian social media was inundated with images of fishers, soldiers and the police personnel posing with the captured surveillance drone. The Selayar Island is situated to the north of Western Australia. The Sunda Strait that is nearby is a deep-water channel leading to the Indian Ocean. The Lombok Strait on the other side links Indonesian to the Timor Sea and Darwin (Australia).

The captured underwater drone has now been taken to Indonesia’s Makassar naval base for inspection.

Military analysts speculate that such drones can act as submarine hunters, capable of locating, identifying, following, photographing and targeting underwater opponents.

Indonesian security analyst, Muhammad Fauzan, opined to the ABC (American Broadcasting Company) that he felt the drone was most likely mapping future submarine routes, given it was found far from Chinese waters and in a significant maritime route between China and Australia’s northernmost city of Darwin.

Fauzan expressed that there were significant questions around whether the drone, if a Chinese instrument, was being used for intelligence gathering or illegal surveying.

“Perhaps this latest discovery is significant because it is reported that the drone was active when the fishermen found it: it was moving, the light was blinking, and the forward sensors were working. And this is the first time we have heard that the military publicly say they have secured the drone and are conducting a full investigation which, according to the latest report, is currently being carried out in the second fleet headquarters of the Indonesian navy in Surabaya.”

There is indeed no confirmation yet on the country of origin and the country that operated this underwater drone. Indonesia’s naval chief Admiral Yudo Margono said the Indonesian Navy’s Centre for Hydrography and Oceanography has been given a month’s time to analyse the drone and its data to identify the owner.

It is noteworthy to revisit that China’s Academy of Sciences had stated in December 2019 that it had released a dozen of such Sea Wing drones into the Indian Ocean.

These underwater drones reportedly travelled around 12,000km and dove up to 6.5km beneath the wavetops. The academy had conducted a similar survey of the South China Sea back in 2017.

In October 2019, at the military parade to mark the 70th anniversary of the People’s Republic of China (PRC), the HSU001 series of UUVs were unveiled which had the capability to launch multiple smaller drones.

The strategic impact

Beijing’s covert surveying of the underwater terrain in these choked waterways is indeed alarming for nations in the region. Australia especially may feel uncomfortable considering the already escalating trade and diplomatic tensions between China and Australia.

These underwater drones can map every nook, cranny and wreck on the sea bottom, and can also chart changes in water temperature, salinity and current speed.

Defence analyst HI Sutton opined: “These drones/gliders may, in some cases, be innocent, but they are naturally viewed with suspicion. It may be evidence that China is reconnoitering potential submarine routes into the Indian Ocean through Indonesian waters. Or some other naval plan.”

“Such hydrographic data is vital for submarine warfare both for friendly submarines to remain hidden and to help locate hostile ones. It can also identify the most effective locations to position

sea mines to attack ships passing overhead. These routes, the Sunda Strait and Lombok Strait, may be important in wartime,” he added.

“Intelligence gathered by the drone may be valuable to the Chinese Navy if their submarines intend to use these straits,” Sutton said.

Beijing has been repeatedly caught operating in foreign waters in the past. In September 2020, the Indian Navy had evicted a Chinese survey ship Shhiyan-1 from the waters surrounding the Andaman and Nicobar Islands. It is recorded that Beijing has been sending regular submarine patrols around the waters of the Andamans and Bay of Bengal since 2012.

Experts said such recesses could also be a result of fears within the Chinese establishment of other naval powerhouses in the region (starting with Quad or the grouping of India, Australia, the US and Japan) as China’s economy relies heavily on sea lanes of communication passing through these waterways. On the other side, controlling these channels could help stifle countries like Japan, Australia and South Korea in the future, if a situation arose.

(The writer is a Singapore-based Open-Source Intelligence analyst)

<https://www.indiatoday.in/news-analysis/story/deep-sea-skullduggery-china-may-be-using-its-submarine-drones-for-undersea-recce-in-indonesian-waters-1757507-2021-01-09>



Sun, 10 Jan 2021

Air India's all-woman cockpit crew set for 17-hour non-stop flight from San Francisco to Bengaluru

By Anantha Krishnan M

Bengaluru: Air India is all set to script history when an all-woman pilot crew will touchdown at the Kempegowda Internal Airport (KIA) here during the early hours of Monday, January 11.



Lead pilots on board AI 176 flight from San Francisco to Bengaluru Captain Zoya Aggarwal (left) and Capt Papagari Thanmai (centre) along with Capt Nivedita Bhasin, Executive Director (Flight Safety), , Air India (right). Photo: Air India CorpCom.

This will be a non-stop flight from San Francisco. Depending upon the wind speed on that particular day, the total flight time on this route would vary in excess of 17 hours.

An Air India communication puts the direct distance between Bengaluru and San Francisco is 13,993 km approximately. According to Air India, the commencement of this historic inaugural flight is the beginning of its efforts to spread its wings further in the United States.

“This will be the first-ever non-stop service between Bengaluru and San Francisco, connecting the world’s two tech hubs - the original Silicon Valley and the Silicon Valley of India. The first flight AI 176 from San Francisco to Bengaluru will operate on Saturdays and Tuesdays,” an official said. This will be the longest commercial flight in the world to be operated by Air India or any other airline in India.

The flight will leave from San Francisco at 2030 hrs (local time) on January 9 and will arrive at Bengaluru at 0345 hrs (IST) on January 11. The official said that the lowest fare for a return flight BLR-SFO-BLR will be Rs 71,210 and SFO-BLR-SFO will be Rs 47,595.

“These are all-inclusive rates for two-way,” the official told Onmanorama.

