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Fri, 23 July 2021 3:43PM

DRDO conducts successful flight test of Akash-NG

- ***Second successful flight test in three days***
- ***Capable of intercepting high speed & agile aerial threats***
- ***Force multiplier to defence capabilities of Indian Air Force***
- ***Raksha Mantri congratulates DRDO***

Defence Research and Development Organisation (DRDO) conducted a successful flight-test of New Generation Akash (Akash-NG) missile from Integrated Test Range, Chandipur off the coast of Odisha at 1145 hrs on July 23, 2021. The test was carried out against a high-speed unmanned aerial target which was successfully intercepted by the missile. The flight test has validated the functioning of complete weapon system consisting of the missile with indigenously developed RF Seeker, Launcher, Multi-Function Radar and Command, Control & Communication system. The test was carried out amidst inclement weather conditions proving the all-weather capability of the weapon system.

The system performance was validated through the data captured by a number of Radar, Telemetry and Electro Optical Tracking systems deployed by ITR, Chandipur. A team of Indian Air Force Officers witnessed the test.

On July 21, 2021, the missile was successfully flight-tested without seeker meeting all the mission requirements.

Raksha Mantri Shri Rajnath Singh has congratulated DRDO, Indian Air Force and the Industry on the second successful flight test of Akash-NG in a span of three days. He said the development of this state-of-the-art missile system will prove to be a force multiplier for air defence capabilities of Indian Air Force.

Secretary, Department of Defence R&D and Chairman DRDO Dr G Satheesh Reddy congratulated the teams for successful trial of Akash NG which is capable of intercepting high speed and agile aerial threats.

https://pib.gov.in/PressReleasePage.aspx?PRID=1738136

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Fri, 23 July 2021 3:43PM

डीआरडीओ ने आकाश-एनजी का सफल परीक्षण किया

- *तीन दिन में दूसरा सफल उड़ान परीक्षण*
- *उच्च स्तरीय गति से आने वाले एवं फुर्तीले हवाई खतरों को रोकने में सक्षम*
- *भारतीय वायु सेना की रक्षा क्षमताओं में अभूतपूर्व इज़ाफ़ा करेगा*
- *रक्षा मंत्री ने डीआरडीओ को बधाई दी*

रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) ने दिनांक 23 जुलाई, 2021 को सुबह 11:45 बजे ओडिशा के तट पर एकीकृत परीक्षण रेंज, चांदीपुर से नई पीढ़ी की आकाश (आकाश-एनजी) मिसाइल का सफल उड़ान परीक्षण किया गया। यह परीक्षण एक उच्च गति वाले मानवरहित हवाई लक्ष्य के विरुद्ध किया गया था जिसे मिसाइल द्वारा सफलतापूर्वक इंटरसेप्ट कर लिया गया। उड़ान परीक्षण से स्वदेशी मल्टी-फंक्शन रडार और कमांड, कंट्रोल एंड कम्युनिकेशन सिस्टम के साथ मिसाइल से युक्त संपूर्ण हथियार प्रणाली के कामकाज को मान्यता मिली है। इस हथियार प्रणाली का खराब मौसमी हालात में परीक्षण किया गया था जिसने इस हथियार प्रणाली की हर मौसम में काम करने की क्षमता को सिद्ध कर दिया।

आईटीआर, चांदीपुर द्वारा तैनात अनेक राडार, टेलीमेट्री और इलेक्ट्रो ऑप्टिकल ट्रैकिंग सिस्टम द्वारा हासिल किए गए डेटा के माध्यम से इस हथियार प्रणाली के प्रदर्शन को मान्य किया गया। भारतीय वायु सेना के अधिकारियों की एक टीम ने यह परीक्षण देखा।

दिनांक 21 जुलाई, 2021 को सीकर बग़ैर मिसाइल का सफलतापूर्वक उड़ान परीक्षण किया गया और मिशन की सभी आवश्यकताएं पूरी हुईं।

रक्षा मंत्री श्री राजनाथ सिंह ने तीन दिनों के अंतराल में आकाश-एनजी के दूसरे सफल उड़ान परीक्षण पर डीआरडीओ, भारतीय वायु सेना और उद्योग जगत को बधाई दी है। उन्होंने कहा कि इस अत्याधुनिक मिसाइल प्रणाली का विकास भारतीय वायु सेना की वायु रक्षा क्षमताओं में अभूतपूर्व वृद्धि करने वाला साबित होगा।

रक्षा अनुसंधान एवं विकास विभाग के सचिव और डीआरडीओ के अध्यक्ष डॉ जी सतीश रेड्डी ने आकाश एनजी के सफल परीक्षण के लिए टीमों को बधाई दी जो उच्च स्तरीय गति से आने वाले एवं फुर्तीले हवाई खतरों को रोकने में सक्षम है।

https://pib.gov.in/PressReleasePage.aspx?PRID=1738212

ANI
South Asia's Leading Multimedia News Agency

Sat, 24 July 2021

Second time in two days, DRDO successfully tests Akash-NG Missile in Balasore

New Delhi [India], July 23 (ANI): India has successfully test fired indigenously developed New Generation Akash Missile (Akash-NG), a Surface to Air Missile defence system off the coast of Odisha in Balasore on Friday.

This is the second test firing of the 30 km strike-range air defence missile systems in the last two days.

The Defence Research and Development Organisation officials in a statement said, "New Generation Akash (Akash-NG) missile has been successfully flight tested today at 1145 hrs from Integrated Test Range, Chandipur off the coast of Odisha. The test was carried out against a high-speed unmanned aerial target which was successfully intercepted by the missile.

A visual of the test firing of Akash–NG Missile by DRDO

"Today's flight test of Akash-NG has validated the functioning of complete weapon system consisting of the Missile with indigenously developed RF Seeker, Launcher, Multi-Function Radar and Command, Control & Communication system," the DRDO said.

The test was carried out amidst inclement weather conditions proving the all-weather capability of the weapon system.

The system performance was validated through the data captured by a number of Radar, Telemetry and Electro-Optical Tracking systems deployed by ITR, Chandipur.

A team of Indian Air Force Officers witnessed the test, DRDO officials said.

Once deployed, the Akash-NG weapon system will prove to be a force multiplier for the Air Defence capability of the Indian Air Force. Production agencies Bharat Electronics (BEL) and Bharat Dynamics Limited (BDL) have also participated in the trials.

Defence Minister Rajnath Singh has congratulated DRDO, BDL, BEL, Indian Air Force and the industry for the successful test.

DRDO Chairman Dr G Satheesh Reddy congratulated the team for the successful test. (ANI)

https://www.aninews.in/news/national/general-news/second-time-in-two-days-drdo-successfully-tests-akash-ng-missile-in-balasore20210723150041/#.YPqqHVlPBwI.whatsapp

THE ECONOMIC TIMES

Sat, 24 July 2021

India flight tests new generation surface-to-air Akash missile

Synopsis

"The missile, equipped with a radio frequency seeker, successfully intercepted a high speed unmanned aerial target," a DRDO spokesperson said.

India on Friday successfully flight tested the New Generation Akash (Akash-NG) missile from the Integrated Test Range, Chandipur, off the Odisha coast, DRDO sources said.

The test was carried out by Defence Research and Development Organisation (DRDO) against a high-speed unmanned aerial target which was successfully intercepted by the missile.

The surface-to-air missile was also successfully flight-tested two days ago from the same launch ground of ITR at Chandipur near here, sources said.

The flight trial was conducted from launch pad 3 of the ITR with all weapon system elements such as Multifunction Radar, Command, Control and Communication System and launcher participating in deployment configuration, they said.

"The missile, equipped with a radio frequency seeker, successfully intercepted a high speed unmanned aerial target," a DRDO spokesperson said.

On July 21, the missile was flight-tested without the seeker, meeting all the mission requirements.

Defence Minister Rajnath Singh congratulated DRDO, Indian Air Force and the Industry on the second successful flight test of Akash-NG in a span of three days.

DRDO successfully flight-tests the New Generation Akash Missile (Akash-NG), a surface-to-air-Missile from Integrated Test Range (ITR) off the coast, in Balasore

The missile system has been developed by Defence Research and Development Laboratory (DRDL), Hyderabad, in collaboration with other DRDO laboratories.

The test was carried out amid inclement weather conditions proving the all-weather capability of the weapon system.

In order to capture flight data, ITR deployed a number of Range stations like Electro Optical Tracking System, Radar and Telemetry.

The flawless performance of the entire weapon system has been confirmed by complete flight data captured by these systems. During the test, the missile demonstrated high manoeuvrability required for neutralising fast and agile aerial threats, sources said.

The launch was witnessed by the representatives of the Indian Air Force. Once deployed, the Akash-NG weapon system will prove to be a force multiplier for the air defence capability of the Indian Air Force.

Production agencies Bharat Electronics Limited and Bharat Dynamics Limited also participated in the trials.

DRDO Chairman, Dr G Satheesh Reddy, also congratulated the teams for the successful trial of Akash NG which is capable of intercepting high speed and agile aerial threats.

https://economictimes.indiatimes.com/news/defence/second-time-in-two-days-drdo-successfully-tests-akash-ng-missile-in-balasore/articleshow/84674861.cms

THE WEEK

Sat, 24 July 2021

India flight tests surface-to-air Akash missile second time in two days

It demonstrated high maneuverability needed for neutralising fast, agile threats

By Pradip R Sagar

The Defence Research and Development Organisation (DRDO) conducted the second successful flight-test of its new generation Akash (Akash-NG) missile. The missile was successfully flight-tested for the first time two days ago.

The test, carried out from Integrated Test Range, Chandipur, off the coast of Odisha at 11.45 hrs on Friday, was against a high-speed unmanned aerial target which was successfully intercepted by the surface-to-air missile. The missile demonstrated high maneuverability required for neutralising fast and agile aerial threats.

DRDO successfully tests Akash-NG missile from Integrated Test Range, Chandipur, off the coast of Odisha | PTI

Defence Minister Rajnath Singh congratulated the team of defence scientists, and said, "The development of this state-of-the-art missile system will prove to be a force multiplier for air defence capabilities of Indian Air Force".

The next-general Akash missile flight test has validated the functioning of complete weapon system, consisting of the missile with indigenously developed RF Seeker, launcher, multi-function radar and command, control and communication system.

"The test was carried out amidst inclement weather conditions, proving the all-weather capability of the weapon system," a DRDO official said, while adding that the system performance was validated through the data captured by a number of radar, telemetry and electro optical tracking systems deployed by ITR, Chandipur. A team of Indian Air Force officers witnessed the test.

On Wednesday, the missile was successfully flight-tested without seeker meeting all the mission requirements.

Existing version of Akash missile was inducted into the Indian Air Force in 2014 and the Army in 2015. In February this year, the Union cabinet cleared the export of Akash missile systems. The Centre also formed a high-powered panel to grant swift approval to export military hardware as Prime Minister Narendra Modi set a target for Indian defence exports—$5 billion by 2024.

Countries like Philippines, Indonesia, Vietnam, the UAE, Bahrain, Saudi Arabia, Egypt, Kenya and Algeria have expressed their interest in Akash, which is capable of targeting aerial assets within a range of 25km. Defence officials claim that Akash is around 50 per cent cheaper than its competitors. Other Indian systems like radars and sonars too cost only a quarter to one-fifth of similar systems available in the global market. All export versions will be different from the ones inducted into the Indian armed forces, as no country sells the best variant.

India's missile programme took off in 1982, when former Prime Minister Indira Gandhi decided to develop indigenous missile systems. She formed a Missile Study Team with A.P.J. Abdul Kalam as its head. The team recommended the phased development of five missiles—Trishul and Akash surface-to-air missiles, Nag anti-tank missile, Prithvi short-range ballistic missile and Agni.

https://www.theweek.in/news/india/2021/07/23/india-flight-tests-surface-to-air-akash-missile-second-time-in-two-days.html

THE NEW INDIAN EXPRESS

Sat, 24 July 2021

New generation Akash missile successfully test-fired, target intercepted amid inclement weather

Designed and developed by DRDO, the Akash-NG system has been equipped with active electronically scanned array multi-function radar to search, track and fire control in one platform

By Hemant Kumar Rout

Bhubaneswar: The New Generation Akash (Akash-NG) surface-to-air missile was successfully flight-tested from a defence facility off the Odisha coast amid inclement weather conditions on Friday proving the all-weather capability of the weapon system.

Akash NG missile being test fired from the Integrated Test Range off Odisha coast on Friday. (Photo | EPS)

The indigenously-developed missile system blasted off from a canisterised mobile launcher at the Integrated Test Range (ITR) at about 11.45 am a few minutes after an unmanned aerial vehicle was flown. The missile searched, tracked, and successfully intercepted the high-speed unmanned aerial target.

Defence sources said the flight test of Akash-NG has validated the functioning of a complete weapon system consisting of the missile with indigenously developed radio frequency seeker, launcher, multi-function radar, and command, control, and communication system.

"The system performance was validated through the data captured by a number of radars, telemetry, and electro-optical tracking systems deployed by ITR. It demonstrated the high maneuverability required for neutralising fast and agile aerial threats. A team of Indian Air Force officers witnessed the test," the sources said.

This was the second successful flight testing of Akash NG in a span of three days. Earlier on July 21, the missile was successfully flight-tested without the seeker meeting all the mission requirements. Three more rounds have been planned.

Designed and developed by DRDO, the Akash-NG system has been equipped with active electronically scanned array multi-function radar to search, track and fire control in one platform. It is capable of intercepting high manoeuvring low radar cross-section aerial targets.

While the earlier variant of Akash had a maximum strike range of 30 km, the new generation Akash has an operational range of 70 km and can defend an area 10 times better compared to any short-range surface-to-air missile and is capable of engaging up to 10 targets simultaneously.

Unlike its earlier version, Akash-NG uses a two-pulse solid rocket motor that gives it a longer range and the ability to generate a high terminal velocity.

Akash is India’s first indigenously designed, developed, and produced air defence system and the cheapest surface-to-air missile ever produced in the world with supersonic interception speed.

DRDO chairman G Satheesh Reddy said the performance of the entire weapon system was flawless and the mission was a copybook success. The missile will be deployed after a few more developmental tests, he added.

