

April
2022

समाचार पत्रों से चयित अंश Newspapers Clippings

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

खंड : 47 अंक : 76 22 April 2022

Vol. : 47 Issue : 76 22 April 2022



रक्षा विज्ञान पुस्तकालय

Defence Science Library

रक्षा वैज्ञानिक सूचना एवं प्रलेखन केंद्र

Defence Scientific Information & Documentation Centre

मेटकॉफ हाउस, दिल्ली - 110 054

Metcalf House, Delhi - 110 054

CONTENTS

S. No.	TITLE		Page No.
	DRDO News		1-2
	DRDO Technology News		1-2
1.	IAF, Navy tie up with DRDO to acquire CHAFF to shield warships, fighter aircraft	<i>Hindustan Times</i>	1
	Defence News		2-17
	Defence Strategic: National/International		2-17
2.	रक्षा मंत्री श्री राजनाथ सिंह कल नई दिल्ली में आईडेक्स-डीआईओ के डिफकनेक्ट 2.0 कार्यक्रम का उद्घाटन करेंगे	<i>Press Information Bureau</i>	2
3.	Raksha Mantri Shri Rajnath Singh to inaugurate DefConnect 2.0 organised by iDEX-DIO in New Delhi tomorrow	<i>Press Information Bureau</i>	4
4.	रक्षा मंत्री ने सेना कमांडरों के सम्मेलन के दौरान भारतीय सेना के वरिष्ठ अधिकारियों को संबोधित किया	<i>Press Information Bureau</i>	5
5.	Raksha Mantri addresses the senior leadership of Indian army during army commanders' conference	<i>Press Information Bureau</i>	7
6.	Rajnath Singh compliments Indian Army's response to cross border terrorism	<i>India Today</i>	9
7.	Make in India IAF's focus for Next Mega Fighter Deal	<i>India Today</i>	11
8.	For its USD 20 Billion 114 Fighter Jet Deal, IAF in Favour of 'Buy Global Make In India' Route	<i>Indian Defence News</i>	12
9.	Indian Government Clashes with Foreign Defense Sector over Offset Demands	<i>Defense News</i>	13
10.	Moving Away from Western Tech – India Hints at Fully Indigenous Engines as Navy Launches its Sixth Scorpene-Class Submarine	<i>The EurAsian Times</i>	15
	Science & Technology News		17-22
11.	विशेषज्ञों ने विचार-मंथन सत्र में विद्युत वाहन प्रौद्योगिकी के रोड मैप को लेकर विचार-विमर्श किया	<i>Press Information Bureau</i>	17
12.	Experts discuss road map for electric vehicle technologies at a brainstorming session	<i>Press Information Bureau</i>	19
13.	OneWeb inks pact with ISRO commercial arm for satellite launches	<i>Financial Express</i>	20
14.	New Materials Enable Cheaper Solar Cells That Are Easier To Make	<i>SciTech Daily</i>	21

IAF, Navy tie up with DRDO to acquire CHAFF to shield warships, fighter aircraft



CHAFF creates a metal particle cloud near the warship and deflects the missiles from it.

CHAFF is a critical defence technology used to protect fighter aircrafts or naval ships from enemy radar-guided missile during war. The significance of this technology lies in the fact that very less quantity of CHAFF material deployed in the air acts as a decoy to deflect enemy's missiles to ensure safety of the fighter aircraft or naval ships. CHAFF is a critical defence technology used to protect fighter aircrafts or naval ships from enemy radar-guided missile during war. The significance of this technology lies in the fact that very less quantity of CHAFF material deployed in the air acts as a decoy to deflect enemy's missiles to ensure safety of the fighter aircraft or naval ships.

The Indian Air Force and the Indian Navy have tied up with the Defence Research Development Organisation to get the CHAFF technology, which protects the warship from an anti-ship missile during hostilities. India is now the second country after the United States to develop this ability, a major Aatmanirbhar push in the field of defence. The developed assumes significance as the Indian navy is currently studying the sinking of Russian missile cruiser Moskva and focusing on how to protect our warships from anti-ship ballistic missiles like the Chinese DF-21.

What is CHAFF?

In simple words, CHAFF is a critical defence technology used to protect fighter aircrafts or naval ships from enemy radar-guided missile during war. The significance of this technology lies in the fact that very less quantity of CHAFF material deployed in the air acts as a decoy to deflect enemy's missiles to ensure safety of the fighter aircraft or naval ships. The DRDO has developed this advanced CHAFF technology to defend naval Ships and fighter aircrafts against modern day broadband (including high frequency) radar threat.