The Crew

The all-women cockpit crew include Capt Zoya Aggarwal (P1), Capt Papagari Thanmai (P1), Capt Akansha Sonaware (P2) and Capt Shivani Manhas (P2). Air India says Capt Zoya is an accomplished pilot with a flying experience of more than 8000 hours to her credit. On B-777 aircraft alone, she has a command experience of more than 10 years, including 2500-plus hours of flying.

Capt Nivedita Bhasin, Executive Director (Flight Safety), Air India, is also traveling on this flight.

“And I’m here today. For a very special flight. San Francisco & Bengaluru -- two giant IT hubs to be only 17 hours away. Our longest flight on the network coming up. #NewBeginnings, #NewHope,” Capt Nivedita, one of the top-rated pilots in the world, tweeted.

She hit headlines in 1989 when she became she commanded Boeing 737 at the age of 26, thereby becoming the youngest woman in the world to captain a jet plane. She also has to her credit of becoming India’s first woman check-pilot on Airbus A-300, in 1990.



The presence of ace pilot Capt Nivedita Bhasin, Executive Director (Flight Safety) of Air India on board the historic flight will be inspiring for the entire crew. Photo: Tarmak007

Speaking to Onmanorma from San Francisco, Capt Nivedita said that the flight has several significances attached to it.

“This will be the second polar flight for Air India. We did the first polar flight on August 15 2019 to validate the flight, risk analysis, readiness and to see operational challenges. Flying over the North Pole is a great experience,” Capt Nivedita said.

She said close to seven tonnes of fuel will be saved during the flight, thereby reducing the carbon footprint by many folds.

Air India said the passengers will benefit from the reduced flight duration and with less fuel consumption, the environment will have less carbon impact.

“There’s lots of excitement for the crew ahead of this flight. At the same time, we also have to look at several safety aspects and address all areas of concerns taking into account the distance we cover and the region we are flying in,” said Capt Nivedita.

During the 2019 maiden polar flight, Air India flew its Boeing 777 aircraft over the North Pole thereby becoming the first Indian airline to operate commercial flights overflying the polar region.

“We have been flying all-women pilot crew since 1985. This time, it will be a great sight to see the Northern Lights -- Aurora Borealis,” she said.

The Plane

The Boeing 777-200LR that will be flying non-stop from San Francisco. Photo: Air India CorpCom The Boeing 777-200LR aircraft has a seating capacity of 238 seats including eight First Class, 35 Business Class, 195 Economy class configuration besides four cockpits and 12 cabin crew.

Air India owns three Boeing 777-200LRs which has a wingspan of 112.6 feet and can cruise at a speed of 1037.232 kmph at a maximum altitude of 43,100 feet.

It has a maximum take-off weight of 347.5 tonnes with an overall length of 209 feet, a height of 61.8 feet and a cabin width of 19.1 feet. The total wing area stands at 4605 sq feet.

“The route for this flight will be the safest, fastest and most economical. It will be an around-the-world flight and based on the wind speed and other logistical parameters, the polar route may be chosen as the flight path, which will result in savings on ying time, fuel consumption and curbing carbon footprint,” says an Air India release.

The cities are diametrically at the opposite ends of the world with a time zone change of approx.13.5 hours.

Excitement in Air

“We are all excited about this flight and there was enough enthusiasm all around when we were planning this flight. An all-women cockpit crew for such a longhaul flight means we are setting new benchmarks in civil aviation. We have the highest women-employee ratio for an airline in the world,” an Air India official told Onmanorama.

This will be the first-ever non-stop route between the West Coast of USA and South India, which will also be accessible to cities in neighboring states via short domestic flights.

At present, Air India operates non-stop flights from Delhi to New York, Newark, Washington DC, San Francisco and Chicago and from Mumbai to Newark and New York.

Plans are afoot now to begin Air India’s first-ever non-stop service between Hyderabad and Chicago from January 15 this year.

At KIA in Bengaluru, preparations are in place to welcome the all-womencockpit-crew flight ahead of the touch down on Monday morning.

“We are happy to be part of this sign cant moment. We have made some special arrangements to welcome the crew and passengers. Some fanfare to receive them, keeping all pandemic protocols in mind,” an airport spokesperson told Onmanorama.

Owing to environmental reasons, KIA has done away with the traditional water cannon salute being given to airlines, whenever a first flight makes a touch down at the airport.

(The writer is an independent aerospace and defence journalist, who blogs at Tarmak007 and tweets @writetake.)

<https://www.onmanorama.com/news/india/2021/01/09/air-india-all-woman-cockpit-crew-non-stop-flight-san-francisco-bengaluru.html>

Mon, 11 Jan 2021

2 IAF surgeons to leave for Russia on Jan 17 to get training for Gaganyaan space crew care

By Surendra Singh

New Delhi: Two flight surgeons with the Indian Air Force will soon leave for Russia for an advanced training in space medicine in order to take care of the four gagannauts who are being trained for the Gaganyaan programme, the country's maiden manned mission to space. Flight surgeons are responsible for astronauts' health before, during and after the space mission.

Talking to TOI on Sunday, Indian Space Research Organisation (Isro) chairman K Sivan said, "The two flight surgeons will leave for Russia on January 17 for an advanced training. They will get to train along with four IAF pilots who are already getting astronaut training in Russia" at the Yuri Gagarin Cosmonaut Training Center near Moscow. The two flight surgeons will get hands-on training from their Russian counterparts.

The four gagannauts, chosen for India's most challenging space mission, have been undergoing training in Russia since February last year. The Russian training of gagannauts, which was halted for some weeks last year due to the pandemic, is set to be completed by March this year after which they will get further training in India.

"The two flight surgeons, who have already been trained by French space medicine experts in India earlier, will also travel to France for more training after their Russian visit," Sivan told TOI.