Defence Minister Rajnath Singh has congratulated DRDO, the Indian Air Force, and Industry. He said the development of the state-of-the-art missile system will prove to be a force multiplier for the air defence capabilities of the Indian Air Force.

https://www.newindianexpress.com/nation/2021/jul/23/new-generation-akash-missile-successfully-test-fired-target-intercepted-amid-inclement-weather-2334360.html

Sat, 24 July 2021

DRDO ने किया नई पीढ़ी की आकाश मिसाइल का सफल परीक्षण, इसकी ताकत से कांपेगा दुश्मन

रक्षा मंत्री राजनाथ सिंह ने डीआरडीओ, भारतीय वायुसेना और इससे जुड़ी विनिर्माण एजेंसियों को बधाई दी। ओडिशा के मुख्यमंत्री नवीन पटनायक ने भी डीआरडीओ की प्रशंसा की और बधाई दी।

बालेश्वर: भारत ने बुधवार को आकाश मिसाइल के नये संस्करण (आकाश-एनजी) का ओडिशा तट से सफल परीक्षण किया। आधिकारिक सूत्रों ने बताया कि बहुद्देशीय राडार, कमांड, कंट्रोल और संचार प्रणाली और लांचर आदि सभी प्रकार की हथियार प्रणाली से लैस मिसाइल का परीक्षण दोपहर करीब पौने एक (12:45) बजे जमीनी मंच से किया गया।

akash_missile

हैदराबाद स्थित रक्षा अनुसंधान और विकास प्रयोगशाला (डीआरडीएल) ने रक्षा अनुसंधान विकास संगठन (डीआरडीओ) की प्रयोगशालाओं के साथ मिलकर इस मिसाइल प्रणाली को विकसित किया है। जमीन से हवा में मार करने की क्षमता से लैस इस मिसाइल का परीक्षण समेकित परीक्षण रेंज (आईटीआर) से किया गया। सूत्रों ने बताया कि परीक्षण के दौरान मिसाइल ने तेज गति वाले और संवेदनशील हवाई लक्ष्यों पर निशाना साधने से जुड़ी क्षमता का अद्भुत प्रदर्शन किया।

सूत्रों ने बताया कि परीक्षण के दौरान मिसाइल की उड़ान से प्राप्त आंकड़ों के आधार पर सभी हथियार प्रणाली के सफल, बिना किसी गड़बड़ी के काम करने की पुष्टि हुई है। सेवा में आने के बाद आकाश-एनजी हथियार प्रणाली भारतीय वायुसेना के लिए बहुत महत्वपूर्ण और उसकी क्षमता को कई गुना बढ़ाने वाली साबित होगी।

रक्षा मंत्री राजनाथ सिंह ने डीआरडीओ, भारतीय वायुसेना और इससे जुड़ी विनिर्माण एजेंसियों को बधाई दी। ओडिशा के मुख्यमंत्री नवीन पटनायक ने ट्वीट किया, "ओडिशा तट पर स्थित समेकित परीक्षण केन्द्र से आकाश मिसाइल के नये संस्करण के सफल परीक्षण पर डीआरडीओ को बधाई।"

डीआरडीओ ने आज ही स्वदेश में विकसित कम वजन वाले ऐसी टैंक रोधी गाइडेड मिसाइल का परीक्षण किया जिसे व्यक्ति के कंधे पर रख कर चलाया जा सकता है। इस सफल परीक्षण के साथ ही सेना द्वारा इसके निर्माण का रास्ता साफ हो गया है। इस मिसाइल को भारतीय सेना की क्षमता बढ़ाने के लिहाज से विकसित किया गया है।

पिछले साल दिसंबर में सरकार ने आकाश मिसाइलों के निर्यात की अनुमति दे दी थी और विभिन्न देशों को इसकी बिक्री के लिए उच्च-स्तरीय समिति का गठन किया था। इस समिति में रक्षा मंत्री राजनाथ सिंह, विदेश मंत्री एस। जयशंकर और राष्ट्रीय सुरक्षा सलाहकार अजित डोभाल शामिल हैं और इसका गठन स्वदेश में विकसित महत्वपूर्ण रक्षा उपकरणों के निर्यात की अनुमति देने के लिए किया गया है।

https://www.abplive.com/news/india/new-generation-missile-shoots-to-success-against-high-speed-aerial-target-1944286

Sat, 24 July 2021

ओडिशा: DRDO ने बालासोर में तीन दिन में दूसरी बार किया Akash-NG मिसाइल का सफल परीक्षण, सतह से हवा में वार करने की क्षमता

ऑल वैदर कैपेबिलिटी को साबित करने के लिए इस मिसाइल का खराब मौसम में परीक्षण किया गया। इस 'मिसाइल डिफेंस सिस्टम' को हैदराबाद स्थित रक्षा अनुसंधान एवं विकास प्रयोगशाला (DRDL) द्वारा अन्य DRDO प्रयोगशालाओं के सहयोग से विकसित किया गया था।

Edited By: गरिमा तिवारी

भारत ने आज बालासोर में ओडिशा के तट से आकाश-एनजी मिसाइल (Akash-NG Missile) का तीन दिनों में दूसरी बार सफल परीक्षण किया। रक्षा अनुसंधान और विकास संगठन (DRDO) के अधिकारी ने बताया कि 30 किमी की मारक क्षमता वाली वायु रक्षा मिसाइल सिस्टम का पिछले तीन दिनों में यह दूसरा सफल ट्रायल है। सतह से हवा में मार करने वाली आकाश एनजी मिसाइल का दोपहर 11.45 बजे सफलतापूर्वक परीक्षण किया गया। इस मिसाइल का इस्तेमाल भारतीय वायु सेना द्वारा एयर स्ट्राइक के लिए किया जाएगा।

आकाश मिसाइल जमीन से हवा में वार करने की क्षमता रखती है.

DRDO ने आकाश-एनजी का सफल परीक्षण किया है। आकाश मिसाइल जमीन से हवा में वार करने की क्षमता रखती है। आकाश एसएएम प्रणाली पूरी तरह से ऑटोनोमस मोड में काम करते हुए कई हवाई लक्ष्यों को ध्वस्त कर सकती है। इस मिसाइल की लंबाई 560 सेंटीमीटर और चौड़ाई की बात करें तो वो 35 सेंटीमीटर है। यह मिसाइल 60 किलोग्राम तक विस्फोटक ढोने की क्षमता रखती है। इस मिसाइल का उड़ान परीक्षण सभी हथियार प्रणाली तत्वों के साथ लैंड-बेस्ड प्लेटफॉर्म से आयोजित किया गया था। इसमें कमांड एंड कंट्रोल सिस्टम का प्रदर्शन, ऑनबोर्ड एवियोनिक्स और मिसाइल के वायुगतिकीय कन्फिग्रेशन को सफलतापूर्वक सत्यापित किया गया।

ऑल वैदर कैपेबिलिटी को साबित करने के लिए इस मिसाइल का खराब मौसम में परीक्षण किया गया। 'मिसाइल डिफेंस सिस्टम' को हैदराबाद स्थित रक्षा अनुसंधान एवं विकास प्रयोगशाला (DRDL) द्वारा अन्य DRDO प्रयोगशालाओं के सहयोग से विकसित किया गया था। मिसाइल की उड़ान से जुड़े आंकड़े रिकॉर्ड रखने के लिए आईटीआर ने कई निगरानी प्रणाली, जैसे इलेक्ट्रो-ऑप्टिकल ट्रैकिंग प्रणाली, राडार और टेलीमेट्री का उपयोग किया। मंत्रालय ने कहा, ''प्रणालियों द्वारा एकत्र आंकड़ों/डेटा के आधार पर पूरी हथियार प्रणाली में कोई गड़बड़ी नहीं होने की पुष्टि हुई है।''

वायुसेना की ताकत को कई गुना बढ़ाएगी आकाश मिसाइल

आईटीआर, चांदीपुर द्वारा तैनात कई रडार, टेलीमेट्री और इलेक्ट्रो-ऑप्टिकल ट्रैकिंग सिस्टम द्वारा कैप्चर किए गए डेटा के माध्यम से सिस्टम के परफॉर्मेंस को वैलिडेट किया गया। डीआरडीओ के अधिकारियों ने बताया कि भारतीय वायुसेना के अधिकारियों की एक टीम ने इस परीक्षण को देखा। रक्षा मंत्री राजनाथ सिंह ने सफल परीक्षण के लिए डीआरडीओ, बीडीएल, बीईएल, भारतीय वायु सेना और उद्योग

जगत को बधाई दी है। डीआरडीओ के अध्यक्ष डॉ जी सतीश रेड्डी ने भी सफल परीक्षण के लिए टीम को बधाई दी।

एक बयान में कहा गया, "तैनात किए जाने पर आकाश-एनजी हथियार प्रणाली भारतीय वायुसेना की हवाई रक्षा क्षमता को कई गुना बढ़ाने वाला साबित होगा।" पिछले साल दिसंबर में सरकार ने आकाश मिसाइलों के निर्यात की अनुमति दे दी थी और विभिन्न देशों को इसकी बिक्री के लिए उच्च-स्तरीय समिति का गठन किया था। इस समिति में रक्षा मंत्री राजनाथ सिंह, विदेश मंत्री एस. जयशंकर और राष्ट्रीय सुरक्षा सलाहकार अजित डोभाल शामिल हैं और इसका गठन स्वदेश में विकसित महत्वपूर्ण रक्षा उपकरणों के निर्यात की अनुमति देने के लिए किया गया है।

https://www.tv9hindi.com/india/odisha-drdo-successfully-test-fired-akash-ng-missile-for-the-second-time-in-three-days-in-balasore-surface-to-air-capability-748197.html

नवभारत टाइम्स

Sat, 24 July 2021

दो दिन में दूसरी बार आकाश मिसाइल का सफल टेस्ट, जमीन से हवा में करती है मार

दो दिन पहले भी नई पीढ़ी की आकाश मिसाइल का सफल परीक्षण किया गया था। उस दौरान इसमें रेडियो फ्रीक्वेंसी यंत्र का इस्तेमाल नहीं किया गया था। डीआरडीओ के सूत्रों ने बताया कि मिसाइल का परीक्षण आईटीआर के लॉन्च पैड-3 से किया गया।

Edited by वैभव पांडेय

बालासोर: भारत ने ओडिशा के चांदीपुर स्थित परीक्षण केंद्र (आईटीआर) से शुक्रवार को जमीन से हवा में मार करने वाली नई पीढ़ी की आकाश मिसाइल (आकाश-एनजी) का सफल परीक्षण किया। रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) ने यह परीक्षण तीव्र गति वाले एक मानवरहित हवाई लक्ष्य को निशाना बनाकर किया। इसे मिसाइल ने सफलतापूर्वक नष्ट कर दिया।

आकाश मिसाइल का परीक्षण

डीआरडीओ के सूत्रों ने बताया कि मिसाइल का परीक्षण आईटीआर के लॉन्च पैड-3 से किया गया। इसके लिए बहुकार्य रडार, कमान, नियंत्रण, संचार प्रणाली और प्रक्षेपक सहित समूची प्रणाली तैनात की गई। संगठन के प्रवक्ता ने कहा, 'रेडियो फ्रीक्वेंसी यंत्र से लैस मिसाइल ने तीव्र गति वाले हवाई लक्ष्य को सफलतापूर्वक नष्ट कर दिया।'

दो दिन पहले भी हुआ था परीक्षण

सूत्रों ने कहा कि दो दिन पहले 21 जुलाई को भी चांदीपुर स्थित आईटीआर के इसी लॉन्च पैड से जमीन से हवा में मार करने वाली मिसाइल का परीक्षण किया गया था, लेकिन इसमें रेडियो फ्रीक्वेंसी यंत्र का इस्तेमाल नहीं किया गया था। इस दौरान मिशन के सभी मानक प्राप्त कर लिए गए थे। रक्षा मंत्री राजनाथ सिंह ने डीआरडीओ, वायुसेना और संबंधित उद्यम को तीन दिन के भीतर आकाश-एनजी के दूसरे सफल परीक्षण पर बधाई दी।

https://navbharattimes.indiatimes.com/state/other-states/other-cities/second-time-in-two-days-drdo-successfully-tests-akash-ng-missile-in-balasore/articleshow/84678232.cms

FINANCIAL EXPRESS
Read to Lead

Sun, 25 July 2021

DRDO Chairman G Sateesh Reddy inspects construction work of Missile Testing Range in Andhra Pradesh's Krishna district

The project, coming up on a 154.4 hectare site, will comprise a technical facility, a few launch pads, control centre and state-of-the-art communications systems

Defence Research and Development Organisation (DRDO) Chairman G Sateesh Reddy on Sunday inspected the ongoing construction work of the Missile Testing Range at Gullalamoda village in Krishna district of Andhra Pradesh.

"At least 1,000 people are working on building the project. The works are progressing at a brisk pace," Sateesh Reddy said on the occasion. (Image Courtesy: Twitter / DRDO_India)

The Rs 1,000 crore MTR is being built on the Bay of Bengal coast, work on which commenced last year.

This will be the second MTR after the one at Balasore in neighbouring Odisha.

The project, coming up on a 154.4 hectare site, will comprise a technical facility, a few launch pads, control centre and state-of-the-art communications systems.

Both short and long-range missiles could be tested from this facility once it is fully up, official sources said.

"At least 1,000 people are working on building the project. The works are progressing at a brisk pace," Sateesh Reddy said on the occasion.

The DRDO would adopt Gullalamoda village and contribute to its overall development, he said.

Later, talking at a get-together organised by the Krishna District Writers' Association in Vijayawada, the DRDO Chief said India's defence sector was constantly growing in strength.

"We are not only able to produce our arsenal using indigenous technology but also reached a stage where we are able to export weapons to other countries. Right now, defence equipment is being manufactured in 11 small and large factories within the country," Sateesh Reddy pointed out.

Former Andhra Assembly Deputy Speaker Mandali Buddha Prasad said Vice-President M Venkaiah Naidu, Supreme Court Chief Justice Nuthalapati Venkata Ramana and Sateesh Reddy rose to great heights in their respective fields and not only made Telugus proud but also earned the acclaim of all countrymen.

At the same time, they have been striving to sustain the glory of Telugu language, Buddha Prasad noted.

https://www.financialexpress.com/defence/drdo-chairman-g-sateesh-reddy-inspects-construction-work-of-missile-testing-range-in-andhra-pradeshs-krishna-district/2297433/

Sat, 24 July 2021

आंध्र प्रदेश: DRDO अध्यक्ष जी सतीश रेड्डी ने किया कृष्णा जिले में मिसाइल परीक्षण केंद्र का निरीक्षण, पिछले साल शुरू हुआ था निर्माण कार्य

ओडिशा में बालासोर स्थित मिसाइल परीक्षण केंद्र के बाद यह दूसरा एमटीआर होगा। रेड्डी ने इस अवसर पर कहा, "परियोजना निर्माण में कम से कम एक हजार लोग काम कर रहे हैं। काम तेज गति से चल रहा है।

Edited By अलका कुमारी

रक्षा अनुसंधान और विकास संगठन (DRDO) **के अध्यक्ष जी सतीश रेड्डी ने आंध्र प्रदेश में कृष्णा जिले के गुल्लालमोडा गांव में मिसाइल परीक्षण केंद्र** (MTR) **के निर्माण कार्य का निरीक्षण किया। बंगाल की खाड़ी तटीय क्षेत्र में एक हजार करोड़ रुपये की लागत से एमटीआर का निर्माण किया जा रहा है जिसकी शुरुआत पिछले साल हुई थी।**

पास के ओडिशा में बालासोर स्थित मिसाइल परीक्षण केंद्र के बाद यह दूसरा एमटीआर होगा। रेड्डी ने इस अवसर पर कहा, "परियोजना निर्माण में कम से कम एक हजार लोग काम कर रहे हैं। काम तेज गति से चल रहा है।" उन्होंने कहा कि डीआरडीओ गुल्लालमोडा गांव को गोद लेगा और इसके समग्र विकास में मदद करेगा।

नौवहन और वैमानिकी प्रौद्योगिकी के क्षेत्र में अहम योगदान

मालूम हो कि जी रेड्डी का नौवहन और वैमानिकी प्रौद्योगिकी के क्षेत्र में अहम योगदान रहा है। उन्होंने अनुसंधान केंद्र के निदेशक के रूप में कई अहम रक्षा परियोजनाओं में अहम भूमिका निभाई है। जी सतीस रेड्डी को मिसाइल सिस्टम में उनके शोध और विकास के लिए जाना जाता है और एयरोस्पेस प्रौद्योगिकियों और उद्योगों के उन्नयन की दिशा में भी उन्होंने निरंतर योगदान दिया है। जी सतीश रेड्डी की अगुवाई में ही एवियनिक्स सिस्टम तैयार किया गया था।

इलेक्ट्रॉनिक्स एंड कम्युनिकेशन इंजीनियरिंग में स्नातक

रेड्डी का जन्म महिमालुरू में हुआ था। रेड्डी ने आंध्र प्रदेश में जवाहरलाल नेहरू टेक्नोलॉजिकल यूनिवर्सिटी (JNTU) **से इलेक्ट्रॉनिक्स एंड कम्युनिकेशन इंजीनियरिंग में स्नातक किया है। इसके साथ-साथ जी रेड्डी रॉयल इंस्टीट्यूट ऑफ नेविगेशन लंदन के साथ रॉयल एयरोनॉटिकल सोसाइटी में भी शामिल हो चुके हैं। (भाषा)**

https://www.tv9hindi.com/india/andhra-pradesh-drdo-president-g-satheesh-reddy-inspects-missile-test-center-in-krishna-district-construction-work-started-last-year-751652.html

The Tribune

Mon, 26 July 2021

Sports techniques can be adapted for faster acclimatisation of troops in high altitude, Says DRDO study

By Vijay Mohan

Chandigarh: A new study by the Defence Research and Development Organisation (DRDO) has suggested that techniques used by sportspersons to enhance their performance can be used for faster acclimatisation of troops being deployed to high altitude areas.