Developed by the DRDO, the technology includes all three variants of CHAFF rockets namely Short Range Chaff Rocket (SRCR), Medium Range Chaff Rocket (MRCR) and Long Range Chaff Rocket (LRCR), and have been inducted in the Indian Navy after successful user trials. The DRDO has also developed advanced CHAFF cartridge-118/I for the Indian Air Force having major advantages over the chaff available worldwide in terms of its better efficacy against higher frequency radar threat in modern warfare scenario. After a successfully extensive user trials, the IAF assessed the performance of indigenous chaff cartridge-118/I satisfactory and started the process of induction into Indian Air Force.

<https://www.hindustantimes.com/india-news/iaf-navy-tie-up-with-drdo-to-acquire-chaff-to-shield-warships-fighter-aircraft-101650542423730.html>

Defence News

Defence Strategic: National/International



पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Thu, 21 Apr 2022 1:22 PM

रक्षा मंत्री श्री राजनाथ सिंह कल नई दिल्ली में आईडेक्स-डीआईओ के डिफकनेक्ट 2.0 कार्यक्रम का उद्घाटन करेंगे

रक्षा मंत्रालय के रक्षा उत्पादन विभाग (डीडीपी) के रक्षा उत्कृष्टता के लिए नवाचार - रक्षा नवाचार संगठन (आईडेक्स-डीआईओ) ने 22 अप्रैल, 2022 को नई दिल्ली स्थित विज्ञान भवन में स्टार्ट-अप्स और विविध हितधारकों के साथ नियमित रूप से जुड़ने की रणनीति को जारी रखने के लिए डिफकनेक्ट 2.0 का आयोजन करने जा रहा है। रक्षा मंत्री श्री राजनाथ सिंह इस कार्यक्रम का उद्घाटन करेंगे। यह कार्यक्रम रक्षा

क्षेत्र में भारत के अग्रणी उद्योगों से एक बड़ी संख्या में नए अन्वेषकर्ताओं और निवेशकों को आकर्षित करेगा। इसमें उद्योग के दिग्गजों के साथ सत्र, विभिन्न घोषणाएं और आईडेक्स-डीआईओ की समर्थित स्टार्ट-अप्स की एक श्रृंखला समूह की स्थिर प्रदर्शनियां शामिल होंगी। यह कार्यक्रम हमें एक उज्ज्वल भविष्य की ओर ले जाने वाले स्वदेशी नवाचारों का पता लगाने के लिए स्टार्ट-अप्स, उद्योग जगत और सैन्य प्रतिनिधियों को एक साथ लाएगा। डिफकनेक्ट, आईडेक्स-डीआईओ से जुड़े नवअन्वेषकों को उद्योग जगत की हस्तियों के लक्षित दर्शकों के लिए अपनी क्षमताओं, उत्पादों और अत्याधुनिक तकनीकों का प्रदर्शन करने का एक अनोखा अवसर प्रदान करेगा। वहीं, स्टार्ट-अप्स के लिए यह अवसर निवेश प्राप्त करने और भविष्य के परिचालनों का नेतृत्व करने को लेकर लाभ उठाने के लिए है। यह आईडेक्स स्टार्ट-अप्स से मिलने व आईडेक्स और इससे संबंधित भागीदारों की ओर से अपेक्षित समर्थन के साथ विकसित की जा रही उनकी नवीन तकनीकों को समझने का एक अनूठा अवसर होगा।

आईडेक्स जैसे मंच सेना को अपने प्रमुख कार्यक्रमों जैसे डिफेंस इंडिया स्टार्टअप चैलेंज (डीआईएससी) और ओपन चैलेंज (ओसी) के माध्यम से जटिल चुनौतियों का विघटनकारी समाधान खोजने में सक्षम बनाते हैं। ये सैन्य प्रौद्योगिकी के भविष्य के लिए प्रमुख घटक होंगे। अब तक आईडेक्स ने डीआईएससी के पांच दौर (राउंड) और ओसी के तीन दौर लॉन्च किए हैं। इनके लिए अलग-अलग नव अन्वेषकों और स्टार्ट-अप्स से 2,000 से अधिक आवेदन प्राप्त हुए हैं। इसके अलावा आईडेक्स अपने अनुदान सहायता ढांचे यानी प्रोटोटाइप और अनुसंधान किकस्टार्ट के लिए सहायता (स्पार्क) के जरिए कई तकनीकी क्षेत्रों की परियोजनाओं को धनराशि देने में सक्षम है। इसके तहत नए उद्यमियों को 1.50 करोड़ रुपये तक का अनुदान प्रदान करने का प्रावधान है।