France has a well-established system for space medicine. It has the MEDES space clinic, a subsidiary of French space agency CNES, where space surgeons undergo training. Since its creation in 1989, MEDES has been helping develop French competence in space medicine and physiology and to promote the application of space research in health.

Isro is expected to launch the Gaganyaan mission by August 2022, the deadline fixed by PM Narendra Modi in his I-Day speech some years ago. But due to Covid-triggered lockdown last year and restrictions later, the programme has hit a speed bump. The launch of two unmanned Gaganyaan missions, meant to carry humanoids, before the final mission have been delayed, which is bound to impact the deadline of the final manned mission. The two unmanned missions, which were earlier scheduled to be launched by early this year, will now get delayed and may be deferred till early next year.

<https://timesofindia.indiatimes.com/india/2-iaf-surgeons-to-leave-for-russia-on-jan-17-to-get-training-for-gaganyaan-space-crew-care/articleshow/80205310.cms>



India developing capabilities for undertaking deep ocean missions, says Harsh Vardhan

The Minister said because of early warning facilities, States and administration were able to take up precautionary measures in protecting the people

Chennai: The government was in the process of developing a capability in which scientists can go deep into the ocean beyond three kilometres for taking up ocean exploration, Union Science and Technology Minister Dr Harsh Vardhan said on Saturday.

Participating in a function in Chennai, he said India was ranked at the top in weather forecasting and had never issued a false warning whenever cyclones were formed.

“Normally it is about six hours of going down (in the ocean) doing some research activities and coming back.

“We are developing the capability in which scientists can go deep in the ocean beyond three kilometers and they can be there for almost 16 hours (for research purposes),” he said after dedicating coastal research vessel ‘Sagar Avneshika’ at Chennai Port Trust in Chennai.

On weather forecast, he said the natural calamity, the country remembers — was the Tsunami of 2004 which caused a ‘tragedy of a huge magnitude’.

“When we look back on how our scientists have developed (since Tsunami hit in 2004), we can proudly say that we are the best nation in the world in predicting early warnings of tsunami. We have never issued false warnings. My scientists tell me that Japan has issued false warnings on tsunamis,” he said. The Minister said because of early warning facilities, states and administration were able to take up precautionary measures in protecting the people.

“Some cyclones could have caused huge damage. But they were very well predicted sometimes 10 days or two weeks earlier so that the government and respective States got ample time and opportunity to take care of all the precautions so that lives of people and sources of livelihood could be protected,” he pointed out.

“The country’s most ambitious mission was to launch a deep ocean mission which would look at all the aspects of the ocean as a source of minerals, a source of water and strengthen the scientific community,” he said.

“We are already in the process and then we will take the help of big organisations in a collaborative way like DRDO, ISRO, people in IITs,” he said.

Dr. Vardhan said ‘Sagar Avneshika’ launched today can accommodate about 15-20 scientists for research purposes and has laboratories similar to research vessel ‘Sagar Thara’ for taking up scientific explorations. “The state-of-the-art vessel will transform our ocean research activities and boost our blue economy,” he said.

The vessel is equipped with advanced navigation systems as well as research and exploration apparatus. “It would boost multi-disciplinary research on oceanography along the Indian coast and will deepen understanding of the ocean and help harness its enormous potential,” he added.

<https://www.thehindu.com/news/national/india-developing-capabilities-for-undertaking-deep-ocean-missions-says-harsh-varadhan/article33537078.ece>



Union Health Minister Harsh Vardhan. File | Photo Credit: Bijoy Ghosh

Researchers realize efficient generation of high-dimensional quantum teleportation

In a study published in *Physical Review Letters*, a team led by academician Guo Guangcan from the University of Science and Technology of China (USTC) of the Chinese Academy of Sciences (CAS) has made progress in high dimensional quantum teleportation. The researchers demonstrated the teleportation of high-dimensional states in a three-dimensional six-photon system.

To transmit unknown quantum states from one location to another, quantum teleportation is one of the key technologies to realize long-distance transmission.

Compared with two-dimensional systems, high-dimensional system quantum networks have the advantages of higher channel capacity and better security. In recent years more and more researchers of the quantum information field have been working on generating efficient generation of high-dimensional quantum teleportation to achieve efficient high-dimensional quantum networks.

As early as 2016, the researchers from USTC experimentally showed that nonlocality can be produced from single-particle contextuality through two-particle correlations which do not violate any Bell inequality by themselves, and generated high-fidelity three-dimensional entanglement. In 2020, 32-dimensional quantum entanglement and efficient distribution of high-dimensional entanglement through 11 km fiber were respectively achieved to lay a solid foundation for scalable quantum networks.

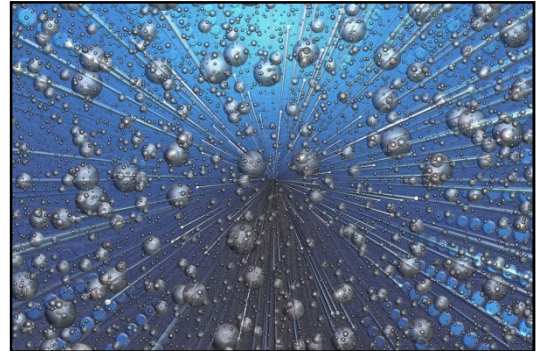
In a linear optical system, auxiliary entanglement is the key to realizing high-dimensional quantum teleportation. The researchers exploited the spatial mode (path) to encode the three-dimensional states that has been demonstrated to extremely high-fidelity, and used an auxiliary entangled photon pair to perform the high-dimensional Bell state measurement (HDBSM), demonstrating the teleportation of a three-dimensional quantum state using the spatial mode of a single photon.