For representation only. File photo

Since the Olympic Games were held at a high altitude in Mexico City in 1968, the usefulness of training at altitude or in hypoxic conditions for the improvement of aerobic exercise performance has received considerable attention among athletes, coaches, and scientists

Intermittent Hypoxia Training (IHT) at sea level has been recommended before proceeding to high altitude as an approach for rapid acclimatisation. This approach may be helpful to reduce the occurrence of acute mountain sickness and leads to better acclimatisation at high altitudes in a shorter duration.

IHT consists of sessions in which an individual is required to breathe hypoxic or low oxygen level air for a few minutes alternated with intervals of breathing hyperoxic or normal air. Recent research has shown that the use of IHT in sports medicine improves physical performance and induces pre-acclimatisation without any pharmacological interventions. Exposure to moderate hypoxic episodes has also been shown to elicit beneficial effects by activating the adaptive responses in the human body and protects against hypertension, myocardial injuries, heart arrhythmia and bronchial asthma.

Thirty Army personnel were divided into two groups. IHT was administered for four hours per day for four days at sea level and within 24-48 hours they were airlifted to 11,700 feet in Ladakh. Their bio-markers and vital parameters were analysed.

Tests showed that IHT exposure decreased the oxidative stress markers and enhanced the level of antioxidants which facilitates faster acclimatisation to high altitudes. The findings of the study, undertaken by six scientists from DRDO's Defence Institute of Physiology and Allied Sciences, were published in June 2021.

High altitude, according to the study, is associated with several environmental challenges such as low temperature, high-velocity winds, ionizing radiations, and low oxygen levels, which lead to a decrease in physical and mental performance. Rapid ascent to high altitude without proper acclimatisation may cause detrimental effects on health and also compromise operational capabilities.

Proper acclimatisation can resolve the problems and reduce the severity of illness. This is vital in the Indian context as the Army deploys a large number of soldiers in high altitude areas in the eastern as well as western theaters. This number went up exponentially since the ongoing stand-off with China along the Line of Actual Control began in May last year.

DRDO as well as the Directorate General Armed Forces Medical Services have been working on various technologies and methodologies to cut down on the acclimatisation period and mitigate mountain sickness. The present acclimatisation protocol is divided into three phases spread over 11 days.

https://www.tribuneindia.com/news/health/sports-techniques-can-be-adapted-for-faster-acclimatisation-of-troops-in-high-altitude-says-drdo-study-288139

THE HINDU

Sat, 24 July 2021

Army to use jammers to protect forward bases from drone attacks

The June 27 attack on Jammu air base is the first instance where small drones were used to drop explosives

By Dinakar Peri

New Delhi: The Army is procuring jammers in large numbers, and expanding the range of the existing ones to protect large military bases in forward areas from drone attacks, a senior defence official has said. Also with ceasefire holding along the Line of Control (LoC), both India and Pakistan are using the peace to upgrade their defences on the border, officials said.

Photo used for representation purpose only. File

"We were cognisant of the threat from drones for sometime. To cover forward bases, we are getting bigger jammers, including from the Defence Research and Development Organisation (DRDO) and an Indian company in Hyderabad," one official said. "We are working to expand the range of our jammers while also importing additional ones."

Stating that several measures were being put in place, officials said. To begin with, the sentries posted along the installations were more alert now and on the lookout for possible presence of drones. "Drone and quadcopter threat is now a reality," a second official noted.

There have been several instances in the last couple of years where quadcopters were used to drop drugs, arms and ammunition from across the border in Jammu and Punjab. However, the June 27 attack on Jammu air base is the first instance where small drones were used to drop explosives.

Ceasefire holding

There has been no violation by Pakistan since the commitment by both sides in February to observe the ceasefire along the Line of Control (LoC) and other areas. However there were two infiltration attempts recently.

With no firing at all, both sides are using the peace to upgrade their defences. Restoration work on the existing border fence, called the Anti-Infiltration Obstacle System (AIOS), is under way, the second official explained.

Over the years, the Army has significantly improved its electronic surveillance along the LoC to check infiltration and, after some delays, work is under way to convert the existing border fence into a smart fence integrated with several sensors. As reported by *The Hindu* earlier, the new hybrid model of the smart fence being tested costs around ₹10 lakh per km.

In the last few months, some terror camps along the LoC have been reactivated and there has been some probing and infiltration attempts, one of the officials said. But there has been no overt support by Pakistan Army to the terrorists, the official said.

There have also been surveillance inputs on several occasions of movement of terrorists close to the LoC, though there have been no attempts to infiltrate.

https://www.thehindu.com/news/national/army-to-use-jammers-to-protect-forward-bases-from-drone-attacks/article35496241.ece

जागरण

Sat, 24 July 2021

पाकिस्तानी ड्रोन हमलों का जवाब देगा DRDO का एंटी ड्रोन सिस्टम, जम्मू अंतरराष्ट्रीय सीमा पर होगा प्रशिक्षण

Jammu Drone Attack डीआरडीओ की मौजूदा ड्रोन प्रणाली का एक बार बीते साल नवंबर-दिसंबर में अमृतसर के पास परीक्षण हो चुका है। हालांकि एनएसजी ने भी इसका परीक्षण किया है लेकिन वह इस समय इस्रायल और अमरीका द्वारा उपलब्ध कराई गई एंटी ड्राेन टैक्नोलाजी का इस्तेमाल कर रही है।

By Rahul Sharma

श्रीनगर: ड्रोन हमलों के लगातार बढ़ते खतरे से निपटने के लिए डीआरडीओ द्वारा विकसित एंटी ड्रोन प्रणाली का जल्द ही जम्मू में अंतरराष्ट्रीय सीमा पर परीक्षण होगा। परीक्षण के आधार पर ही इसे बीएसएफ स्थापित करने पर अंतिम फैसला लेगी। यह परीक्षण अगले एक पखवाड़े में पूरा कर लिया जाएगा।

डीआरडीओ की मौजूदा एंटी ड्रोन प्रणाली चार किलोमीर के दायरे में उड़ रहे ड्रोन का पता लगाने, दो किलाेमीटर के दायरे में जाम करने और एक से दो किलाेमीटर की रेंज में उसे मार गिराने में सक्षम है। इस बीच, सेना द्वारा पुंछ में एलओसी पर कुछेक जगहों पर इलेक्ट्रो आप्टिक ड्रोन प्रणाली भी स्थापित की गई है। यह प्रणाली करीब डेढ़ किलोमीटर की रेंज में दुश्मन के ड्रोन का पता लगा उसके संचार तंत्र काे अवरुद्ध करने, उसे हवा में मार गिराने में समर्थ है। इसमें लेजर तकनीक का इस्तेमाल होता है।

संबधित सूत्रों ने बताया कि बीएसएफ ने जम्मू प्रांत में कठुआ से लेकर कानाचक तक अंतरराष्ट्रीय सीमा पर कुछ विशेष स्थानों को एंटी ड्रोन प्रणाली काे स्थापित करने के लिए चिन्हित कर लिया है। इन स्थानों पर एंट्री ड्रान प्रणाली को स्थापित करने से पूर्व उसका परीक्षण हाेगा। बीएसएफ ने इसके लिए डिफेंस रिसर्च एंड डिवेल्पमेंट आर्गेनाईजेशन डीआरडीओ काे औपचारिक आग्रह करते हुए पत्र भी भेजा है।

डीआरडीओ द्वारा विकसित एंटी ड्रोन प्रणाली का जम्मू-कश्मीर की भौगोलिक परिस्थितियों और बीएसएफ व अन्य सुरक्षा एजेंसियों की आवश्यक्तानुरुप रियल टाइम ऑन ग्राउंड परीक्षण होगा। अगर यह परीक्षण कामयाब रहता है ताे ही इस प्रणाली को जम्मू-कश्मीर मं बीएसएफ स्थापित करेगी। इसके अलावा परीक्षण के दाैरान अगर कुछ खामियां पायी जाती हैं तो तदनुसार उनका सुधार भी किया जाएगा। यह परीक्षण संभवत: सांबा सेक्टर के आस-पास ही हाेगा।

उन्हाेंने बताया कि डीआरडीओ की मौजूदा ड्रोन प्रणाली का एक बार बीते साल नवंबर-दिसंबर में अमृतसर के पास परीक्षण हो चुका है। हालांकि एनएसजी ने भी इसका परीक्षण किया है, लेकिन वह इस समय इस्रायल और अमरीका द्वारा उपलब्ध कराई गई एंटी ड्राेन टैक्नोलाजी का इस्तेमाल कर रही है।बीएसएफ चाहती है कि एंटी ड्रोन प्रणाली अकेले या समूह मेंं आने वाले अवांछित यूएवी का 10 सैकेंड में पता लगा उसे निशाना बनाने में समर्थ हो।

इस अलावा यह स्टैंड एलोन प्लेटफार्म आधारित हाे और रिचार्जेबल बैटरी से चलाए जाने में समर्थ हो। यह मल्टीकाप्टर, फिक्सड विंग यूएवी और रिमाेट कंट्राेल से संचालित होने वाले यूएवी को किसी भी मौसमी परिस्थिति में रियल टाइम स्कैन करने, पता लगाने ,पीछा करने और उसे मार गिराने में समर्थ हाे। इसके अलावा एंटी ड्रोन प्रणाली ड्राेन के रेडियो सिस्टम और जीपीएस को पूरी तरह अवरुद्ध करने, उसे जमीन पर उतरने को मजबूर करने वाले संकेत जारी करने में समर्थ हाेनी चाहिए।

संबधित अधिकारियों ने बताया कि ड्रोन का खतरा लगातार बढ़ता जा रहा है। जम्मू-कश्मीर में कई लोगों के पास ड्रोन हैं। हालांकि प्रशासन ने इन पर रोक लगा दी है, लेकिन आतंकी तत्व कभी भी इनका इस्तेमाल कर सकते हैं। इसके अलावा सरहद पार से भी ड्रोन की घुसपैठ आए दिन हो रही है।इसलिए इस खतरे से निपटने लिए विभिन्न सुरक्षा एजेंसियां लगातार अत्याधुनिक तकनीक और उपकरणों के विकल्प काे तलाश रही हैं।

https://www.jagran.com/jammu-and-kashmir/jammu-drdo-prepared-anti-drone-system-trial-will-be-held-at-jammu-international-border-soon-21860052.html

The Tribune

Sat, 24 July 2021

Army installing jammers at LoC

By Ajay Banerjee

New Delhi: Faced with a threat posed by drones to military stations and installations in sensitive areas like J&K, the Army has tried and achieved some success in installing jammers to disable drones. But, so far, no system exists to detect a drone to alert a human being who can then shoot it down with a laser gun.

Photo for representation only.

With hundreds of military camps in the Union Territory, the next threat is a swarm of low-flying drones carrying explosives that can be dropped on targets, sources have indicated.

The jammer snaps the radio-wave link between the drone and the ground controller, thus stalling the drone.

One anti-drone option being fast-tracked is the system made by the DRDO, which can detect a drone 4 km away, jam it at 2 km and kill it at a distance of 1 km. It has been tested by security forces three-four times. It costs Rs 25 crore a piece.

Bharat Electronics Limited has signed transfer of technology agreement to mass produce the system. The Army also tested an Israeli system that is being looked at by the Navy. Its efficacy for the semi mountainous terrain of Jammu region and the snow clad terrain of North Kashmir is yet to be established.

No technology for detection

- No system exists to detect a drone to alert a human being who can shoot it down with a laser gun
- Currently, the detection depends upon security personnel trying to listen to sound and see light that some UAVs emit

https://www.tribuneindia.com/news/j-k/army-installing-jammers-at-loc-287372

TSG SundayGuardianLive

Sun, 25 July 2021

Security grid seeks early anti-drone system in J&K

By Noor-ul-Qamrain

Srinagar: The security and intelligence grid wants an immediate anti-drone system to be put in place, especially on the international border in Jammu and Punjab sectors as "non-state actors", along with smugglers with international connections, have increased their activities by drone dropping of drugs and arms.

As per reports in sections of the media in Delhi, intelligence agencies have already warned that there is an immediate need of "efficient anti-drone technology" as they have credible inputs that soon, from across the border, many groups would be "using artificial intelligence and robotics to target India".

Jammu and Kashmir, July 23 (ANI): Combo picture of the hexacopter drone shot down by Jammu and Kashmir Police and recovers explosive worth 5 kg, in Akhnoor on Friday. (ANI Photo)

The alarm of the security and intelligence grid has become more pronounced, as in the recent past, police have arrested drug smugglers in the Akhnoor sector of Jammu, while as on Friday within 8 km inside Indian territory, a drone was shot down carrying 5 kg of IED.

On Friday, security agencies were able to shoot down a drone with 5 kg of IED at Gurachak village within Indian territory, in the Akhnoor-Sunderbani sector of Jammu.

After the two drone attacks at the Jammu air force station, intelligence agencies have already asked the central government to bring the latest anti-drone technology and also use Defense Research and Development Organization (DRDO) scientists to create their own system to be immediately put in place in Jammu and Punjab.

Recent media reports have claimed that both in Jammu and Punjab sectors, the DRDO, along with the BSF, has tested a prototype anti-drone system for testing under real conditions near the borders.

The BSF posted on the borders at Punjab and Jammu has already detected a lot of activities by the groups by using unmanned drones to drop weapons and drugs. Intelligence agencies have also said that from across the border, some international drug rings were using drone technology to drop packets of heroin to their contacts on this side of the border to be further carried to the international market.

These intelligence inputs finally alerted the Anti-Narcotics Task Force (ANTF) in Jammu, as they arrested on Thursday several persons by recovering from them Afghan brand heroin worth Rs 40 crore and there would be more arrests from several places.

The initial investigations have indicated that international drug modules are working along the international border of Jammu and they have been dropping heroin packets at several places near the border.

The part of the module on this side of the border collects this contraband to be given to further contacts of the gang for the international market.

Media reports have already said that the DRDO anti-drone system would be in place soon in the Jammu and Punjab borders to combat the latest drone system from across the border.

https://www.sundayguardianlive.com/news/security-grid-seeks-early-anti-drone-system-jk

The EurAsian Times

Sat, 24 July 2021

India's 5th-Gen aircraft: IAF to model its AMCA on US' F-35s instead of J-20 or Su-57 jets – Experts

By Apoorva Jain

India is on course to develop its very own fifth-generation multirole fighter jet, expected to enter service in the next decade. With this, India will join the league of the US, Russia, and China, which boast advanced jets such as F-35, Su-57, and J-20, respectively.