नवाचार सामाजिक विकास की गति को आगे बढ़ाने वाला प्रमुख कारक बन गया है और यह अनोखे परिणाम के साथ सामाजिक मानकों को फिर से परिभाषित करता है। आईडेक्स, हमेशा रक्षा और आंतरिक सुरक्षा में नवाचार के मामले में सबसे आगे रहा है और इसकी अधिकांश परियोजनाओं में जबरदस्त नागरिक एप्लीकेशन भी हैं, जैसे कि क्वांटम कम्प्यूटेशन, आर्टिफिशियल इंटेलिजेंस/प्रेडिक्टिव मेंटेनेंस/लॉजिस्टिक्स/डेटा एनालिटिक्स, सुरक्षा/एन्क्रिप्शन और संचार आदि। इसे और आगे ले जाने के लिए आईडेक्स विभिन्न हितधारकों के कई विविध समस्या विवरणों के साथ डीआईएससी के छठे संस्करण को लॉन्च करेगा।

आईडेक्स, रक्षा नवाचार में नई क्षमताओं को विकसित करने के लिए भारत के मजबूत विज्ञान, प्रौद्योगिकी और अनुसंधान प्रतिभा के आधार का उपयोग करने में सक्षम है। इस योजना के जरिए प्रदान किए गए सहायता से रक्षा नवाचार के संबंध में दर्शकों को संवेदनशील बनाने के लिए नवोदित उद्यमियों की समझ में और भी बढ़ोतरी की जा रही है। प्रधानमंत्री श्री नरेन्द्र मोदी ने 2018 में आईडेक्स को शुरू किया था। यह अनिवार्य रूप से रक्षा और एयरोस्पेस क्षेत्रों में विभिन्न हितधारकों को एक एकीकृत मंच प्रदान

करता है। यह इस विशिष्ट क्षेत्र में प्रौद्योगिकी विकास और संभावित सहभागिता के पर्यवेक्षण के लिए एक व्यापक संगठन की तरह कार्य करता है।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1818738>



Press Information Bureau
Government of India

Ministry of Defence

Thu, 21 Apr 2022 1:22 PM

Raksha Mantri Shri Rajnath Singh to inaugurate DefConnect 2.0 organised by iDEX-DIO in New Delhi tomorrow

Continuing with the strategy of connecting regularly with the start-ups and the multifarious stakeholders, Innovations for Defence Excellence, Defence Innovation Organisation (iDEX-DIO), under the aegis of Department of Defence Production (DDP), Ministry of Defence has organised DefConnect 2.0 at Vigyan Bhawan, New Delhi on April 22, 2022. The event will be inaugurated by Raksha Mantri Shri Rajnath Singh. The event will attract a large number of innovators and investors from India's leading industries in the defence sector. It will include sessions with stalwarts of the industry, various announcements and static exhibitions of an array of start-ups supported by iDEX-DIO. The event will bring together start-ups, corporates and military representatives to ascertain the indigenous innovations leading us into a bright future.

The DefConnect will provide a unique opportunity for innovators associated with iDEX-DIO to showcase their capabilities, products and state-of-the-art-technologies to the target audience of the industry leaders. The start-ups get to leverage this opportunity to generate investments and leads for future operations. This will be a unique opportunity to meet iDEX start-ups and understand their innovative technologies being developed with requisite support from iDEX and the associated partners. Platforms like the iDEX enable the military to find disruptive solutions to complex challenges through its flagship programmes like Defence India Startup Challenges (DISC) and Open Challenges (OC) which shall be the key components for the future of military technology. Till date, iDEX has launched five rounds of DISC and three rounds of OC, receiving more than 2,000 applications from individual innovators and start-ups. Furthermore, iDEX has been able to fund projects in numerous technological areas through its Grant-in-Aid framework, Support for Prototype and Research Kickstart (SPARK), which entail provisioning of grant up to Rs 1.50 crore to budding entrepreneurs.