In this work, the fidelity of teleportation process matrix could reach 0.5967, which is seven standard deviations above the fidelity of $1/3$, which proves the teleportation is both non-classical and genuinely three dimensional.

This study paves the way to rebuild complex quantum systems remotely and to construct complex quantum networks. It will promote the research on high-dimensional quantum information tasks. Entanglement-assisted methods for HDBSM are feasible for other high-dimensional quantum information tasks.

More information: Xiao-Min Hu et al, Experimental High-Dimensional Quantum Teleportation, *Physical Review Letters* (2020). DOI: [10.1103/PhysRevLett.125.230501](https://doi.org/10.1103/PhysRevLett.125.230501)

Journal information: [Physical Review Letters](https://phys.org/news/2021-01-efficient-high-dimensional-quantum-teleportation.html)
<https://phys.org/news/2021-01-efficient-high-dimensional-quantum-teleportation.html>



Credit: CC0 Public Domain

Researchers develop ultrahigh-performance plasmonic metal-oxide materials

In a study published in *Advanced Materials*, researchers from Hefei National Laboratory for Physical Sciences at the Microscale, the University of Science and Technology of China of the Chinese Academy of Sciences, using an electron-proton co-doping strategy, invented a new metal-like semiconductor material with excellent plasmonic resonance performance. This material achieves a metal-like ultrahigh free-carrier concentration that leads to strong and tunable plasmonic field.

Plasmonic materials are widely used in the fields including microscopy, sensing, optical computing and photovoltaics. Most common plasmonic materials are gold and silver. Some other materials also show metal-like optical properties but just perform poor in limited wavelength ranges.

In recent years, much effort has been made in finding high-performance plasmonic materials excluding noble metals. Metal-oxide semiconductor materials have rich and tunable properties such as light, electricity, heat, and magnetism. Hydrogenation treatment can effectively modify their electronic structure to reach rich and tunable plasmon effects. It is a challenge to significantly increase the intrinsically low concentration of free carriers in metal-oxide materials.

The researchers in this study developed a electron-proton co-doping strategy with theoretical calculations. They hydrogenated the semiconductor material MoO_3 via a simplified metal-acid treatment at mild conditions, realizing the controllable insulator-to-metal phase transition, which significantly increase the concentration of free carriers in the metal-oxide material.

The free electron concentration in the hydrogenated MoO_3 material is equivalent to that of the precious metal. This property makes the plasmon resonance response of the material moving from the near infrared area to the visible light area. The plasmon resonance response of the material has both strong gain and adjustability.

Using ultrafast spectroscopy characterizations and first-principle simulations, the researchers unraveled the quasi-metallic energy band structure in the hydrogen-doped H_xMoO_3 with its dynamical features of plasmonic responses.

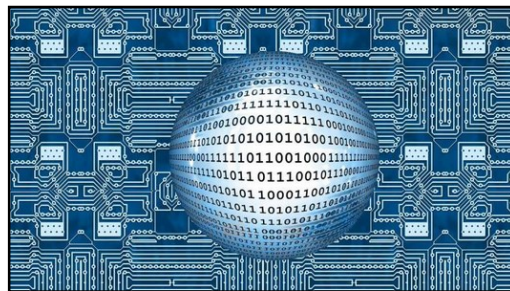
To verify their modification, they performed the surface-enhanced Raman spectra (SERS) of rhodamine 6G molecules on the material. The result showed that the SERS enhancement factor reached as high as 1.1×10^7 with a detection limit at concentration as low as 1×10^{-9} mol/L.

This study developed a general strategy to increase the concentration of free carriers in a non-metal semiconductor material system, which not only realized a quasi-metallic phase material with strong and tunable plasmon effect at low cost, but also significantly broadened the variable range of the physical and chemical properties of semiconductor materials. It provides a unique idea and guidance for designing novel metal oxide functional materials.

More information: Qing Zhu et al, Hydrogen-Doping-Induced Metal-Like Ultrahigh Free-Carrier Concentration in Metal-Oxide Material for Giant and Tunable Plasmon Resonance, *Advanced Materials* (2020). DOI: [10.1002/adma.202004059](https://doi.org/10.1002/adma.202004059)

Journal information: [*Advanced Materials*](#)

<https://phys.org/news/2021-01-ultrahigh-performance-plasmonic-metal-oxide-materials.html>

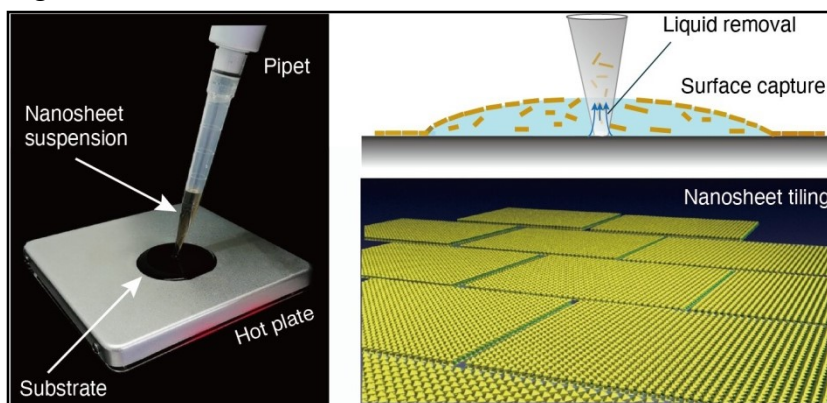


Credit: CC0 Public Domain

Nanosheet-based electronics could be one drop away

Scientists at Japan's Nagoya University and the National Institute for Materials *Science* have found that a simple one-drop approach is cheaper and faster for tiling functional nanosheets together in a single layer. If the process, described in the journal *ACS Nano*, can be scaled up, it could advance development of next-generation oxide electronics.