A model of India's fifth-generation fighter jet AMCA. (via Twitter)

The Advanced Medium Combat Aircraft (AMCA) program aims to build a homegrown fifth-generation fighter jet with "sixth-generation characteristics," intended to replace the aging fleet SEPECAT Jaguar, Dassault Mirage 2000, and MiG-27.

The AMCA is eyeing a complementary role for the Indian Air Force's (IAF) air superiority fighters, to serve as a flexible force multiplier with versatile missions.

With the AMCA fighter, India will join the elite club of the US, Russia, and China, each of which has developed an indigenous fifth-generation aircraft.

The origins of India's own fighter program dates back to 2018 when the country withdrew from the joint Russian-Indian Fifth Generation Fighter Aircraft (FGFA) program to manufacture a new fighter based on Russia's Su-57 model.

However, military experts suggest that the technical design and projected specifications of AMCA share many similarities with the US F-35, one of the most advanced jets in the world.

AMCA Program

The Advanced Medium Combat Aircraft (AMCA) is a program to develop a fifth-generation fighter aircraft.

The Aeronautical Development Agency (ADA) under India's Defence Research and Development Organisation (DRDO) is responsible for designing the plane and state-run Hindustan Aeronautics Limited (HAL) is the primary contractor responsible for assembly and development of individual components like landing gear, air-to-air refueling (AAR) probe, and some parts of the composite structure.

It is a multi-role combat aircraft designed for air superiority, ground attack, bombing, intercepting, strike, and other missions.

After initial approval in funding and design, a computer-aided design (CAD) model of the aircraft was shown at the 'Aero India' show in 2019.

The proposed fifth-generation "stealth" aircraft will have all-weather capabilities and supercruise capability. It is also planned to have both manned and unmanned operational capability.

The indigenous jet will be equipped with advanced AESA radar, supermaneuverability, data fusion, and advanced avionics. Reports suggest that the fighter program will be developed in a joint venture with a private company, something that has not been done in India so far.

"We have to decide how we produce the jet after freezing (finalizing) its design. We want to bring in private Indian partners for the production," R Madhavan, chairman-cum-Managing Director of the HAL, told Indian daily, *The Tribune*.

ADA is reportedly looking to fly the AMCA prototype by 2025 and commence production by 2026-28.

Other Fifth-Gen Jets

Although India kickstarted the process to build an indigenous fifth-generation jet as a fallout of the joint Russian program, the AMCA has more similarities with Lockheed Martin's F-35 jet than to Russia's Su-57 jet or China's J-20 jet with respect to its design.

AMCA has been designed as a role-flexible fighter capable of executing a wide range of missions depending on loadout, according to National Interest.

The US, China, and Russia are the only three in the world to have fifth-generation jets in service. While the F-35 entered service in 2016, China became the second country in the world to induct its J-20 in 2017, followed by Russian Su-57 which was inducted into the air force in late 2020.

Russia's Su-57 is a single-seat, twin-engine multi-role aircraft with supercruise, supermaneuverability, and stealth capability.

China's J-20 is also a single-seat, twin-engine jet, meant for "air defense systems penetration" and precision strike missions.

On the other hand, Lockheed Martin's F-35 has state-of-the-art stealth technology, advanced radars, electronic warfare systems and transformational capabilities that enable pilots to operate in any environment, against any threat.

The F-35 is also capable of strategic attack and intelligence, surveillance and reconnaissance missions, making it much more versatile than the other jets.

AMCA is also projected to perform multiple missions from deep penetration to air superiority roles.

Indigenous Engine

Younis Dar, a senior defense journalist with The Eurasian Times, wrote a report on the procurement of engines by the Aeronautical Development Agency (ADA) for indigenous jets.

The ADA is eyeing the F414 GE jet engine to power the first two squadrons of AMCA fighters while the next two are expected to use the indigenous engine.

Scientists at the organization are faced with the daunting task of developing a completely new engine to suit the fifth-generation fighter, with the capability to produce a thrust of 110-kilo newton (kN), the report said.

Earlier, an indigenous engine 'Kaveri' was being developed by DRDO, first mooted in 1989 when indigenous Tejas jet was on the drawing board. Despite 1,880 hours of engine test in 2010, several technical problems and cost overruns raised questions on the efficiency of the program.

Decaying performance at high altitude, combustion flicker, and insufficient thrust are some of the problems plaguing the integration of an indigenous engine with an Indian-made fighter jet.

Recent reports suggest that India is all set to ink another major defense deal with the United States (US), to acquire fighter jet engines worth $700 million.

The Indian Air Force (IAF) will buy a total of 83 jet engines of the LCA Tejas Mk-1A version, an indigenous fourth-generation fighter, from US company General Electric (GE).

The GE F404, also known as GE 404, is a turbojet engine used in numerous military aircraft, including McDonnell Douglas F/A-18 Hornet, KAI T-50 Golden Eagle, and Northrop F-20 Tigershark.

Every variant of the HAL Tejas, including the latest Mark 1A, has been powered by the F404. The AMCA along with indigenous LCA Tejas, French Rafale, and the Russian Sukhoi Su-30 will make the IAF a formidable force in the region.

Dar, when interviewing defense officials, analyzed that India would want to model its AMCA on the lines of the F-35 jet while dramatically cutting the costs.

Since India already rejected the Su-57 and capabilities of J-20 appear very uncertain, New Delhi is 'getting inspired' by US technology (as most of avionics and engine is based on western and not on Russian tech).

Even with the Tejas fighter jet which will serve as the bae to AMCA, the aircraft is 60 percent Indian by government estimates. Value of other foreign components includes the plane's General Electric F404 jet engine and Israel Aerospace Industries' radar and electronic warfare systems.

Dar concludes that there is a possible shift in the Indian military circles who are looking to move away from Russian technology, given the lessons learned from the fallout of the FGFA project. Despite a robust defense partnership with Russia, it seems that India's first fifth-generation fighter jet will not really host any Russian technology and could be like the Indian F-35.

https://eurasiantimes.com/indias-5th-gen-aircraft-iaf-to-model-its-amca-on-us-f-35s-instead-of-j-20-or-su-57-jets-experts/

asianet newsable

Sun, 25 July 2021

Indian Army Vice Chief Lt Gen CP Mohanty reviews HAL's helicopter division in Bengaluru contact

The Vice Chief, who is on a 2-day visit held discussions with indigenous defence manufacturers, Tata Advanced Systems Limited and Aroo Private Limited

By Anish Kumar

Bengaluru: Keeping focus on the niche technologies in the domains of missiles, artificial intelligence, drones, robotics, unmanned ground systems and avionics, Indian Army vice chief Lt Gen CP Mohanty has reviewed the wide ranging issues with the defence equipment makers, which needed impetus and hand holding.

During his interactions with the industry leaders in Bengaluru, self reliance in defence was the underlying theme.

The vice chief, who is on a 2-day visit held discussions with indigenous defence manufacturers, Tata Advanced Systems Limited and Aroo Private Limited.

"He was briefed by the manufacturers on progress being made in electronics, optronics and ammunition related to platforms such as artillery guns," an official said.

He also visited the HAL facility and reviewed the progress made by the Helicopter Division of HAL and interacted with the representatives of the design bureau of both the Advance Light Helicopter and Light Combat Helicopter.

On July 22, he also witnessed advances made in special winter clothing.

The General officer also witnessed the demonstrations and briefings on the Akash Missile System, Tactical Communication and encryption devices and satellite communication equipment during his visit to BEL facility on Friday.

https://newsable.asianetnews.com/india-defence/indian-army-vice-chief-lt-gen-cp-mohanty-reviews-hal-s-helicopter-division-in-bengaluru-contact-dnm-qwqq6z

THE TIMES OF INDIA

Sun, 25 July 2021

Solar Group and OFB clear trials for ATAL grenades

By Shishir Arya

Nagpur: The Solar Group has cleared the test to make one more weapon system. A week ago, the company cleared user trials for 81mm anti-thermal, anti-laser (ATAL) grenade, the latest tank defence system. The Ordnance Factory Board (OFB) too cleared the trials for the grenade at the same time.

With this, Solar Group, which is the only private entity to have passed the user trials, will have to now compete with OFB for bagging the order. Both will have to bid through request for proposal (RFP) to be floated by the armed forces.

The 81mm grenades are a defensive system for tanks. The grenades create a smoke screen, which blocks lasers and makes it difficult to trace coordinates, preventing the tanks from being hit by the enemy. The grenades have been developed by the High Energy Materials Research Laboratory (HEMRL), one of the units of Defence Research and Development Organisation (DRDO).

Sources said the RFP will be on 60:40 basis. This means the lowest bidder will be getting 60% of the order. To get the rest 40%, the next bidder will have to match the lowest price, said sources.

The OFB, which is now being turned into a public corporation from a government department, will have to compete for the orders.

Solar, which has emerged as the first private company to bag major orders, is expected to deliver the latest multimodal hand-grenades to the army. The OFB, which is also making the same grenade, has been asked to match the rates with that of Solar Group to get a bulk production order. Solar Group undertakes defence business through its fully owned subsidiary Economic Explosives Limited (EEL).

The group has also cleared the trials for two versions of Pinaka rockets, making it eligible for taking part in the RFP for these systems too. Last month, trials were held for the enhanced range version of the rockets, which can hit targets up to 45km away. The rockets have been developed by the Armament Research and Development Establishment (ARDE), also a part of DRDO.

https://timesofindia.indiatimes.com/city/nagpur/solar-group-and-ofb-clear-trials-for-atal-grenades/articleshow/84689641.cms

COVID 19: DRDO's Contribution

THE NEW INDIAN EXPRESS

Mon, 26 July 2021

Centre working to set up 2 O2 manufacturing units in each dist, says DRDO

The DRDO chairman was on a two-day visit to Krishna district to examine the ongoing works of Missile Testing Launch Facility coming up at Gullalamoda in Nagayalanka mandal

Vijayawada: With health experts cautioning that the country is likely to face the third spell of Covid-19, around 1,500 oxygen plants that can each produce 1,000 litres of liquid medical oxygen are being set up across India, said Defence Research and Development Organization (DRDO) chairman G Sateesh Reddy. The DRDO chairman was on a two-day visit to Krishna district to examine the ongoing works of Missile Testing Launch Facility coming up at Gullalamoda in Nagayalanka mandal.

DRDO chiarman G Satheesh Reddy in Vijayawada on Sunday I P Ravindra Babu

Speaking at an event organised by Krishna District Writers' Association on Sunday, Sateesh Reddy said steps are being taken to set up at least two oxygen manufacturing units in each district under PM CARES. "At DRDO, we are manufacturing small cylinders in huge numbers for the common public. Besides that, the formula of DRDO's new anti-Covid oral drug, 2-Deoxy-D-Glucose (2-DG) will be given to pharmaceutical companies for its manufacture on a large scale," Sateesh Reddy said.

The DRDO chairman further said the Centre is discussing the possibility of establishing small hospitals at all primary locations in the country. "Plans are afoot to enhance the number of oxygen plants, manufacture 10 kg portable oxygen cylinders that can be used at home, strengthen hospitals and mass supply of 2-DG drug." Recalling the efforts of DRDO to combat the Covid first wave, Sateesh Reddy said AIIMS Delhi had set up an oxygen plant in 15 days and later such plants came across in many parts of the country.

He added only 47,000 PPE were produced in the country before Covid. However, since the outbreak their production has crossed six lakh units per day. The technology was given to industries by DRDO for mass production of PPE in the country. He also pointed out that ventilators production too increased during the second wave spread of the virus.

Sateesh Reddy said the country achieved a rapid progress in construction of makeshift hospitals and Covid centres. As many as 20 firms are producing the equipment required for setting up oxygen plants in the, he added.

https://www.newindianexpress.com/states/andhra-pradesh/2021/jul/26/centre-working-to-set-up-2-o2-manufacturing-units-in-each-dist-says-drdo-2335482.html

THE HANS INDIA

Mon, 26 July 2021

DRDO helping Centre improve medical infra: Satheesh Reddy

Highlights

- ***The DRDO chairman points out that 1,500 oxygen plants have been set up across the country***
- ***Efforts are on to produce 10 kg portable (small) O2 cylinders***
- ***Technology has been transferred from DRDO to other industries for massive production of PPE kits in the country, he says***

Vijayawada: The DRDO is working with other Central government organisations, labs and private industries to develop infrastructure facilities to combat Covid in the country, said Defence Research and Development Organisation (DRDO) chairman G Satheesh Reddy.

Chairman of Defence Research and Development Organisation (DRD)) Dr G Satheesh Reddy speaking at the Krishna District Writers Association meeting in Vijayawada on Sunday

He said the DRDO has given assistance for setting up oxygen plants, production of small oxygen cylinders and produced drugs in the fight against Covid. Satheesh Reddy on Sunday participated in a programme conducted by Krishna District Writers Association in a hotel at Gandhinagar here.

The association felicitated the DRDO Chairman, who hails from Nellore district. Interestingly Satheesh Reddy is a lover of literature and loves to participate in literary programmes.

Later, interacting with the media Satheesh Reddy said the DRDO is not only working in the defence sector but also working in co-ordination with other Central government organisations and private industries to develop infrastructure facilities and helping in the production of medical equipment required for Covid treatment.

He said efforts were on for large-scale production of 10 kg portable small oxygen cylinders in the country. He said the Central government will distribute 10 kg small cylinders that can be used at home by Covid patients.

He said over 1,500 Oxygen plants were set up in the country with a view to produce 1,000 litres of liquid oxygen every minute to cater to the needs of the Covid hospitals in the country.

Recalling the efforts of DRDO to combat the Covid second wave, Satheesh Reddy said the AIIMS Delhi had set up Oxygen plant in 15 days and later such plants were set up in many parts of the country to cater to the needs of the Covid hospitals and patients.

Referring to PPE kits, he said only 47,000 PPE kits were produced in the country before Covid to meet the requirements of the defence personnel and other departments. He said PPE kits production crossed six lakh units per day after the outbreak of the pandemic in the country. He said technology was transferred from DRDO to other industries for massive production of PPE kits in the country. He said the production of ventilators too increased on a large-scale in the country during the second wave of Covid.

Satheesh Reddy said the country achieved rapid progress in the speedy construction of makeshift Covid hospitals and Covid centres with facilities like oxygen supply and ventilators.