Innovation has become the key driver of the pace of societal evolution and it redefines social parameters with unique outputs. iDEX has always been at the forefront of innovation in defence and internal security and most of its projects also have tremendous civilian applications: Quantum Computation, Artificial Intelligence/Predictive Maintenance/Logistics/Data Analytics, Security/Encryption, Communication etc. To take this further, iDEX will be launching the sixth edition of DISC with numerous diverse problem statements from various stakeholders. iDEX is able to utilise India's strong science, technology and research talent base to develop new

capabilities in defence innovation. The understanding of the budding entrepreneurs for sensitising the audience towards defence innovation is being further complemented by the support provided through this scheme. The iDEX, launched by Prime Minister Shri Narendra Modi in 2018, essentially provides a unified platform for various stakeholders in the defence and aerospace sectors. It acts like an umbrella organisation to oversee technology development and potential collaborations in this specific field.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1818633>



पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Thu, 21 Apr 2022 5:40 PM

रक्षा मंत्री ने सेना कमांडरों के सम्मेलन के दौरान भारतीय सेना के वरिष्ठ अधिकारियों को संबोधित किया

शीर्ष स्तरीय द्विवार्षिक सेना कमांडरों का सम्मेलन नई दिल्ली में 18 से 22 अप्रैल 2022 तक आयोजित किया जा रहा है। सम्मेलन के दौरान भारतीय सेना का शीर्ष नेतृत्व मौजूदा सुरक्षा परिदृश्यों, सीमाओं पर स्थिति, भीतरी इलाकों के हालात और वर्तमान सुरक्षा तंत्र के लिए चुनौतियों से जुड़े सभी पहलुओं पर व्यापक विचार-विमर्श कर रहा है। इसके अलावा, सम्मेलन में चर्चा के दौरान संगठनात्मक पुनर्गठन, रसद, प्रशासन, मानव संसाधन प्रबंधन, स्वदेशीकरण के माध्यम से आधुनिकीकरण, महत्वपूर्ण प्रौद्योगिकियों के उपयोग और रूस-यूक्रेन युद्ध के प्रभाव के आकलन से संबंधित मुद्दों पर भी ध्यान केंद्रित किया जा रहा है। सम्मेलन के चौथे दिन का मुख्य आकर्षण रक्षा मंत्री श्री राजनाथ सिंह का भारतीय सेना के वरिष्ठ अधिकारियों को संबोधन था, जो भारतीय सेना की "स्वदेशीकरण के माध्यम से आधुनिकीकरण" योजनाओं पर एक संक्षिप्त विवरण से पहले हुआ।

रक्षा मंत्री ने राष्ट्र के सबसे भरोसेमंद और प्रेरक संगठनों में से एक के रूप में भारतीय सेना में देश के अरबों नागरिकों के विश्वास की पुष्टि की। श्री राजनाथ सिंह ने देश की सीमाओं की रक्षा करने और आतंकवाद से लड़ने के अलावा नागरिक प्रशासन को जब भी आवश्यकता पड़ती हो, ऐसे में सहायता प्रदान करने के लिए सेना द्वारा निभाई गई महत्वपूर्ण भूमिका पर प्रकाश डाला। रक्षा मंत्री ने अपनी टिप्पणी में यह भी कहा कि देश में स्थिरता से आंतरिक स्थिति को बनाए रखने के लिए सुरक्षा, एचएडीआर और चिकित्सा सहायता से लेकर हर क्षेत्र में सेना मुस्तैद है। उन्होंने कहा कि राष्ट्र निर्माण के साथ-साथ समग्र राष्ट्रीय विकास में भी भारतीय सेना की भूमिका बहुत महत्वपूर्ण है। उन्होंने सेना कमांडर के सम्मेलन में उपस्थित होने की अपनी प्रसन्नता को दोहराया और राष्ट्र तथा माननीय प्रधानमंत्री के 'रक्षा एवं सुरक्षा' दृष्टिकोण

को सफलतापूर्वक आगे बढ़ाने के लिए सेना के अधिकारियों की सराहना की। रक्षा मंत्री ने सेना प्रमुख जनरल एमएम नरवणे की भी सराहना करते हुए कहा कि उन्होंने भारतीय सेना के अध्यक्ष के रूप में अपने कार्यकाल के पिछले ढाई वर्षों में सेना का सफलतापूर्वक नेतृत्व किया है।

रक्षा मंत्री ने वर्तमान जटिल वैश्विक स्थिति का भी उल्लेख किया, जो विश्व स्तर पर सभी को प्रभावित करती है। उन्होंने कहा कि हाइब्रिड युद्ध सहित अपरंपरागत और असंयमित संघर्ष अब भविष्य के पारंपरिक युद्धों का हिस्सा होंगे। श्री सिंह ने कहा कि साइबर, सूचना, संचार, व्यापार एवं वित्त सभी भविष्य के युद्धों का एक अविभाज्य अंग बन चुके हैं और यह आवश्यक है कि सशस्त्र बलों को योजना तथा रणनीति बनाते समय इन सभी पहलुओं को ध्यान में रखना होगा।