"Drop casting is one of the most versatile and cost-effective methods for depositing nanomaterials on a solid surface," says Nagoya University materials scientist Minoru Osada, the study's corresponding author. "But it has serious drawbacks, one being the so-called coffee-ring effect: a pattern left by particles once the liquid they are in evaporates. We found, to our great surprise, that controlled convection by a pipette and a hotplate causes uniform deposition rather than the ring-like pattern, suggesting a new possibility for drop casting."



The process, which involves dropping a nanosheet suspension onto a substrate heated by a hot plate and then removing the solution, leads to a uniform surface tension-driven tiling of the nanosheets, with limited gaps between them. Credit: American Chemical Society

The process Osada describes is surprisingly simple, especially when compared to currently available tiling techniques, which can be costly, time-consuming, and wasteful. The scientists found that dropping a solution containing 2-D nanosheets with a simple pipette onto a substrate heated on a hotplate to a temperature of about 100°C, followed by removal of the solution, causes the nanosheets to come together in about 30 seconds to form a tile-like layer.

Analyses showed that the nanosheets were uniformly distributed over the substrate's surface, with limited gaps. This is probably a result of surface tension driving how particles disperse, and the shape of the deposited droplet changing as the solution evaporates.

The scientists used the process to deposit particle solutions of titanium dioxide, calcium niobate, ruthenium oxide, and graphene oxide. They also tried different sizes and shapes of a variety of substrates, including silicon, silicon dioxide, quartz glass, and polyethylene terephthalate (PET). They found they could control the surface tension and evaporation rate of the solution by adding a small amount of ethanol.

Furthermore, the team successfully used this process to deposit multiple layers of tiled nanosheets, fabricating functional nanocoatings with various features: conducting, semiconducting, insulating, magnetic and photochromic. \

More information: Yue Shi et al. Single Droplet Assembly for Two-Dimensional Nanosheet Tiling, *ACS Nano* (2020). DOI: [10.1021/acsnano.0c05434](https://doi.org/10.1021/acsnano.0c05434)

Journal information: [Science](#), [ACS Nano](#)

Using the SYK model to examine the fast-charging process of quantum batteries

By Ingrid Fadelli

The Sachdev-Ye-Kitaev (SYK) model, an exactly solvable model devised by Subir Sachdev and Jinwu Ye, has recently proved useful for understanding the characteristics of different types of matter. As it describes quantum matter without quasiparticles and is simultaneously a holographic version of a quantum black hole, it has so far been adopted by both condensed matter and high-energy physicists.

Researchers at University of Pisa and the Italian Institute of Technology (IIT) have recently used the SYK model to examine the charging protocols of quantum batteries. Their paper, published in *Physical Review Letters*, offers evidence of the potential of quantum mechanical resources for boosting the charging process of batteries.

"Previous theoretical studies laid down the idea that entanglement can be used to greatly speed up the charging process of a quantum battery," Davide Rossini and Gian Marcello Andolina, two of the researchers who carried out the study, told Phys.org, via email. "However, a concrete solid-state model displaying such fast charging was missing, until now."

Rossini, Andolina and their colleagues realized that the SYK model is a good candidate for examining the fast-charging process of quantum batteries, as it is known to generate highly entangled dynamics. The model's many-body, real-time dynamics are ultimately sufficiently complex for it to outperform standard analytic approaches.

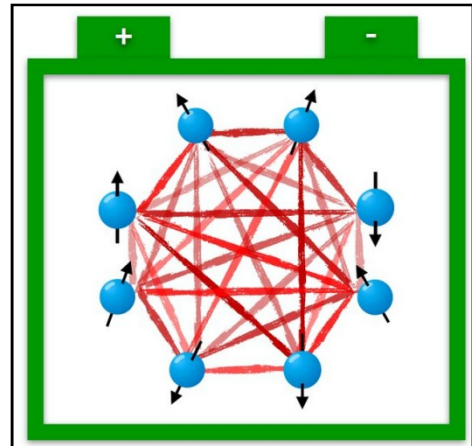
"For our purposes, we found it convenient to employ a numerical treatment based on the exact-diagonalization of huge matrices," Rossini and Andolina explained. "We thus performed extensive numerical simulations, requiring up to 100 Gb of memory and around two weeks of computational time, on a high-performance computing cluster for scientific purposes."

The model used by the researchers is the first to clearly delineate a quantum advantage in the charging speed of quantum batteries. Although this model is particularly difficult to use in laboratory settings, the recent work by Rossini, Andolina and their colleagues was a first and important step toward collecting experimental proof of this quantum advantage.

"A battery is a rather complicated machine, which one would like to quickly charge, which should store energy for a long time and finally provide useful work," Rossini and Andolina said. "While we proved that quantum mechanical resources can boost the charging process, it is still unclear if they can be used to improve other tasks of such a hypothetical quantum battery, thus the investigation of quantum batteries is still at its infancy."

The recent study carried out by Rossini, Andolina and their colleagues offers strong numerical evidence hinting to the advantage of applying quantum mechanical forces in batteries, which is enabled by underlying highly entangled quantum dynamics. In the future, it could pave the way towards the development of more batteries that can be charged faster.

"An interesting possible addition to our work would be to apply the same concepts to thermal engines," Rossini said. "Since the 18th century, it [has been] known that the efficiency of a thermal engine cannot exceed a universal value known as the Carnot bound. Therefore, it is clear that



A quantum battery constituted by a set of highly entangled spins in a fully connected and random network, named the SYK model. Credit: Rossini et al., PRL (2020). American Physical Society (APS).

quantum mechanical resources cannot be used to improve efficiency. However, no universal bound exists concerning the power, and we plan to study an SYK-based thermal engine to further investigate this issue."