He said 20 industries in the private sector were producing the equipment required for setting up Oxygen plants in the country.

https://www.thehansindia.com/news/cities/vijayawada/drdo-helping-centre-improve-medical-infra-satheesh-reddy-698013

अमर उजाला

Sat, 24 July 2021

तैयारी: आगरा के एसएन मेडिकल कॉलेज में डीआरडीओ बनाएगा एक और ऑक्सीजन प्लांट

सार

एसएन मेडिकल कॉलेज की इमरजेंसी में अगले सप्ताह ऑक्सीजन प्लांट का निर्माण कार्य शुरू हो जाएगा।

विस्तार

आगरा में कोरोना संक्रमण की दूसरी लहर में ऑक्सीजन संकट को देखते हुए तीसरी लहर से निपटने के लिए कोई कसर नहीं छोड़ी जा रही। एसएन मेडिकल कॉलेज इमरजेंसी में एक और ऑक्सीजन प्लांट मंजूर हो गया है। इसे डीआरडीओ तैयार करेगा। अगले सप्ताह से निर्माण कार्य शुरू हो जाएगा।

एसएन मेडिकल कॉलेज के प्राचार्य डॉ. संजय काला ने बताया कि ऑक्सीजन की कमी न पड़े इसके लिए डीआरडीओ इमरजेंसी में 1000 लीटर प्रति मिनट की दर से हवा से ऑक्सीजन बनाने वाला प्लांट बनाएगा।

अभी यहां बन रहे 1000 लीटर प्रति मिनट ऑक्सीजन बनाने का प्लांट लगभग पूरा हो चुका है। सात दिन में ऑक्सीजन बनना शुरू हो जाएगी। इस तरह से इमरजेंसी पर 2000 लीटर प्रति मिनट की दर से ऑक्सीजन बनाई जा सकेगी। इसमें जरूरत के मुताबिक अंतराल देकर दोनों प्लांट से ऑक्सीजन बनाएंगे।

टीबी विभाग का सात दिन में हो जाएगा तैयार

टीबी विभाग में बन रहा ऑक्सीजन प्लांट भी लगभग पूरा हो चुका है, इसमें भी सात से दस दिन लगेंगे। यहां भी 1000 लीटर प्रति मिनट से ऑक्सीजन बनाने की क्षमता है। घड़ी वाली इमारत पर बनने वाले प्लांट का अभी कार्य शुरू नहीं हो पाया है।

एसएन मेडिकल कॉलेज आगरा - फोटो : अमर उजाला

बिजली गुल तो भी चलते रहेंगे ऑक्सीजन प्लांट

बिजली जाने या फिर अन्य किसी गड़बड़ी पर भी ऑक्सीजन प्लांट बंद नहीं होंगे और हवा से ऑक्सीजन बनाते रहेंगे। इसके लिए एसएन मेडिकल कॉलेज दो जनरेटरों की खरीद करेगा। शासन ने 50 लाख रुपये का बजट भी मंजूर कर दिया है।

प्राचार्य डॉ. संजय काला ने बताया कि एसएन में चार ऑक्सीजन प्लांट तैयार हो रहे हैं, सभी की क्षमता एक मिनट में 1000-1000 लीटर ऑक्सीजन बनाने की है। इनको जनरेटर से भी जोड़ा जाएगा, जिससे किसी भी स्थिति में बिजली की दिक्कत हुई तो ऑक्सीजन बनाने का कार्य बंद नहीं होगा।

इन जनरेटर से एसएन मेडिकल कॉलेज के चारों ऑक्सीजन प्लांट को जोड़ा जाएगा। इसके लिए 50 लाख रुपये से दो जनरेटर खरीदे जाएंगे। 50 लाख रुपये का बजट मंजूर हो गया है, इसका टेंडर करने की तैयारी चल रही है।

https://www.amarujala.com/uttar-pradesh/agra/drdo-will-build-another-oxygen-plant-in-sn-medical-college-agra?pageId=1

अमर उजाला

Mon, 26 July 2021

जुलाई के अंत तक ऑक्सीजन प्लांट का पूरा हो निर्माण: डीएम

गायघाट (बहराइच): मोतीपुर सामुदायिक स्वास्थ्य केंद्र में ऑक्सीजन प्लांट का निर्माण चल रहा है। जिसका निरीक्षण रविवार को जिलाधिकारी ने किया। उन्होंने निर्माण के गुणवत्ता की जांच की। जिलाधिकारी ने जुलाई माह के अंत तक फाउंडेशन निर्माण पूरा करने के निर्देश दिए। इसके बाद जिलाधिकारी ने सीएचसी में बने पीकू, कोविड, इमरजेंसी, पोषण पुनर्वास वार्ड का निरीक्षण किया। उपस्थिति पंजिका पर कर्मचारियों की उपस्थिति देखी।

मोतीपुर सामुदायिक स्वास्थ्य केंद्र में ऑक्सीजन प्लांट के लिए बन रहे फाउंडेशन का निरीक्षण करते ज - फोटो : BAHRAICH

जिले के मोतीपुर सामुदायिक स्वास्थ्य केंद्र को पीकू वार्ड के लिए चिह्नित किया गया है। साथ ही यहां पर डीआरडीओ की ओर से ऑक्सीजन प्लांट का निर्माण कराया जाएगा। जिसके लिए फाउंडेशन का निर्माण बाराबंकी-बहराइच एएनएचआई की टीम द्वारा किया जा रहा है। जिसका निरीक्षण करने रविवार को जिलाधिकारी डॉ. दिनेश चंद्र पहुंच गए। जिलाधिकारी ने फाउंडेशन निर्माण में गुणवत्ता जांची। उन्होंने स्वास्थ्य अधिकारियों को निर्देशित किया कि जुलाई के अंत तक निर्माण कार्य पूरा कराएं।

इसके बाद जिलाधिकारी ने सीएचसी में स्थापित पीकू वार्ड, कोविड वार्ड, पोषण पुनर्वास केंद्र, इमरजेंसी वार्ड, ड्रग हाउस का जायजा लिया। डीएम ने सीएचसी के उपस्थिति पंजिका की जांच की। कोरोना की तीसरी लहर की तैयारियों पर डीएम संतुष्ट दिखे। अंत में डीएम ने बेहतर कार्य के लिए अधीक्षक डॉ. अनुराग वर्मा व फार्मासिस्ट दिनेश चंद्र को पुरस्कृत किया। इस दौरान उपजिलाधिकारी ज्ञानप्रकाश त्रिपाठी, डॉ. एलबी यादव, डॉ. शेर अली, बीपीएम राधेश्याम समेत अन्य कर्मचारी मौजूद रहे।

प्रति मिनट 250 लीटर ऑक्सीजन देगा प्लांट

सीएचसी अधीक्षक डॉ. अनुराग वर्मा ने बताया कि सीएचसी में डीआरडीओ की ओर से ऑक्सीजन प्लांट का निर्माण कराया जा रहा है। प्लांट से प्रति मिनट 250 लीटर ऑक्सीजन का उत्पादन होगा। जिससे विकास खंड के बड़े व बच्चों को इलाज में ऑक्सीजन की दिक्कत नहीं होगी।

https://www.amarujala.com/uttar-pradesh/bahraich/construction-of-oxygen-plant-should-be-completed-by-the-end-of-july-dm-bahraich-news-lko5884620197

DRDO on Twitter

रक्षा मंत्री कार्यालय/ RMO India Retweeted

DRDO @DRDO_India · Jul 23

New Generation Akash (Akash-NG) missile has been successfully flight tested today at 1145 hrs from Integrated Test Range, Chandipur off the coast of Odisha. The test was carried out against a high-speed unmanned aerial target which was successfully intercepted by the missile.

ANI @ANI · 21h

Today India successfully testfired Akash-NG surface to air missile air defence system off the coast of Odisha in Balasore. This is the second test firing of the 30 km strike-range air defence missile systems in last two days: DRDO (Defence Research and Development Org) officials

Defence News

Defence Strategic: National/International

Press Information Bureau
Government of India

Ministry of Defence

Fri, 23 July 2021 4:10PM

Indian Naval Ship Tabar arrives at St Petersburg, Russia on good will visit

Indian Naval Ship Tabar arrived at St Petersburg 22 Jul 21 as part of a five-day goodwill visit to Russia and to participate in the 325th Navy Day celebrations of the Russian Navy. India and Russia share special bilateral relations that span several decades. These include close military ties and strong cooperation between the two navies.

INS Tabar is a Talwar-class stealth frigate and forms part of the Indian Navy's Western Fleet which is based at Mumbai under the Western Naval Command. Incidentally, the ship was built for the Indian Navy in Russia and was commissioned at St Petersburg in April 2004. The ship is presently commanded by Capt Mahesh Mangipudi and has a complement of over 300 personnel. The ship is equipped with a versatile range of weapons and sensors and is among the earliest stealth frigates of the Indian Navy.

During the Russian Navy Day Parade on 25 Jul 21, INS Tabar will join the column of ships that will be reviewed by the President of Russian Federation. The Indian Naval Band embarked on Tabar will also participate in the City Parade during the celebrations. In addition, during her stay at St Petersburg, the crew of Tabar will participate in various bilateral professional interactions with the Russian Navy. This will be followed by naval exercises at sea between the two navies. This will be part of the established series of naval exercises between the Indian Navy and the Russian Navy titled exercise INDRA. The harbour interactions and the exercise at sea aim to consolidate the long standing ties between the two navies. These engagements seek to further enhance maritime security and conduct combined operations against maritime threats. These interactions will also offer an opportunity for both sides to observe and imbibethe 'Best Practices' followed in each other's Navy.

https://pib.gov.in/PressReleasePage.aspx?PRID=1738139

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Fri, 23 July 2021 4:10PM

भारतीय नौसेना का जहाज तबर सद्भावना यात्रा पर रूस के सेंट पीटर्सबर्ग पहुंचा

भारतीय नौसेना का जहाज तबर रूस की पांच दिवसीय सद्भावना यात्रा और रूसी नौसेना के 325वें नौसेना दिवस समारोह में भाग लेने के लिए दिनांक 22 जुलाई 2021 को सेंट पीटर्सबर्ग पहुंचा। भारत और रूस के बीच विशेष द्विपक्षीय संबंध हैं जो अनेक दशक पहले से चले आ रहे हैं। इनमें दोनों नौसेनाओं के बीच घनिष्ठ सैन्य संबंध और करीबी सहयोग शामिल हैं।

आईएनएस तबर एक तलवार श्रेणी का स्टील्थ फ्रिगेट है और भारतीय नौसेना के पश्चिमी बेड़े का हिस्सा है जो पश्चिमी नौसेना कमान के तहत मुंबई में स्थित है। संयोग से यह जहाज रूस में भारतीय नौसेना के लिए बनाया गया था और अप्रैल 2004 में सेंट पीटर्सबर्ग में इसको कमीशन किया गया। वर्तमान में जहाज की कमान कैप्टन महेश मंगीपुडी के पास है और इसमें 300 से अधिक नौसेना कर्मी तैनात हैं। जहाज हथियारों और सेंसर्स की एक बहुमुखी रेंज से लैस है और भारतीय नौसेना के शुरुआती स्टील्थ फ्रिगेट्स में से एक है।

दिनांक 25 जुलाई 2021 को रूसी नौसेना दिवस परेड के दौरान, आईएनएस तबर जहाजों के कॉलम में शामिल होगा जिसकी समीक्षा रूसी संघ के राष्ट्रपति द्वारा की जाएगी। समारोह के दौरान तबर पर सवार भारतीय नौसेना बैंड सिटी परेड में भी भाग लेगा। इसके अलावा सेंट पीटर्सबर्ग में उनके प्रवास के दौरान तबर के चालक दल के सदस्य रूसी नौसेना के साथ विभिन्न द्विपक्षीय पेशेवराना बातचीत में भाग लेंगे। इसके बाद दोनों नौसेनाओं के बीच समुद्र में नौसैनिक अभ्यास होगा। यह भारतीय नौसेना और रूसी नौसेना के बीच युद्धाभ्यास इंद्रा नामक नौसैनिक अभ्यासों की स्थापित श्रृंखला का हिस्सा होगा। बंदरगाह पर होने वाली बातचीत और समुद्र में अभ्यास का उद्देश्य दोनों नौसेनाओं के बीच लंबे समय से चले आ रहे संबंधों को मजबूत करना है। यह संबंध समुद्री सुरक्षा को और बढ़ाने और समुद्री खतरों के खिलाफ संयुक्त अभियान चलाने का प्रयास करते हैं। ये बातचीत दोनों पक्षों को एक-दूसरे की नौसेना में अपनाई जाने वाली 'सर्वोत्तम प्रथाओं' को देखने और आत्मसात करने का एक अवसर प्रदान करेगी।

https://pib.gov.in/PressReleasePage.aspx?PRID=1738228

THE TIMES OF INDIA

Sat, 24 July 2021

Defence Minister Rajnath Singh flags in Army skiing expedition along China border

By Rajat Pandit

New Delhi: An Army skiing expedition that covered a distance of 1,660-km from the Karakoram Pass in Ladakh to Malari in Uttarakhand, which also conducted an operational reconnaissance along the "northern borders with China, was flagged in by defence minister Rajnath Singh on Friday.

The expedition named `Armex-21' is part of the Army's concerted drive for launching mountaineering expeditions as well as research studies to publicize and consolidate India's legitimate territorial claims in areas along the 3,488-km Line of Actual Control to counter the salami-slicing tactics of an expansionist China, as was first reported by TOI in February.

Terming the expedition that was flagged off on March 10 as "extraordinary", Singh said not only did the team complete a thrilling journey but also conducted an operational reconnaissance of the region.

Interacting with the local population of far-flung areas close to the LAC in the Ladakh, Himachal, Garhwal and Kumaon sectors, the skiing expedition was also able to "gather detailed information about several hitherto uncharted areas" along the international boundary and the hinterland said, officers.

Armex-21 was held in the backdrop of the continuing military confrontation with China in eastern Ladakh, which first erupted in April-May last year. More such expeditions will be planned in coordination with the Indian Mountaineering Foundation and other mountaineering institutes to peaks along the LAC and IB, with participation from the Army, civilians and foreign persons.

https://timesofindia.indiatimes.com/india/defence-minister-rajnath-singh-flags-in-army-skiing-expedition-along-china-border/articleshow/84681260.cms

Hindustan Times

Sun, 25 July 2021

Gen Rawat holds meeting of service Chiefs, addresses theatre command concerns

Gen Rawat took a marathon five-hour meeting with three service chiefs and vice chiefs to hear about their concerns over the forthcoming military theatre commands. He answered all the questions in a professional manner in line with the military requirements of the country

By Shishir Gupta

New Delhi: Chief of Defence Staff General Bipin Rawat held a marathon meeting on Thursday to assuage concerns of the Indian Army, Indian Navy and Indian Air Force over forthcoming military theatre commands and professionally addressed all misgivings of the tri-services. Prime Minister Narendra Modi is expected to announce key changes and reforms in military architecture during his Independence Day speech this year.

General Rawat held a five-hour meeting in the presence of three service chiefs, vice chiefs and integrated defence staff officers above the rank of major general and equivalent. (File Photo)

On July 22, General Rawat held a five-hour meeting in the presence of three service chiefs, vice chiefs and integrated defence staff officers above the rank of major general and equivalent to explain to them the proposed military theatre commands with a vision to synergise military operations for rapid response to future conflicts. China, India's main military threat, has already reorganised its military into theatre commands and is now helping client Pakistan to shed its imperial legacy and reform its military. While India faces Chengdu based Western Theatre Command on its northern border along the LAC, Pakistan except for its Peshawar based XI Corps and Quetta based XII Corps has deployed its entire military to face India.

South Block sources said Gen Rawat held the meeting with the military chiefs at the advice of defence minister Rajnath Singh, who wanted all the legitimate concerns of the tri-services to be noted and valid ones addressed before the military theatre commands were announced. Thursday's meeting was the second such meeting on the issue with the Modi government all set to announce the maritime theatre command and the air defence command. Besides, three land commands will be announced next year with the western theatre command solely handling the Pakistan border and the eastern theatre command solely the Tibet-China border with northern command separately handling both the borders due to illegal land claims of both Pakistan and China over UTs of Jammu and Kashmir and Ladakh.

According to South Block officials, the military theatre commands process is going on smoothly with Gen Rawat taking all the questions from the three service chiefs. While the future (now for over two decades) lies in jointmanship and synergy between three services, the three services are worried about their respective turfs and fiefdom with the power of the service chief getting reduced to procurement and training as is the case with theatre commands. It is the theatre commander who will be responsible for operations with all three services joining hands to counter the enemy. It was the 1999 Kargil war, which revealed the lacunae within the Indian military with both the army and the Indian Air Force on different pages when the war started in May 1999.