उत्तरी सीमाओं के साथ वर्तमान स्थिति पर टिप्पणी करते हुए रक्षा मंत्री ने पूर्ण विश्वास व्यक्त किया कि जहां एक ओर सैनिक मजबूती से खड़े हैं, वहीं शांतिपूर्ण समाधान के लिए चल रही बातचीत जारी रहेगी और अलगाव तथा तनाव को कम करना ही आगे का रास्ता सुनिश्चित करता है। उन्होंने कृतज्ञता व्यक्त करते हुए टिप्पणी की कि हमारी क्षेत्रीय अखंडता की रक्षा के लिए अत्यंत कठिन मौसम और शत्रुतापूर्ण ताकतों का मुकाबला करने वाले हमारे सैनिकों को सर्वोत्तम हथियारों, उपकरणों तथा उत्कृष्ट वर्दी की उपलब्धता सुनिश्चित करने हेतु हमारा 'पूर्ण रूप से सहयोगी सरकार' वाला दृष्टिकोण है। रक्षा मंत्री ने बीआरओ के प्रयासों की भी सराहना की, जिसने कठिन परिस्थितियों में काम किया है और इनसे पश्चिमी एवं उत्तरी दोनों सीमाओं पर सड़क संचार में काफी सुधार हुआ है। पश्चिमी सीमाओं की स्थिति का उल्लेख करते हुए, उन्होंने सीमा पार से होने वाले आतंकवाद पर भारतीय सेना की प्रतिक्रिया की सराहना की, हालांकि विरोधी शक्तियों द्वारा छद्म युद्ध जारी है। रक्षा मंत्री ने कहा कि मैं जम्मू-कश्मीर में आतंकवाद के खतरे से निपटने में सीएपीएफ/पुलिस बलों और सेना के बीच उत्कृष्ट तालमेल की सराहना करता हूँ। ये सभी केंद्र शासित प्रदेश जम्मू एवं कश्मीर में समन्वित संचालन क्षेत्र में स्थिरता बढ़ाने में योगदान दे रहे हैं और इसे जारी रहना चाहिए।

रक्षा मंत्री ने उच्च स्तर की परिचालन तैयारियों और क्षमताओं के लिए बलों की सराहना की, जिसका अनुभव उन्होंने हमेशा सीमावर्ती क्षेत्रों की अपनी यात्राओं के दौरान किया है। श्री सिंह ने मातृभूमि की रक्षा में सर्वोच्च बलिदान देने वाले सभी वीरों को श्रद्धांजलि दी। उन्होंने विदेशी सेनाओं के साथ स्थायी सहकारी संबंध बनाकर हमारे राष्ट्रीय सुरक्षा हितों को आगे बढ़ाने के लिए सैन्य कूटनीति में सेना द्वारा किए गए महत्वपूर्ण योगदान की सराहना की। उन्होंने हाल ही में 'ऑपरेशन गंगा' में यूक्रेन से भारतीय नागरिकों को निकालने के लिए सशस्त्र बलों की सराहना की। रक्षा मंत्री ने जीवन के हर क्षेत्र में हो रही तकनीकी प्रगति पर जोर दिया और सशस्त्र बलों द्वारा प्रौद्योगिकी को उपयुक्त रूप से इस्तेमाल करने के लिए उनकी सराहना की। उन्होंने प्रमुख शैक्षणिक संस्थानों सहित असैन्य उद्योगों के सहयोग से विशिष्ट प्रौद्योगिकियों को विकसित करने में सेना के प्रयासों की सराहना की और कहा कि इस तरह देश 'स्वदेशीकरण के माध्यम से आधुनिकीकरण' या 'आत्म निर्भरता' की तरफ बढ़ रहा है।

रक्षा मंत्री ने इस बात पर प्रकाश डाला कि सरकार युद्धक क्षमता बढ़ाने और सैनिकों का कल्याण सुनिश्चित करने पर अपना ध्यान केंद्रित कर रही है। उन्होंने यह भी टिप्पणी की कि आत्मनिर्भर भारत की नीति अब रक्षा क्षेत्र में स्व-निर्भरता प्राप्त करने की दिशा में एक बड़ा कदम है, जो भारतीय रक्षा उद्योग को सशस्त्र बलों की भविष्य की आवश्यकताओं को पूरा करने के लिए बड़ा अवसर प्रदान करती है। श्री सिंह ने इस लक्ष्य की दिशा में काम करने के लिए भारतीय सेना की सराहना की और कहा कि 2021-2022 में, आत्मनिर्भर भारत को ध्यान में रखते हुए, भारतीय उद्योगों को सेना द्वारा 40,000 करोड़ रुपये के ठेके दिए जा रहे हैं, जो सराहनीय पहल है।