More information: Quantum advantage in the charging process of Sachdev-Ye-Kitaev batteries. *Physical Review Letters*(2020). DOI: [10.1103/PhysRevLett.125.236402](https://doi.org/10.1103/PhysRevLett.125.236402).

Journal information: *Physical Review Letters*
<https://phys.org/news/2021-01-syk-fast-charging-quantum-batteries.html>



Sat, 09 Jan 2021

New strategies for designing electroluminescent materials

By Erica K. Brockmeier

New research details how a class of electroluminescent materials, key components of devices such as LED lights and solar cells, can be designed to work more efficiently. Published in *Nature Photonics*, the combined efforts of experimental and theoretical researchers provides insights into how these and other similar materials could be used for novel applications in the future.

This work was the result of a collaboration between Penn, Seoul National University, the Korea Advanced Institute of Science and Technology, the Ecole Polytechnique Fédérale de Lausanne, the University of Tennessee, the University of Cambridge, the Universitat de Valencia, the Harbin Institute of Technology, and the University of Oxford.

Two years ago, Penn theoretical chemist Andrew M. Rappe visited the lab of Tae-Woo Lee at Seoul National University, and the discussion soon turned to whether they could develop a theory to help explain some of their experimental results. The material they were studying was formamidinium lead bromide, a type of metal-halide perovskite nanocrystal (PNC). Results collected by the Lee group seemed to indicate that green LEDs made with this material were working more efficiently than expected. "As soon as I saw their data, I was amazed by the correlation between the structural, optical, and light-efficiency results. Something special had to be going on," says Rappe.



A collaborative study by a team of materials scientists and theoretical chemists demonstrates how a class of electroluminescent materials, key components of devices such as LED lights and solar cells, can be designed to work more efficiently. Credit: University of Pennsylvania

PNCs like formamidinium lead bromide are used in photovoltaic devices, where they can store energy as electricity or convert electric current into light in light-emitting devices (LEDs). In LEDs, electrons are carried from an electron-rich (n-type) region to a high-energy level in an electron-poor (p-type) region, where they find an empty lower-energy state, or "hole," to drop down into and emit light. A material's efficiency is determined by how well it can convert light into electricity (or vice versa), which depends on how easily an excited electron can find a hole and how much of that energy is lost to heat.

To make sense of the Lee group's results, Penn postdoc Arvin Kakekhani began working with Young-Hoon Kim and Sungjin Kim of Seoul National University to develop a computational model of the material's unexpected efficiency and to design targeted follow-up experiments to confirm these new theories. "We spent a lot of time cross linking experiment and theory to rationalize every single experimental observation that we have," says Kakekhani about the research process.

After months of exchanging ideas and narrowing down potential theories, the researchers developed a theoretical model using a method known as density functional theory, a modeling approach that relies on mathematical theories from quantum mechanics. While DFT has been used in the field for many years, the implementations of this theory can now efficiently incorporate the impacts of small, delocalized quantum mechanical interactions, known as van der Waals forces, which are known to play a major role in the behavior of soft materials that are similar to the PNCs used in this study.

Using their new model, the researchers found that the PNCs were more efficient if the size of the quantum dots were smaller, since the probability of an electron finding a hole was much greater. But because reducing a particle's size also means increasing its surface-to-volume ratio, this also means that there are more places along the material's surface that are prone to defects, where energy from electrons can easily be lost.

To address both challenges, the researchers found that a simple chemical substitution, replacing formamidinium with a larger organic cation called guanidinium, made the particles smaller while also preserving the structural integrity of the material by allowing more hydrogen bonds to form. Building on this alloying approach, the researchers found additional strategies to improve efficiency, including the addition of long-chain acids and amines to stabilize surface ions and the addition of defect-healing groups to "heal" any vacancies that might form.

As a theoretical chemist, one thing that stood out to Kakekhani was how well the model's predictions and experimental data aligned, which he attributes in part to using a theory that incorporates van der Waals forces. "You don't fit parameters that make the theory specific to the experiment," he says. "It's more like first principles, and the only knowledge that we have is what type of atoms the materials have. The fact that we predicted the results based on almost pure mathematical operations and quantum mechanical theories in our computers, in close correspondence to what our experimental colleagues found in their labs, was exciting."

While the current study provides specific strategies for materials that have the potential for widespread use as solar cells and LEDs, this strategy is also something that could be adopted more generally in the field of material science. "Advancement of the Internet of Things and the drive toward optoelectronic computing both demand efficient light sources, and these novel perovskite-based LEDs can lead the way," Rappe says.

For Kakekhani, this work also highlights the importance of detailed, theory-driven insights for gaining a thorough understanding of a complex material. "If you don't fundamentally know what is going on and what is the underlying reason, then it is not really extendable to other materials," says Kakekhani. "In this study, having that long period of trying to rule out theories that didn't actually work was useful. At the end, we found a really deep reason that was self-consistent. It took a lot of time, but I think it was worth it."

More information: Young-Hoon Kim et al. Comprehensive defect suppression in perovskite nanocrystals for high-efficiency light-emitting diodes, *Nature Photonics* (2021). DOI: [10.1038/s41566-020-00732-4](https://doi.org/10.1038/s41566-020-00732-4)

Journal information: [Nature Photonics](https://www.nature.com/news)
<https://phys.org/news/2021-01-strategies-electroluminescent-materials.html>

Movers and shakers: New evidence for a unifying theory of granular materials

By Carol Clark

Antiferromagnetism is a type of magnetism in which parallel but opposing spins occur spontaneously within a material. Antiferromagnets, materials that exhibit antiferromagnetism, have advantageous characteristics that make them particularly promising for fabricating spintronic devices.