While the Narendra Modi government has decided to move towards theatre commands, the three services are worried about the division of military assets and the principal role of the permanent chairman of the Chief of Staffs Committee (COSC) in wartime conditions. Under the military theatre commands, the commanders will directly report to the chairman, COSC, who in turn will task them on the advice of the military chiefs or members of the committee.

https://www.hindustantimes.com/india-news/gen-rawat-holds-meeting-of-service-chiefs-addresses-theatre-command-concerns-101627184901431.html

नवभारत टाइम्स

Mon, 26 July 2021

INS तबर, नेवी चीफ करमबीर सिंह...रूस के नौसैनिक परेड में भारतीय नौसेना ने ऐसे दिखाई ताकत

रूस के सेंट पीटर्सबर्ग में आयोजित नौसैनिक परेड में भारतीय नौसेना के युद्धपोत आईएनएस तबर ने भी हिस्सा लिया। भारतीय युद्धपोत ने दुनियाभर के कई देशों के जंगी जहाजों के साथ फिनलैंड की खाड़ी में अपनी ताकत का प्रदर्शन किया।

By प्रियेश मिश्र

मॉस्को: रूस ने आज 325वें नौसना दिवस के अवसर पर आयोजित परेड के जरिए पूरी दुनिया को अपनी नौसैनिक ताकत दिखाई है। सेंट पीटर्सबर्ग में आयोजित इस नौसैनिक परेड में भारतीय नौसेना के युद्धपोत आईएनएस तबर ने भी हिस्सा लिया। इस परेड के महत्व का अंदाजा इसी बात से लगाया जा सकता है कि इसमें भारतीय नौसेना के चीफ एडमिरल करमबीर सिंह भी शामिल हुए हैं। भारतीय युद्धपोत ने दुनियाभर के कई देशों के जंगी जहाजों के साथ फिनलैंड की खाड़ी में अपनी ताकत का प्रदर्शन किया।

रूसी नौसेना की परेड में भारतीय युद्धपोत और नेवी चीफ करमबीर सिंह

रूसी नौसेना के साथ युद्धाभ्यास भी करेगा भारत

रूसी नौसैनिक परेड में में भारतीय नौसेना के एक बैंड ने भी हिस्सा लिया। इस परेड के बाद सेंट पीटर्सबर्ग में आईएनएस तबर के चालक दल के सदस्य रूसी नौसेना के साथ कई तरह के द्विपक्षीय चर्चाओं में शामिल होंगे। इसके बाद भारत और रूस की नौसेना साझा युद्धाभ्यास भी करेंगी। इस युद्धाभ्यास का नाम इंद्र 2021 होगा। इसका मकसद समुद्री खतरों से निपटने के लिए संयुक्त अभियान को बढ़ावा देना और समुद्री सुरक्षा सुनिश्चित करना है।

कितना शक्तिशाली है आईएनएस तबर

आईएनएस तबर भारतीय नौसेना के तलवार क्लास का तीसरा फ्रिगेट है। आईएनएस तबर रूस में ही बना हुआ युद्धपोत है। इसे भारतीय नौसेना में 19 अप्रैल 2004 को रूस के कलिनिनग्राद में शामिल किया गया था। इस युद्धपोत का संचालन भारतीय नौसेना की वेस्टर्न कमांड करती है। 3620 टन डिस्प्लेसमेंट वाले इस युद्धपोत की लंबाई 124.8 मीटर है। इसके पिछले हिस्से पर हेलिकॉप्टर डेक भी बना हुआ है।

आईएनएस तबर पर तैनात हैं ये हथियार

आईएनएस तबर की टॉप स्पीड 56 किलोमीटर प्रति घंटा है। इस युद्धपोत पर 18 ऑफिसर्स सहित 180 क्रू मेंबर तैनात होते हैं। इस युद्धपोत पर 24 की संख्या में Buk मिसाइल सिस्टम का नेवल वर्जन Shtil-1 तैनात है। Shtil-1 मीडियम रेंज की एंटी एयरक्राफ्ट मिसाइल है। इसके अलावा 8 की संख्या में इग्ला मैन पोर्टेबर एंटी एयर मिसाइल सिस्टम भी तैनात हैं। क्लब क्लास की एंटी शिप क्रूज मिसाइलों को फायर करने के लिए इसमें आठ वर्टिकल लॉन्चिंग ट्यूब भी लगे हुए हैं। दुश्मन के जमीनी और कम उंचाई पर उड़ने वाले हवाई निशानों को मारने के लिए इसमें A-190E नाम का 100 एमएम का मेन गन लगा हुआ है।

सेंट पीटर्सबर्ग में क्यों ताकत दिखा रहा रूस

सेंट पीटर्सबर्ग रूस के सबसे बड़े औद्योगिक शहरों में से एक है। यहीं पर रूसी नौसेना की उत्तरी फ्लीट तैनात रहती है, जो यूरोप से लेकर आर्कटिक तक सुरक्षा का जिम्मा संभालती है।

रूस का ज्यादातर व्यापार भी सेंट पीटर्सबर्ग स्थित शिपयॉर्ड से ही किया जाता है। फिनलैंड की खाड़ी आगे जाकर बाल्टिक सागर से मिलती है। इसके किनारे स्थित पोलैंड और जर्मनी में अमेरिकी सेना तैनात है। जिसके कारण रूस की टेंशन बनी रहती है।

नाटो के युद्धाभ्यास से चिढ़ा हुआ है रूस

काला सागर के उत्तर पश्चिम हिस्से में अमेरिका के नेतृत्व वाले सैन्य संगठन नाटो के वार्षिक युद्धाभ्यास सी ब्रिज से रूस चिढ़ा हुआ है। नाटो देश जानबूझकर रूस को उकसाने के लिए हर साल इसी इलाके में युद्धाभ्यास करते हैं। रूसी नौसेना के युद्धपोतों ने भी इस सैन्य अभ्यास पर करीबी निगाह रखी। इसमें रूस के विरोधी गुट के 32 देशों के लगभग 5,000 सैनिक और 32 युद्धपोत शामिल हुए थे।

https://navbharattimes.indiatimes.com/world/rest-of-europe/russian-navy-day-parade-2021-indian-navy-warship-ins-tabar-admiral-karambir-singh-in-st-petersburg/articleshow/84732085.cms

Mon, 26 July 2021

Navy Chief Karambir Singh attends Russian Navy's 325th anniversary parade

Indian Navy's stealth frigate Tabar was part of the column of ships during the parade that were reviewed by Russian President Vladimir Putin

New Delhi: Indian Navy Chief Admiral Karambir Singh on Sunday attended the Russian Navy's 325th-anniversary parade in St Petersburg, an official statement said.

Karambir Singh on Sunday attended the Russian Navy's 325th-anniversary parade.

Moreover, the Indian Navy's stealth frigate Tabar was part of the column of ships during the parade that were reviewed by Russian President Vladimir Putin, it mentioned.

Indian Ambassador to Russia DB Venkatesh Varma also attended the parade on Sunday.

"The 325th Anniversary of the Russian Navy. Adm Karambir Singh, Chief of Naval Staff and Ambassador, Indian Embassy in Russia, at the Main Naval Parade in St Petersburg," the Indian Navy said on Twitter.

"Indian Navy's stealth frigate INS Tabar is part of the mobile column being reviewed by the Russian President Vladimir Putin," it added.

Comments Tabar arrived at St Petersburg on Thursday on a five-day goodwill visit, which also includes bilateral professional interactions with the Russian Navy.

https://www.ndtv.com/india-news/indian-navy-chief-karambir-singh-attends-russian-navys-325th-anniversary-parade-2494642

THE HINDU

Mon, 26 July 2021

Getting India's military convergence formula right

For genuine military jointness, a blending of minds and tailor-made solutions are critical

By G. Prakash

The Chief of Defence Staff General Bipin Rawat's recent description of the Indian Air Force (IAF) as a supporting arm — in an interview on July 2 — and the IAF chief Air Chief Marshal R.K.S. Bhadauria's rebuttal, is the newest bump in the turbulent journey marking the reorganisation process of the armed forces. Unfortunately, this bump, probably caused by misinterpretation of an oversimplification by the Chief of Defence Staff, comes just when the process appears to be touching down after being airborne for long. Whatever the cause, the differences do not speak well of the intellectual underpinnings of the reorganisation process. Is there a problem with air power? What about the IAF warning against splitting it into 'penny packets'? Is air power an adjunct?

Armies and navies will see air power as an adjunct, history being the reason. Analysing the experience of the United States, the greatest exponent of air power in history, the air power theorist Tami Davis Biddle wrote in 2019 that 'aerial bombing cannot control the ground. It is fundamentally a coercive activity in which an attacker seeks to structure the enemy's incentives — using threats and actions to shape and constrain the enemy's options, both perceived and real. It is an important and much-utilized military instrument for both deterrence and compellence. However, its ability to produce results varies, and students of strategy must understand the circumstances under which it is more or less likely to achieve particular results or political ends' (https://bit.ly/3iHHrza). Holding and controlling land or water is essential in conflict. From Vietnam to Afghanistan, air power failed to deliver the promised results to the U.S. But everyone acknowledges how greatly air power can aid victories though.

Issues before the IAF

Media reports suggest that counting even ageing aircraft, the IAF is 25% short on fighter squadrons. A pan service shortage of about 400 pilots, almost 10% of their authorised strength, further aggravates this. Therefore, the IAF has a point when it warns against splitting assets, for, there may be nothing much to split. Whether now, or in any future joint arrangement, the service chief is responsible for the operational availability of assets. He alone will be blamed for failures. So he must protest with all his might. Vulnerabilities should be known to all stakeholders. When the U.S. Navy faced a budget cut in 2015, Admiral Jonathan W. Greenert, Chief of Naval Operations told the Senate that '(if the budget gets cut) more ships and aircraft (will be) out of action when in battle, more sailors, Marines and merchant mariners (will be) killed, and (there will be) less credibility, to deter adversaries and to assure allies in the future' (https://bit.ly/2TxL1TJ). But shortage alone is not at the core of the IAF's objections. It is also the prospect of operational plans for the IAF being made outside the service.

Finding common ground

A common understanding of the nuances of military air power is the key. Towards this, it has to be accepted that others too understand air power. The 67-year-old naval air arm figures among the top 10 air forces of the world. With the experience of operating almost every kind of aircraft the IAF operates, and with the benefits of the operational wisdom borne of the harsh integrity of the supremely tough aircraft carrier and other small deck operations, the naval leadership understands

air power. This applies to the Indian Army too, in its own way. Confidence needs to be developed that rightly staffed apex joint organisations can draw up professional operational plans for air power. This will need some effort in the short term towards enhancing professional military education though, at the staff level.

Synergy and hurdles

With dwindling budgets, a steadily deteriorating security situation and the march of technology, the armed forces understand the need to synergise. But natural human faults interfere. For instance, different services do not co-exist well where they are colocated. Bitter fights over land, buildings, facilities, etc. mar optimal operational synergising. Then there is the issue of giving each other the best, or of wanting to be with each other. The Andaman and Nicobar Command suffered from the lack of a substantial operational charter, and the services not positioning appropriate personnel or resources there. Moreover, as a joint tenure did not benefit career, no one strove for it. The U.S., when faced with the same problem, made joint tenures mandatory for promotions. Steamrolling with decrees is useful in such areas.

Major reorganisations must strictly follow the sequence of written concepts, their refinement through consultation, simulation or table top war gaming, field evaluation and final analysis before implementation. This would help address command and control, asset adequacy, individual service roles, operational planning under new circumstances and the adequacy of joint structures. Who gets to lead what also matters. The Western Command between the Indian Army and the IAF, the Northern Command with the Indian Army, Maritime Command with the Indian Navy and the Air Defence Command with the IAF may be an acceptable formula.

What is needed

As we hurtle towards inevitable reorganisation, some specifics are required. The first is the need for a comprehensive National Security Strategy to guide the services develop capacities required in their respective domains. The second is the need to transform professional education and inter-service employment to nurture genuine respect for others. The third is that the armed forces must resolve their differences among themselves, as the politicians or bureaucrats cannot do it. The fourth is to ensure good quality staff, in adequate numbers, at apex joint organisations, to reassure individual services and those in the field that they are in safe hands. The fifth is the acceptance of the fact that what works for other countries need not work for us. We may need tailor-made solutions which may need more genuine thinking. For genuine military jointness, a genuine convergence of minds is critical. Decrees have limitations.

(Commodore G. Prakash, a Nau Sena Medal recipient, served the Indian Navy for 35 years. He is a specialist in aviation and anti-submarine warfare)

https://www.thehindu.com/opinion/lead/getting-indias-military-convergence-formula-right/article35529115.ece

THE HINDU BusinessLine

Sun, 25 July 2021

India set to bring an easy drone framework

Government also intends to create a trade body

By Ramesh Vaidyanathan / Mansi Singh

Drones have come into focus since the recent drone attack on the Indian Air Force base in Jammu.

India's first set of drone regulations came out in 2018 in the form of Civil Aviation Requirements. These requirements could not be fulfilled because the government's ambitious online platform for monitoring drone operations, Digital Sky, remained inoperative.

The Drone Rules, 2021 aim to strike a balance between safety and ease of operations- Getty Images/iStockphoto

Then, in March 2021, the government introduced 'UAS Rules 2021' that faced a lot of backlash from stakeholders as it entailed a multi-level licensing and fee payment system for almost every kind of drone-related activity.

Taking such criticism into account, the government has now released the updated Drone Rules, 2021 for public consultation, which will replace the UAS Rules 2021. The last date for public comments is August 5, 2021.

What has changed?

Coverage of drones under the new rules has increased from 300 kg to 500 kg. This will cover drone taxis also.

Many of the approvals required previously – such as unique authorisation number, unique prototype identification number, certificate of conformance, certificate of maintenance and import clearance, to name a few, are not required now.

Digital sky platform shall be developed as a business-friendly, single-window online system. There will be minimal human interface; most permissions will be self-generated.

Interactive airspace maps with green, yellow and red zones will be displayed on the digital sky platform. The 'Yellow Zone', flying over which requires permission of the air traffic control authority concerned, has been reduced from 45 km to 12 km from the airport perimeter.

Security clearance is not necessary for registration, license. No need for pilot licence for micro-drones. Unlike the previous rules, there are no restrictions now on drone operations by foreign-owned companies registered in India. The draft rules propose to reduce fee to nominal levels, delinking fee from the size of the drone. The maximum penalty is ₹1 lakh. This, however, excludes penalties for violations of other laws.

The government also intends to create a trade body called the Drone Promotion Council, involving industry and academic experts for policy advice, to foster a business-friendly regulatory regime.

Built on the premise of trust, self-certification and non-intrusive monitoring, the Drone Rules, 2021 aim to strike a balance between safety and ease of operations. The Drone Rules, 2021 are far simpler than the UAS Rules, 2021 and they will not just help promote the use of drones but also focus on the development of technologies that address the threat posed by rogue drones.

(The authors are Managing Partner and Senior Associate, respectively, at Advaya Legal, a Mumbai-based law firm)

https://www.thehindubusinessline.com/business-laws/india-set-to-bring-an-easy-drone-framework/article35526661.ece

Business Standard

Sat, 24 July 2021

Tata-Boeing JV delivers 100th Apache fuselage in just three years

TBAL delivered its first Apache fuselage in May 2018 and in three years has made its 100th delivery

By Ajai Shukla

New Delhi: Tata Boeing Aerospace (TBAL), a joint venture (JV) between The Boeing Company and Tata Advanced Systems (TASL), announced on Friday the delivery of the 100th fuselage it has fabricated for the AH-64 Apache combat helicopter.