रक्षा मंत्री ने यह भी बताया कि आयुध निर्माणी बोर्ड (ओएफबी) का हालिया निगमीकरण एक सफल कदम साबित हो रहा है और सभी 7 x डीपीएसयू सशस्त्र बलों के क्षमता विकास की दिशा में लगातार काम कर रहे हैं। उन्होंने टिप्पणी करते हुए कहा कि सरकार युद्ध के हताहतों की सभी श्रेणियों के हमारे पूर्व सैनिकों और उनके परिजनों के कल्याण के लिए हर तरह से प्रतिबद्ध है। श्री सिंह ने यह भी घोषणा की कि सरकार दुर्गम क्षेत्रों में रक्षा कर्मियों के सामने आने वाले जोखिम और कठिनाई से अवगत है, सरकार ने ऐसे इलाकों में तैनात सेना के कर्मियों के लिए जोखिम और कठिनाई भत्ता बढ़ाने का निर्णय लिया है।

रक्षा मंत्री ने अपने संबोधन के समापन पर कहा कि रक्षा कूटनीति, स्वदेशीकरण, सूचना युद्ध, रक्षा बुनियादी ढांचे और बल आधुनिकीकरण से संबंधित मुद्दों पर हमेशा ऐसे मंच पर विचार-विमर्श किया जाना चाहिए। उन्होंने कहा कि एकीकृत युद्ध क्षेत्र कमान को औपचारिक रूप देना समय की मांग है और मैं इस दिशा में हो रही प्रगति से खुश हूँ। रक्षा मंत्री ने वरिष्ठ सैन्य नेतृत्व पर पूर्ण रूप से अपना भरोसा जताया। श्री सिंह ने कहा कि राष्ट्र को अपनी सेना पर गर्व है और सरकार सुधारों तथा क्षमता आधुनिकीकरण की राह पर सेना को आगे बढ़ने में मदद करने के लिए प्रतिबद्ध है।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1818832>



Press Information Bureau
Government of India

Ministry of Defence

Thu, 21 Apr 2022 1:22 PM

Raksha Mantri addresses the senior leadership of Indian army during army commanders' conference

The Army Commanders' Conference, an apex level biannual event, is being held in New Delhi from 18 to 22 April 2022. During the event, Indian Army's apex leadership is comprehensively deliberating upon all aspects of existing security scenarios, situation along the borders, in the hinterland and challenges for the present security apparatus. In addition, the conference is also

focusing on issues pertaining to organisational restructuring, logistics, administration, human resource management, modernisation through indigenisation, induction of Niche technologies and assessment of impact of the Russia - Ukraine war. The main highlight of the fourth day of the conference was the address by the Raksha Mantri, Shri Rajnath Singh, to the senior leadership of the Indian Army, which was preceded by a brief on the “Modernisation through Indigenisation” plans of the Indian Army.

The Raksha Mantri reaffirmed the faith of the billion-plus citizens in the Indian Army as one of the most trusted and inspiring organisations in the country. He highlighted the stellar role played by the Army in guarding our borders and fighting terrorism apart from providing assistance to the civil administration whenever called for. The Raksha Mantri also remarked “The Army is present in every domain from Security, HADR, Medical Assistance to maintaining the stable internal situation in the country. The role of Indian Army is very important in Nation building as also in the overall national development”. He reiterated his happiness to be present in the Army Commander’s conference and complimented the Army leadership for successfully taking ahead the ‘Defence and Security’ vision of the Nation and the Hon’ble Prime Minister. He also complimented the COAS, General MM Naravane of having successfully led the Army in last two and half years of his tenure as COAS, Indian Army.