Understanding the dynamics of granular materials—such as sand flowing through an hourglass or salt pouring through a shaker—is a major unsolved problem in physics. A new paper describes a pattern for how record-sized "shaking" events affect the dynamics of a granular material as it moves from an excited to a relaxed state, adding to the evidence that a unifying theory underlies this behavior.

The *Proceedings of the National Academy of Sciences (PNAS)* published the work by Stefan Boettcher, an Emory theoretical physicist, and Paula Gago, an expert in modeling the statistical mechanics of granular matter in the Department of Earth Science and Engineering at the Imperial College of London.

"Our work marks another small step forward to describing the behavior of granular materials in a uniform way," says Boettcher, professor and chair of Emory's Department of Physics.

"A complete understanding of granular materials could have a huge impact on a range of industries," he adds. "To name just a few examples, it's relevant to the compaction of granules into pellets to make pills, the processing of grains in agriculture and to predict behaviors of all kinds of geophysical matter involved in civil engineering."

Granular materials are disordered systems often found in a far-from-equilibrium state. Examples include everything from sand, rice and coffee grounds to ball bearings.

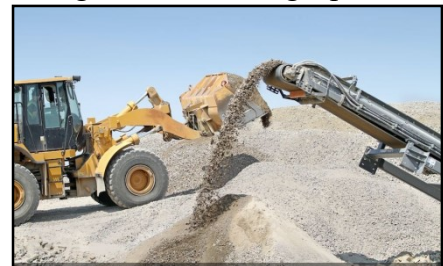
"They are kind of the 'odd balls' of matter because they behave differently from solids, liquids and gases," Boettcher says.

While the phases of water, for example, can easily be described as either a liquid, solid or gas, depending on specific temperatures, the thermodynamics of non-equilibrium systems are not well-defined. A major complication is the fact that individual particles in most granular materials have different, distinct properties and exert frictional forces on each other. And changes in temperature do not produce significant motion in them. Gravity further complicates the behavior of granular materials, since it affects the density of different layers in a system of particles.

In 1997, researchers developed a way to shake granular materials in a controllable way for a series of experiments on what is known as the "Chicago pile." They filled a glass beaker with micron-sized glass beads and "tapped" the material upward with a specific amplitude. They were then able to measure the resulting density of the material in the beaker as a function of the strength of the taps, or the energy pulsing through the system.

Boettcher and his collaborator wanted to gain a molecular-level understanding of the compaction dynamics of a granular pile through analysis of computer simulations. They were particularly interested in comparing a granular pile's density in both an excited and a relaxed state to look for patterns.

Inspired by the Chicago pile experiments, the researchers ran computer simulations based on 60,000 spheres, from 1 to 1.02 micrometers in diameter, contained in a vertical cylinder 2.4



Granular materials are ubiquitous in everyday life, from gravel (above) to sesame seeds (below). Credit: Emory University

centimeters in diameter. The cylinder is tapped through pulses of energy tuned to precise amplitudes. The technology allows the researchers to measure the density of the pile locally and globally by tracking the shifting number of neighboring particles each individual particle touches.

The simulations showed that when a series of taps are exactly the same strength, the density of the pile increases ever more slowly, or logarithmically. As the taps continue over time, ever larger, record-sized shifts in the arrangement of the grains are required to increase the density of the pile. These record-sized fluctuations are increasingly difficult to achieve, explaining the slow gains in density.

"You can think of it like a beaker filled with loose sand," Boettcher explains. "At first there are big holes between the grains. So initially, it's easy for a grain to shift position by falling into an empty space. But as these spaces start to get smaller, it becomes less likely that a grain can fall through one. As the taps continue, it takes increasingly cooperative events to create the space necessary for more compaction."

Previous research has shown a similar statistical pattern for the behavior of amorphous solids that don't form ordered crystals when moving from a liquid to a solid state, such as glass and many polymers.

"That suggests that this pattern may be a piece of the puzzle to finding a systematic way to describe materials that are out of equilibrium," Boettcher says.

The researchers are now diving deeper into the question of whether the kinetic energy of the taps may be equivalent to the way temperature is used to describe materials in classical physics.

More information: Paula A. Gago et al. Universal features of annealing and aging in compaction of granular piles, *Proceedings of the National Academy of Sciences* (2020). DOI: [10.1073/pnas.2012757117](https://doi.org/10.1073/pnas.2012757117)

Journal information: [Proceedings of the National Academy of Science](https://phys.org/news/2021-01-movers-shakers-evidence-theory-granular.html)
<https://phys.org/news/2021-01-movers-shakers-evidence-theory-granular.html>



Sat, 09 Jan 2021

Researchers develop new system for measuring ship-generated underwater noise

Strathclyde researchers have developed a novel way of measuring underwater noise created by ships which poses a danger to marine life.

Human-generated underwater radiated noise (URN) from the military, the oil and gas industry and shipping traffic can interfere with the ability of marine animals to hear, navigate, communicate and catch prey.

The problem was recognized by the United Nations at its Convention of Migratory Species in 2018 where it called for more research on the impact of URN and for countries to mitigate ocean noise where possible.

Professors Patrick Fitzsimmons and Mehmet Atlar of the Department of Naval Architecture, Ocean and Marine Engineering (NAOME), have adapted off-the-shelf equipment to deploy the HyDrone, a waterproof aerial drone fitted with a SoundTrap hydrophone recorder to measure the URN generated by the propulsion systems of marine craft.