TBAL fabricates the fuselages in Hyderabad. They are then transported to Boeing's AH-64 Apache integration line in Mesa, Arizona, in the US, where they are assembled into fully built helicopters and shipped out to Apache customers around the globe.

TBAL, Boeing's first equity JV in India, is the result of a 2015 partnership agreement with TASL. Spread over 14,000 square meters, the state-of-the-art manufacturing facility is being expanded, says Boeing.

A new production line will begin manufacturing complex vertical fin structures for the Boeing 737 family of airplanes. The production line will utilise cutting-edge robotics and automation technology in manufacturing, said a senior TASL executive.

"The achievement of 100th fuselage delivery for AH-64 within three years of the facility being operational… places the Telangana facility as part of the global supply chain for Apache helicopters. Further, it underlines our indigenous manufacturing capability to produce cutting-edge technology and quality defence equipment in the country," said Sukaran Singh, chief of TASL.

TBAL delivered its first Apache fuselage in May 2018 and in three years has made its 100th delivery. The Apache fuselage and other secondary structures supplied by TBAL account for 90 per cent of the structure of the Apache.

About 90 per cent of the parts utilised in manufacturing the Apache fuselage are indigenous. The majority of them are being built in another Tata unit in Hyderabad, said TABL.

TBAL posted a revenue of Rs 280 crore in 2020-21, which was achieved by doubling the number of Apache fuselages built at Hyderabad. It expects to ramp up Apache fuselage deliveries in this financial year.

https://www.business-standard.com/article/current-affairs/tata-boeing-jv-delivers-100th-apache-fuselage-in-just-3-three-years-121072301609_1.html

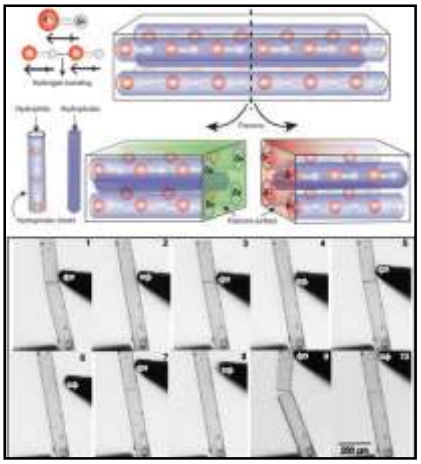
Press Information Bureau
Government of India

Ministry of Science & Technology

Sat, 24 July 2021 5:10PM

Indian scientists discover materials that self-repair mechanical damages

New materials may soon make it possible for damaged electronic components, such as in space crafts, to mend themselves. The materials recently developed by scientists can repair their own mechanical damages with the electrical charges generated by the mechanical impact on them.



Devices that we use daily often break down due to mechanical damage, forcing us either to repair or replace them. This decreases the life of the equipment and increases maintenance costs. In many cases, like in space crafts, human intervention for restoration is not possible.

Keeping such necessities in mind, researchers from the Indian Institute of Science Education and Research (IISER) Kolkata, teaming up with IIT Kharagpur, have developed piezoelectric molecular crystals that repair themselves from mechanical damages without need for any external intervention. Piezoelectric crystals are a class of materials that generate electricity when it undergoes a mechanical impact.

The piezoelectric molecules developed by the scientists called bipyrazole organic crystals recombine following mechanical fracture without any external intervention, autonomously self-healing in milliseconds with crystallographic precision.

In these molecular solids, due to the unique property of generating electrical charges on mechanical impact, the broken pieces acquire electrical charges at the crack junction, leading to attraction by damaged parts and precise autonomous repair. This research supported by the Department of Science and Technology, GoI via Swarnajayanti Fellowship to CM Reddy and Science and Engineering Research Board (SERB) research grants has been published in the journal *'Science'* recently.

This methodology was initially developed by the IISER Kolkata team led by Prof. C Malla Reddy, a recipient of Swarnajayanti fellowship (2015) given by the Department of Science & Technology, GoI. Prof. Nirmalya Ghosh of IISER Kolkata, a laureate of the Society of Photo-Optical Instrumentation Engineers (SPIE) G.G. Stokes Award in Optical polarization 2021, used a custom-designed state-of-the-art polarization microscopic system to probe and quantify the perfection of the piezoelectric organic crystals. These materials with perfect internal arrangement of molecules or ions are called 'crystals', which are abundant in nature.

The IIT Kharagpur's team, Prof. Bhanu Bhusan Khatua and Dr. Sumanta Karan studied the performance of the new materials for fabricating mechanical energy harvesting devices. The material may find application in high-end micro-chips, high precision mechanical sensors, actuators, micro-robotics, and so on. Further research into such materials may eventually lead to the development of smart gadgets that self-repair cracks or scratches.

https://pib.gov.in/PressReleasePage.aspx?PRID=1738607

पत्र सूचना कार्यालय
भारत सरकार

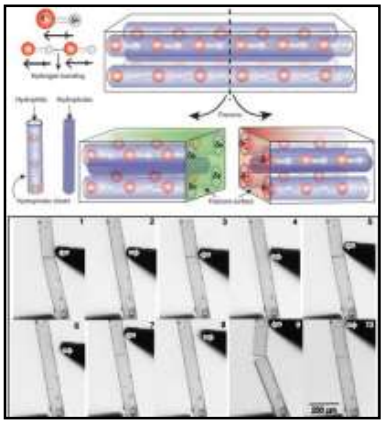
विज्ञान एवं प्रौद्योगिकी मंत्रालय

Sat, 24 July 2021 5:10PM

भारतीय वैज्ञानिकों ने ऐसे पदार्थों की खोज की जो यांत्रिक क्षति को स्वयं ठीक करते हैं

जल्द ही नये पदार्थ से ऐसा संभव हो सकता है कि अंतरिक्ष यान आदि में इस्तेमाल होने वाले, इलेक्ट्रॉनिक उपकरण क्षतिग्रस्त होने पर खुद ही ठीक हो सकें। वैज्ञानिकों द्वारा हाल ही में विकसित पदार्थ यांत्रिक टक्कर से उत्पन्न इलेक्ट्रिकल चार्ज की मदद से अपनी यांत्रिक क्षति की मरम्मत कर सकते हैं।

जिन उपकरणों का हम दैनिक उपयोग करते हैं वे अक्सर यांत्रिक क्षति के कारण खराब हो जाते हैं, जिससे हमें या तो उन्हें सुधारने या बदलने के लिए मजबूर होना पड़ता है। इससे उपकरण का जीवन कम हो जाता है और रखरखाव की लागत बढ़ जाती है। कई मामलों में, जैसे की अंतरिक्ष यान, मरम्मत के लिए इंसानों की मौजूदगी संभव नहीं है।



ऐसी आवश्यकताओं को ध्यान में रखते हुए, भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान (आईआईएसईआर) कोलकाता के शोधकर्ताओं ने आईआईटी खड़गपुर के साथ मिलकर पीजोइलेक्ट्रिक मॉलिक्यूलर क्रिस्टल विकसित किये हैं जो बिना किसी बाहरी हस्तक्षेप की मदद के अपनी यांत्रिक क्षति को खुद ही ठीक करते हैं। पीजोइलेक्ट्रिक क्रिस्टल पदार्थों का एक समूह है जो यांत्रिक प्रभाव से गुजरने पर विद्युत उत्पन्न करता है।

वैज्ञानिकों द्वारा विकसित पीजोइलेक्ट्रिक मॉलिक्यूलर को बाइपाइराज़ोल ऑर्गेनिक क्रिस्टल कहा जाता है जो बिना किसी बाहरी हस्तक्षेप के यांत्रिक टूटफूट के बाद क्रिस्टलोग्राफिक परिशुद्धता के साथ मिलीसेकंड में बिना किसी की मदद से स्व-उपचार के द्वारा फिर से जुड़ जाते है।

इन आणविक ठोस में, यांत्रिक प्रभाव की वजह से इलेक्ट्रिक चार्ज को उत्पन्न करने की अनूठी क्षमता के कारण, क्षतिग्रस्त हिस्से से टूटे हुए टुकड़े इलेक्ट्रिक चार्ज उत्पन्न करते हैं, जिससे क्षतिग्रस्त हिस्सों द्वारा उन्हें वापस अपनी तरफ खींचा जाता है और शुद्धता और स्वायत्तता के साथ मरम्मत हो जाती है। सी एम रेड्डी को स्वर्णजयंती फैलोशिप के माध्यम से विज्ञान और प्रौद्योगिकी विभाग, भारत सरकार और विज्ञान और इंजीनियरिंग अनुसंधान बोर्ड (एसईआरबी) अनुसंधान अनुदान के द्वारा समर्थित यह रिसर्च हाल ही में जर्नल *'साइंस'* में प्रकाशित किया गया है।

इस प्रक्रिया को शुरू में आईआईएसईआर कोलकाता टीम द्वारा प्रोफेसर सी मल्ला रेड्डी के नेतृत्व में विकसित किया गया था, जिन्हें विज्ञान और प्रौद्योगिकी विभाग, भारत सरकार द्वारा स्वर्णजयंती फेलोशिप (2015) मिली थी। आईआईएसईआर कोलकाता के प्रो. निर्माल्य घोष, जो ऑप्टिकल पोलराइजेशन में सोसाइटी ऑफ फोटो-ऑप्टिकल इंस्ट्रुमेंटेशन इंजीनियर्स (एसपीआईई) जी.जी. स्टोक्स अवॉर्ड 2021 के विजेता हैं, ने पीजोइलेक्ट्रिक ऑर्गेनिक क्रिस्टल की उत्कृष्टता को जांचने और मापने के लिये विशेष रूप से तैयार अत्याधुनिक पोलराईजेशन माइक्रोस्कोपिक सिस्टम का उपयोग किया। अणुओं या आयनों की पूर्ण आंतरिक व्यवस्था वाले इन पदार्थों को 'क्रिस्टल' कहा जाता है, जो प्रकृति में प्रचुर मात्रा में होते हैं।

आईआईटी खड़गपुर की टीम, प्रो. भानु भूषण खटुआ और डॉ. सुमंत करण ने यांत्रिक ऊर्जा उत्पन्न करने में सक्षम उपकरणों के निर्माण के लिए नई पदार्थ के प्रदर्शन का अध्ययन किया। नये पदार्थ का हाई-एंड माइक्रो चिप, ऊंची परिशुद्धता वाले मैकेनिकल सेंसर, एक्चुएटर्स, माइक्रो रोबोटिक्स में इस्तेमाल किया जा सकता है। ऐसे पदार्थों में और शोध से आने वाले समय में ऐसे स्मार्ट गैजेट्स विकसित हो सकते हैं जो खुद ही क्रैक और स्क्रेच को ठीक कर सकें।

https://pib.gov.in/PressReleasePage.aspx?PRID=1738686

THE TIMES OF INDIA

Mon, 26 July 2021

Gaganyaan: More than 2 uncrewed missions on cards

By Chethan Kumar

Bengaluru: The Indian Space Research Organisation (Isro), whose initial plan was to launch two uncrewed missions before the human spaceflight carries astronauts to Low Earth Orbit (LEO) as part of the Gaganyaan programme, may carry out more uncrewed launches.

The national-level Gaganyaan Advisory Council (GAC) will take a final call on how many uncrewed missions Isro may need to carry out after it evaluates data from the first two missions. As reported by TOI last week, the first uncrewed mission is now unlikely before June 2022, and Isro won't be sending the life support systems for tests.

Isro chairman K Sivan told TOI: "...We may need to carry out more than two uncrewed missions. The GAC has advised that the first uncrewed mission should be carried out as soon as possible. Based on how the systems perform during the first and the second uncrewed missions and evaluation of the data, the GAC will decide if we need more missions before the astronauts are sent."

7-14 Orbits only?

Also, no final decision on how long the astronauts would eventually spend in LEO as part of the first mission has been taken yet. A source from the Gaganyaan team said that they might only do "seven orbits", or at best, "fourteen".

Any satellite in LEO can do around 14 orbits in a day — which means the Indian astronauts may just spend one day in space. "The preparations (development of systems) are to keep astronauts in space for a week. However, we may be a bit more cautious on the first mission. That said, no decision has been taken yet on how long they will spend there," Sivan said.

Arabian Sea, Bay of Bengal Both Options

Further, Isro is looking at both the west and east coast options for the landing of the orbital module upon its return. Sources said that plans are being drawn up for landing on both seas but the landing could eventually happen in the Bay of Bengal.

"The Arabian sea is less rough compared to the Bay of Bengal, but the latter has better infrastructure for recovery of the module given that the landing would take place closer to Port Blair. At this juncture, we're keeping both options open," Sivan said.

40 Ground Stations & 2 Satellites

Also, Isro will be using at least 40 ground stations — Indian and those belonging to other countries — to track astronauts when they travel around Earth aside from launching two relay satellites.

"Generally we only need a handful of stations to track our satellites. But for the human mission the entire orbit needs to be tracked, so we have already tied up with 40 stations around the world," Sivan said.

He added that these stations would still cover only 40% of the module's orbit around Earth and the remaining 60% will be covered by the two relay satellites Isro will launch. "The first of these satellites will be ready by March-April next year and the second one by the time we launch the second uncrewed mission," Sivan said.

https://timesofindia.indiatimes.com/india/gaganyaan-more-than-2-uncrewed-missions-on-cards/articleshow/84738013.cms

Hindustan Times

Mon, 26 July 2021

After six-month delay, start-up targets satellite launch in October

The earth observation satellite developed by the Indian start-up Pixxel will target an October launch with Indian Space Research Organisation mission, a company official said on Sunday

By Anonna Dutt

New Delhi: The earth observation satellite developed by the Indian start-up Pixxel will target an October launch with Indian Space Research Organisation mission, a company official said on Sunday. The satellite was to be launched aboard the PSLV-C51 mission in February this year but the company had to back out due to a last minute glitch in the software.

"There was a problem with GPS acquisition and logging in the satellite which we were able to resolve in a couple of days. But we had missed the window to ship the satellite to ISRO launch site. The satellite is completely ready and we used the time to do another round of testing. We were waiting for the next opportunity that ISRO mission would go to the orbit we need. We will be launching the satellite in October," said Awais Ahmed, founder and CEO of the company (incorporated as Sygyzy).

The work on the second satellite, in a planned constellation of 36, is also 60% complete and is likely to be launched in December. "We have been working on two more satellites in parallel; they are 30% complete and will be launched next year," said Ahmed.

The company aims to complete the constellation of hyperspectral satellites by 2023.

This would be first satellite by an Indian start-up; barring the satellite of the non-profit SpaceKidz India that was launched as per a non-commercial agreement by ISRO on PSLV C51 mission in February. The PSLV C51 mission carried on board a three-satellite system developed by an industry consortium and SindhuNetra by DRDO for monitoring the Indian Ocean Region.

Pixxel is designing the world's highest resolution hyperspectral imaging satellites that can provide 10 to 50 times more detailed information. "A normal phone camera works in the visible RBG range, whereas something like a night goggle works in the infrared range. A hyperspectral image can capture data in both visible and infrared spectrum thereby providing great details," said Ahmed. Explaining it further, he said, "If we take agriculture for example, our satellite will be able to provide granular data on not just the health of soil but the nutrients present in it. It will be able to identify the crop. It will be able to tell whether the crop has been under-irrigated or over-irrigated from soil moisture data."

After a break of over four months due to the second wave of the pandemic, ISRO is targeting a launch next month of its own earth observation satellite GISAT 1 (also known as EOS-3 as per the new nomenclature). The satellite launch was postponed last year after a technical glitch and then later because of the ongoing pandemic.