The Hon’ble Raksha Mantri stressed upon the present complex world situation which effects everyone globally. He stated that “Unconventional and asymmetric warfare, including hybrid war will be part of the future conventional wars. Cyber, information, communication, trade and finance have all become an inseparable part of future conflicts. This necessitates that Armed Forces will have to keep all these facets in consideration while planning and formulating strategies”. Commenting on the current situation along the Northern borders, the Hon’ble Raksha Mantri expressed full confidence that while troops are standing firm, the ongoing talks for peaceful resolution will continue and disengagement and de-escalation, is the way forward. Expressing his gratitude, he remarked “It is our ‘Whole of Government’ approach to ensure availability of best weapons, equipment and clothing to our troops braving extreme weather and hostile forces to defend our territorial integrity”. The Raksha Mantri complimented the efforts of BRO, which has led to the quantum improvement of road communication in the borders both Western and Northern, while working under difficult conditions.

Referring to the situation along the Western borders, he complimented the Indian Army’s response to cross border terrorism, however the proxy war by the adversary continues. The Hon'ble Raksha Mantri said “I compliment the excellent synergy between the CAPF/ Police forces and the Army in tackling the menace of terrorism in Jammu and Kashmir. The synergised operations in the Union Territory of Jammu and Kashmir are contributing to increased stability in the region and the same should continue”. The Raksha Mantri complimented the forces for the high standard of operational preparedness and capabilities which he has always been experiencing first hand during his visits to forward areas. He also paid tributes to all the brave hearts for making the ultimate sacrifice in the defence of the motherland. He complimented the significant contributions made by the Army in military diplomacy to further our national security interests by creating sustainable cooperative relationships with foreign Armies. He also complimented the Armed Forces for the recent evacuation of Indian Nationals from Ukraine in ‘Operation Ganga’.

The Hon’ble Raksha Mantri stressed upon the technological advancement taking place in every sphere of our life and applauded the Armed Forces for aptly incorporating them. He appreciated

the Army's efforts to develop niche technologies in collaboration with civil industries, including premier educational institutions and thereby progressing towards the aim of ' Modernisation through Indigenisation' or 'Atam Nirbharta'.

The Hon'ble Raksha Mantri highlighted that "the Government is focused on enhancing combat capability and ensuring welfare of soldiers". He also remarked that "the Policy of Atmanirbhar Bharat is a big step towards self-reliance in defence which offers great opportunity to the Indian defence industry to meet the future requirements of the Armed Forces". He applauded the Indian Army for working towards this goal and remarked that in 2021-2022, in keeping with the Atamnirbhar Bharat, Rs 40,000 crores worth of contracts by the Army are being awarded to Indian Vendors, which is commendable.

The Hon'ble Raksha Mantri also brought out that the recent corporatisation of the Ordnance Factory Board (OFB) is proving as a successful step and all 7 x DPSUs are working towards capability development of Armed Forces. He remarked that the government is committed in every manner towards the welfare of our Veterans and the Next of Kin of all categories of Battle Casualties. He also announced that Government is aware of the Risk and Hardship the defence personnel faces in the field areas, apropos, Government has decided to enhance the Risk and Hardship allowance for the Army personnel posted in such areas.

He concluded by saying that issues related to "Defence diplomacy, indigenisation, information warfare, defence infrastructure and force modernisation should always be deliberated upon in such a forum. The formalisation of Integrated Theatre Command is the need of hour and I am happy with the progress being made towards the same. I have full confidence in the senior Military leadership. The Nation is proud of its Army and the Government is committed to facilitate the Army in their forward movement, on the road to reforms and capability modernisation".

<https://pib.gov.in/PressReleasePage.aspx?PRID=1818743>



Fri, 22 Apr 2022

Rajnath Singh compliments Indian Army's response to cross border terrorism

Defence Minister Rajnath Singh attended the ongoing Army Commanders' Conference in New Delhi on Thursday. The Army Commanders' Conference commenced on April 18 and will conclude on April 22. The Defence Minister reaffirmed the faith of the billion-plus citizens in the Indian Army as one of the most trusted and inspiring organisations in the country. He highlighted the stellar role played by the Army in guarding our borders and fighting terrorism apart from providing assistance to the civil administration whenever called for. He also remarked, "The Army is present in every domain from Security, HADR, Medical Assistance to maintaining the stable internal situation in the country. The role of the Indian Army is very important in nation building as also in the overall national development".

Rajnath Singh reiterated his happiness to be present at the Army Commander's conference and complimented the Army leadership for successfully taking ahead the 'Defence and Security' vision of Prime Minister Narendra Modi. He also complimented the COAS, General MM Naravane, for having successfully led the Army in the last two and half years of his tenure as Army chief. The Raksha Mantri stressed upon the present complex world situation which affects everyone globally. He stated, "Unconventional and asymmetric warfare, including hybrid war will be part of the future conventional wars. Cyber, information, communication, trade and finance have all become an inseparable part of future conflicts. This necessitates that Armed Forces will have to keep all these facets in consideration while planning and formulating strategies". Commenting on the current situation along the Northern borders, Rajnath Singh expressed full confidence that while troops are standing firm, the ongoing talks for peaceful resolution will continue and disengagement and de-escalation, is the way forward.