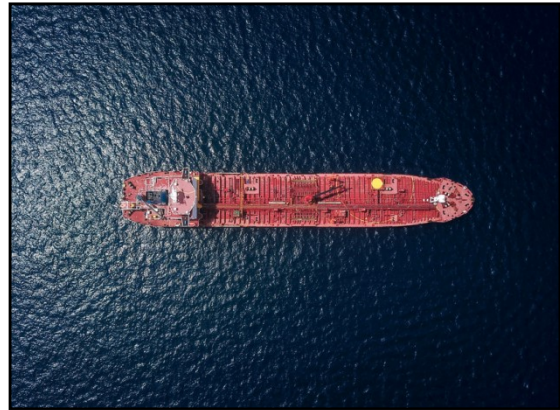
The HyDrone is capable of landing on the sea, powering off and floating while the SoundTrap hydrophone is suspended below it. The HyDrone is then flown back to the boat it operates from.

This novel configuration minimizes extraneous background noise from tidal current cross-flow which affects traditional weighted-line systems, where a hydrophone is tethered to a buoy or support vessel.

Professor Atlar, said: "Like carbon emission, increasing emission of URN from ever-growing commercial shipping traffic in the world's ocean has become a life-threatening danger to living mammal and fish whose communications, feeding, breeding and day-to-day affairs are adversely affected by URN emission.

"The international and EU regulatory authorities like the International Maritime Organisation (IMO) and the EU have started campaigns and launched research programs to mitigate and prevent this harmful environmental impact."

Professor Fitzsimmons adds "Within this context, technology like the HyDrone can simplify the practical measurement of the URN from ship propellers and other sources. The unit can operate wherever the target ship is operational and so can measure noise levels in shallow waters."



Credit: Unsplash/CC0 Public Domain

More versatile

The aerial platform provides a cheaper, more versatile deployment system since it can be launched quickly to sites from 5m to 1.5km from the target vessel and can be recovered in minutes, without requiring the vessel to stop to recover the alternative, heavier in-water drone or buoyed systems.

The HyDrone also has an on-board, low-light camera augmented with a more deeply immersed lightweight camera, which can measure temperature and salinity. The system will allow observation of ship propeller's tip vortex cavitation—the creation of vapor filled cavities in the water—and measure near-field noise adjacent to the propeller and at increasing distances behind the vessel.

This type of cavitation is caused by increased speed at the propeller tips that can reduce the nearby water pressure at a level of the critical vapor pressure. This induces so-called cold-boiling or "cavitation" which is a nuisance for propellers resulting in blade erosion, vibration and noise when those cavities implode.

Such data will be used to validate more advanced computational fluid dynamics simulations of cavitation induced noise, which are being developed within NAOME. The HyDrone may also be adapted to record wave motions.

Proving trials were recently conducted off Blyth in Northumberland where the target vessel was the "Princess Royal," a ship which had been designed by Professor Atlar and students in his previous post at Newcastle University. The HyDrone was tested at 10m immersion against a standard vertical array of tethered hydrophones.

The trial confirmed the ability of the HyDrone to minimize background noise, with little cross-flow experienced on the line between the drone and the Soundtrap hydrophone.

Strathclyde has started student projects involving a series of further trials in the Clyde estuary which will gather a body of URN and video data on a variety of vessels traveling at service speeds and at approach and departure speeds in shallow and deeper waters. The system will also be available commercially.

Provided by [University of Strathclyde, Glasgow](https://www.strath.ac.uk/news/2021-01-ship-generated-underwater-noise.html)

<https://phys.org/news/2021-01-ship-generated-underwater-noise.html>

Sun, 10 Jan 2021

COVID-19 vaccination drive to kick off in India on January 16, says Health Minister

New Delhi: The Union Health Ministry said on Saturday that the much-awaited coronavirus vaccination drive will kick off on January 16.

"It was decided that in view of the forthcoming festivals, including Lohri, Makar Sankranti, Pongal, Magh Bihu etc., the Covid-19 vaccination will start from January 16, 2021," the ministry said in a statement.

The roll-out of Covid-19 vaccine will give priority to the healthcare and frontline workers who are estimated to be around 3 crore, followed by those above 50 years of age and the under-50 population groups with comorbidities numbering around 27 crore.

On January 3, two vaccines - Bharat Biotech's Covaxin and Oxford-AstraZeneca's Covishield manufactured by Serum Institute of India - were approved for restricted emergency use.

Earlier on Saturday, Prime Minister Narendra Modi chaired a high-level meeting to review the status of Covid-19 in the country along with the preparedness of the states and UTs for the vaccination drive.

The Prime Minister took a detailed and comprehensive review of the status of Covid management covering various issues. Modi was also briefed about the preparedness status of the Centre in close collaboration with the state and UT governments for the roll-out of the vaccine.

The Prime Minister was also apprised about the Co-WIN vaccine delivery management system. The unique digital platform will provide real time information of vaccine stocks, their storage temperature and individualised tracking of the beneficiaries of the Covid-19 vaccine.

This platform will assist the programme managers across all levels through automated session allocation for pre-registered beneficiaries, their verification and for generating a digital certificate upon successful completion of the vaccine schedule. More than 79 lakh beneficiaries have been already registered on the platform.

As the vaccinators and vaccine administrators comprise a crucial pillar of the vaccination exercise, their training process was detailed out. A total of 2,360 participants were trained during the national level 'Training of Trainers' which comprised state immunisation officials, cold chain officials, IEC officials, and development partners, among others.

More than 61,000 programme managers, 2 lakh vaccinators and 3.7 lakh other vaccination team members have been trained so far as part of the trainings in the state, district and block levels.

The Prime Minister was also apprised on the three phases of dry runs which have been conducted across the country. The third dry run was conducted on Friday across 615 districts covering 4,895 sites in 33 states and UTs.

<https://www.businessinsider.in/india/news/covid-19-vaccination-drive-to-kick-off-in-india-on-january-16-says-health-minister/articleshow/80188100.cms>