Ahmed said that the opening up of the space sector last year was a great help for start-ups like his. Pixxel had initially planned launches with the Russian space agency and had to get the testing done in Netherlands.

"Testing a satellite in another country is expensive and time consuming. Once the space sector was opened up in the country, we wanted to go with ISRO for the launch. What was better, we were able to use the ISRO satellite testing facility in Bangalore. This was the first time that their testing facility was opened up for a commercial satellite. Not only did we get the facility, which would have been expensive to set up. We also got the expertise of scientists who have been testing all ISRO satellites," said Ahmed.

https://www.hindustantimes.com/india-news/after-six-month-delay-start-up-targets-satellite-launch-in-october-101627237587576.html

Sat, 24 July 2021

A curvy and shape-adaptive imager based on printed optoelectronic pixels

By Ingrid Fadelli

Curved imagers that can adjust their shape could have many valuable applications, for instance, aiding the development of more advanced medical imaging tools and cameras. Most existing flexible curvy imagers, however, are either not compatible with tunable focal surfaces or can only capture images with low resolutions and pixel fill factors.

Credit: Rao et al.

Researchers at University of Houston and University of Colorado-Boulder have recently designed and created a curvy and shape-adaptive imager with high pixel fill factors. The new imager, presented in a paper published in *Nature Electronics*, was fabricated by transferring an array of ultrathin silicon optoelectronic pixels with a kirigami design onto curvy surfaces, using a technique known as conformal additive stamp printing.

"Curvy imaging sensor-based cameras, such as a human-like eyeball composed of retina and a lens, hold great promise for many critical applications," Cunjiang Yu, one of the researchers who carried out the study, told *Phys.org*. "Nonetheless, the development of such cameras entails many technical challenges, for instance associated with high pixel fill factor and shape tunability, two features that are necessary to capture clear images without optical aberration."

The objective of the recent study by Yu and his colleagues was to overcome the technical challenges previously encountered when trying to develop curvy and shape-adaptive imagers. In contrast with conventional digital cameras, in fact, curvy imaging sensors typically require multiple and complex lens combinations to take clear and high-resolution images.

The curvy imager developed by the researchers is inspired by the shape of human eyeballs. Just like a human eyeball, in fact, curvy cameras should be made of a curvy and shape adaptive imaging sensor array and a lens.

"Creating curvy imagers using conventional or existing technologies can be highly challenging," Yu explained. "The key novelty of our curvy imager is the novel, reliable and robust manufacturing technology, named conformal additive stamp (CAS) printing, which was invented by my research group."

First, Yu and his colleagues used mature microfabrication processes to create a planar shaped, very thin 32 x 32-pixel imaging sensor array, following a kirikami design (i.e., a variation of the Japanese art of origami that also involves cutting paper to create 3D objects, rather than just

folding it). Subsequently, the researchers used a technique called CAS printing to create curvy imagers with desired shapes.

"The focal length of the lens and the curvature of the imaging sensor (or imager) can be tuned accordingly, to achieve adaptive optical focus and reduce aberration for imaging far and near objects, which even exceeds the capability of the human eye, since the human retina does not offer a similar level of tunability," Yu said.

The curvy imager exhibits a fill factor of 78% before stretching and can maintain its electrical performance under a 30% biaxial strain. In the future, it could have a number of valuable applications, for instance aiding the development of more advanced and better performing endoscopes, retinal prostheses, night vision goggles, artificial compound eye cameras and fisheye cameras. "Our work paves way to achieve curvy, shape tunable adaptive/tunable imager with high pixel fill factor to guarantee imaging capture with high quality and low optical aberration," Yu said. "Our future research will be aimed at developing other high-performance imaging sensor pixels and arrays, and the aforementioned camera devices."

More information: Curvy, shape-adaptive imagers based on printed optoelectronic pixels with a kirigami design. *Nature Electronics*(2021). DOI: 10.1038/s41928-021-00600-1

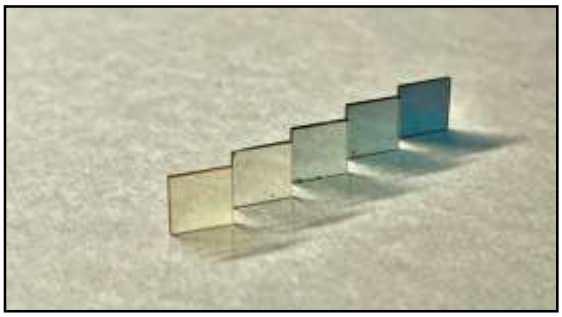
Journal information: *Nature Electronics*

https://phys.org/news/2021-07-curvy-shape-adaptive-imager-based-optoelectronic.html

Sat, 24 July 2021

A new theory to explain the transparency of metallic oxides

The electrons of some metal oxides, due to their large effective mass when coupled with the ionic lattice of the material, cannot follow the electric field of light and allow it to pass through the material. Transparent and conductive materials are used in smartphone touch screens and solar panels for photovoltaic energy.



A collection of strontium and vanadium oxide (SrVO3) metallic films of increasing thickness. Credit: ICMAB-CSIC

Researchers from the Institute of Materials Science of Barcelona (ICMAB-CSIC), propose a new theory to explain the transparency of metal oxides, which are used in the touch screens of smartphones and tablets as well as on the solar cells used in photovoltaic energy. Scientists point out that the effective mass of electrons in these types of materials is large due to the formation of polarons or couplings between the electrons in motion and the ionic lattice of the material, which is distorted around it. These electrons cannot rapidly oscillate following the electric field of light and let it pass rather than reflect it. Until now, the accepted theory to explain this transparency pointed to the interactions between the electrons themselves. The study has been published in the journal *Advanced Science*.

Materials, in general, are transparent to visible light when light photons cannot be absorbed by the material and pass through it without being interrupted by interactions with electrons. The presence of free charges (electrons) is a fundamental characteristic in metals, which are conductors by nature. In these materials, the electrons, under the influence of the electric field of light, are forced to oscillate, and they radiate light at the same frequency as the receive light. This means that metals tend to shine, because they reflect the light that reaches them. In addition, this makes them

opaque, since light does not pass through them. In some materials, electrons are heavier, and cannot follow the oscillations caused by the electric field of light as quickly, and cannot reflect it, but let it pass through the material without interacting; the material is then transparent.

Looking for alternatives

Touch screens in smartphones and tablets are made of a transparent and conductive material. Most of them are made of indium tin oxide (ITO), a material that is a semiconductor. This material is also used in solar panels, in LEDs, in LED or OLED liquid crystal displays, and even in the coatings of aircraft windshields. But indium is a very rare metal. In fact, with the high production of touch screens and the expansion of photovoltaic energy, it is estimated that it will be finished before 2050. Hence the importance of finding substitutes. Researchers at ICMAB-CSIC have studied thin films of the metal oxide strontium and vanadium oxide. What they have found is that thin layers of this metallic material, surprisingly, are transparent, something that would have to be related to a large effective mass of its free electrons.

"We think that the increase in the effective mass of the electrons is due to their coupling with the crystal lattice. The electrons of strontium and vanadium oxide and, in general, of metal oxides, move in a matrix of ions (positive and negative). This lattice deforms with the moving electron and this distortion moves with it. It would be like an electron dressed in a distortion of the lattice moving through the material. This coupling between the electron and the lattice is called a polaron and it is heavier than the free electron, so the effective mass of the electron is greater, which would explain the transparency of the material to visible light since it cannot follow the oscillations of the electric light field and lets it pass through," explains Josep Fontcuberta, CSIC researcher at ICMAB-CSIC and leader of this study.

This new model breaks with the paradigm established so far in the field of condensed matter physics; Coulomb interactions between electrons were accepted to govern the properties of metal oxides. Instead, this new theory proposes that the interaction between electrons and the ion lattice plays a crucial role.

The study contains a comprehensive and unprecedented analysis of some of the electrical and optical properties that are described by the polaron scenario. "In previous studies it had been seen that there could be a relationship, but it had never been analyzed in depth. Furthermore, apart from checking the theory in strontium and vanadium oxide, it has been analyzed in other metallic oxides and in some doped insulators, and their predictions have been found to be true," explains Fontcuberta.

"This study, among other things, is the result of a very exhaustive characterization of the electrical and optical properties of dozens of thin layers of the material in question. It is also the result of a very careful analysis of the data, which has revealed some discrepancies with scenarios and theories established long ago. The patient and meticulous work of Mathieu Mirjolet, ICMAB predoctoral researcher, has made this possible. I do not know if it has been the most relevant discovery of my career, since I do not know what is still to come, but I can assure you that it is one that best ways to illustrate my genuine pleasure in looking at science and life from another point of view," adds Fontcuberta.

These results come from a collaboration between ICMAB researchers Josep Fontcuberta and Mathieu Mirjolet, from the MULFOX group, with researchers from the University of Santiago de Compostela (Spain), the University of Freiburg (Germany) and the University of Frankfurt (Germany).

More information: Mathieu Mirjolet et al, Electron–Phonon Coupling and Electron–Phonon Scattering in $SrVO_3$, *Advanced Science* (2021). DOI: 10.1002/advs.202004207

Journal information: *Advanced Science*

https://phys.org/news/2021-07-theory-transparency-metallic-oxides.html

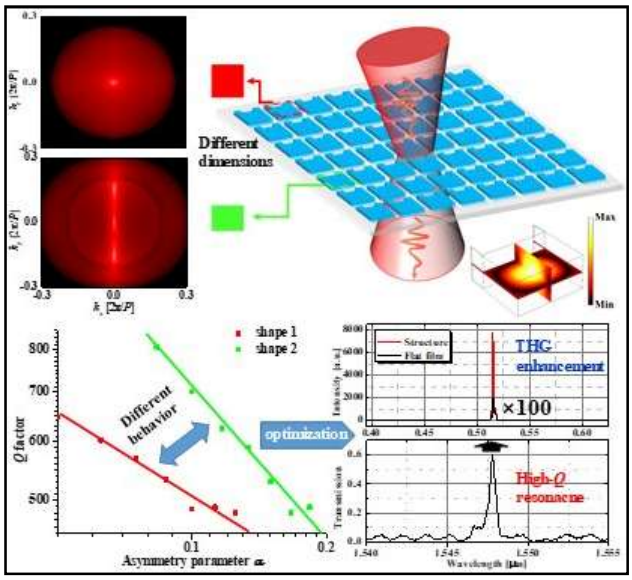
PHYS.ORG

Sat, 24 July 2021

Generation and application of the high-Q resonance in all-dielectric metasurfaces

In a new publication from *Opto-Electronic Advances*, researchers led by Professor Liu Yan from Xidian University, China and Professor Gan Xuetao from Northwestern Polytechnical University, China, consider generation and application of the high-Q resonance in all-dielectric metasurfaces.

Metamaterials are artificial composite electromagnetic structures consisting of subwavelength units, which can realize efficient and flexible control of the electromagnetic waves. Metamaterials are an emerging research area for optoelectronics, physics, chemistry and materials, due to their novel physical properties and potential applications.



BIC-supporting metasurfaces can achieve the high-Q resonance. The Q factor can be controlled by changing the size of the introduced defect and further this relationship can be adjusted by the proposed design (bottom left). By optimizing the dimensions of the structures, a high-Q resonance can be easily achieved and the THG signal can be enhanced significantly. Credit: Compuscript Ltd

With the development in the fabrication of nanostructures, all-dielectric metasurfaces have attracted much research attention because of their high efficiency and low loss. However, metasurfaces based on traditional optical materials (such as silicon) can only support relatively low Q resonances, limiting their applications in lasing action, sensing, and nonlinear optics. A recently emerged concept of bound states in the continuum (BICs) provides a new solution to overcome this problem. The concept of BICs was first introduced in quantum mechanics. It represents a wave phenomenon of modes, which have the energy lying in the delocalized states inside the continuum. The BIC-supporting metasurfaces can achieve controllable high-Q resonance, which can extend their applicability to the devices requiring sharp spectral features.

The authors of this article propose a Si metasurface based on symmetry-broken blocks, which can achieve the high-Q resonance. Nanoparticles made of conventional materials can only support a relatively low quality factor. The concept of BIC provides a new solution to overcome this problem. This concept firstly appears in quantum mechanics, where a true BIC is a mathematical abstraction with infinite Q factor. In this work, symmetry breaking is introduced into the symmetric periodic structure and the ideal BICs turn into the leaky mode with a high Q factor. At the same time, the Q factor of the resonance can be controlled by varying the size of the introduced defects. In addition, by changing the design proposal, the relationship between the Q factor and defect size can also be adjusted. A high-Q resonance can be easily realized in this way and the nonlinear optical effect of the structure can be obviously enhanced at the resonance.

The research reported in this article paves a way to manipulate BICs and realize high-Q dynamic resonances, which constitutes a significant step towards the development of high-Q resonant photonic applications. innovative and advanced optical technologies.

More information: Cizhe Fang et al, High-*Q* resonances governed by the quasi-bound states in the continuum in all-dielectric metasurfaces, *Opto-Electronic Advances* (2021). DOI: 10.29026/oea.2021.200030

https://phys.org/news/2021-07-application-high-q-resonance-all-dielectric-metasurfaces.html

Hindustan Times

Sun, 25 July 2021

Elderly Covid patients prone to low sodium level: AIIMS Patna study

Roughly 14% of the elderly patients, above 60 years of age, sampled for the research, suffered from hyponatremia

By Ruchir Kumar

Elderly Covid-19 patients, especially those with co-morbidity and showing signs of disorientation, need to be promptly hospitalised and checked for fall in sodium level. If left unchecked, it can be fatal, said a prominent surgeon.

Dr Anand has done scientific research based on case analysis of 500 elderly Covid-19 patients admitted at AIIMS, Patna. (HT Photo)

Low sodium level or hyponatremia, which is a common electrolyte abnormality in such patients, if unchecked, may lead to brain oedema (fluid build up around brain) and can be fatal, says Dr Utpal Anand, associate professor and head, department of gastrointestinal surgery at the All India Institute of Medical Sciences (AIIMS), Patna.

Dr Anand has done scientific research based on case analysis of 500 elderly Covid-19 patients admitted at AIIMS, Patna. His finding, which forms a case series, has been recently accepted for publication in the Medical Journal Armed Forces India (MJAFI), a PubMed-indexed journal.

Dr Anand says that excessive secretion of antidiuretic hormone due to stress in Covid-19 patients leads to fall in sodium level, known as the Syndrome of Inappropriate Antidiuretic Hormone (SIADH), causing hyponatremia in Covid-19 patients. His research found that SIADH is not the only cause of hyponatremia.

"Hyponatremia in Covid-19 can be multifactorial, due to co-existent abnormalities like diabetes and hypocortisolism, a disorder in which the adrenal glands don't produce enough hormones. Associated pneumonia, respiratory failure and stress in patients with coronavirus can also lead to hyponatremia," says Dr Anand."

He also found that roughly 14% of the elderly patients, above 60 years of age, sampled for the research, suffered from hyponatremia. So, if the elderly under home isolation with mild Covid-19 infection demonstrate any alteration in behaviour or consciousness, Dr Anand advises urgent hospitalisation and prompt evaluation of their serum sodium.

"A proper clinical evaluation and interpretation of laboratory parameters like urine osmolality, plasma osmolality, cortisone level, thyroid hormone level, sugar level and lipid profile are important in management of hyponatremia associated with Covid-19. This will help to identify multiple contributing factors so that a targeted treatment strategy can be instituted in order to avoid serious consequences," he adds.

https://www.hindustantimes.com/lifestyle/health/elderly-covid-patients-prone-to-low-sodium-level-aiims-patna-study-101627122494246.html