Expressing his gratitude, he remarked, "It is our 'Whole of Government' approach to ensure availability of best weapons, equipment and clothing to our troops braving extreme weather and hostile forces to defend our territorial integrity". He also complimented the efforts of BRO, which has led to the quantum improvement of road communication in the borders both Western and Northern, while working under difficult conditions.

Referring to the situation along the Western borders, he complimented the Indian Army's response to cross border terrorism, however, the proxy war by the adversary continues. The Raksha Mantri said "I compliment the excellent synergy between the CAPF/ Police forces and the Army in tackling the menace of terrorism in Jammu and Kashmir. The synergised operations in the Union Territory of Jammu and Kashmir are contributing to increased stability in the region and the same should continue". The Defence Minister complimented the forces for the high standard of operational preparedness and capabilities which he has always been experiencing first hand during his visits to forward areas. He also paid tributes to all the brave hearts for making the ultimate sacrifice in the defence of the motherland. He complimented the significant contributions made by the Army in military diplomacy to further our national security interests by creating sustainable cooperative relationships with foreign Armies. He also complimented the Armed Forces for the recent evacuation of Indian Nationals from Ukraine in 'Operation Ganga'.

At the event, Rajnath Singh stressed upon the technological advancement taking place in every sphere of our life and applauded the Armed Forces for aptly incorporating them. He appreciated the Army's efforts to develop niche technologies in collaboration with civil industries, including premier educational institutions and thereby progressing towards the aim of 'Modernisation through Indigenisation' or 'Atam Nirbharta'. Rajnath Singh highlighted, "The Government is focused on enhancing combat capability and ensuring welfare of soldiers". He also remarked, "The policy of Atmanirbhar Bharat is a big step towards self-reliance in defence which offers great opportunity to the Indian defence industry to meet the future requirements of the Armed Forces".

He applauded the Indian Army for working towards this goal and remarked that in 2021-2022, in keeping with the Atamnirbhar Bharat, Rs 40,000 crores worth of contracts by the Army are being awarded to Indian Vendors, which is commendable. He concluded, "Defence diplomacy, indigenisation, information warfare, defence infrastructure and force modernisation should always be deliberated upon in such a forum. The formalisation of Integrated Theatre Command is the need of hour and I am happy with the progress being made towards the same. I have full confidence in the senior Military leadership. The Nation is proud of its Army and the

Government is committed to facilitate the Army in their forward movement, on the road to reforms and capability modernisation”.

<https://www.indiatoday.in/india/story/rajnath-singh-compliments-indian-army-response-to-cross-border-terrorism-1940421-2022-04-22>



Fri, 22 Apr 2022

Make in India IAF's focus for Next Mega Fighter Deal

In the 114 multi-role fighter aircraft (MRFA) programme, the Indian Air Force (IAF) is working towards manufacturing 114 planes within the country under the Buy Global Make in India route. “Work is already going on the indigenous Light Combat Aircraft (LCA) Tejas and the 5th Generation Advanced Medium Combat Aircraft project. The 114 MRFA project would also be required by the IAF to maintain an edge over both the northern and western adversaries. We would prefer to go for the ‘Buy Global Make in India’ route, which is preferred by the vendors who are also expected to take part in the programme,” defence sources told India Today.

In the race are three American aircraft, including the F-18, F-15, and F-21 (modified version of the F-16), Russian MiG-35 and Su-35 along with the French Rafale, Swedish Saab Gripen and the Eurofighter Typhoon. The Indian Air Force had also sought the views of these companies on the acquisition procedure that they would like to opt for in the programme and most of them have shown a preference for the Buy Global Make in India route only, they said.

The sources said that the force has also sought directions from the government on the project and when it can move the project for clearance from the Defence Ministry for further action. An official said, “The two squadrons of the Rafale combat aircraft were fully functional with 35 aircraft which have already arrived from France and only one plane is left for delivery.” Sources said the IAF would certainly require a capability that is being provided by Rafale and more planes would be required as the two squadrons had only met the emergency requirements of the force.

The sources said, “The two Rafale squadrons played a major role in containing the situation after the Chinese started aggression in the Northern sector in Ladakh and were operationalised within a few weeks of their arrival and induction into the IAF.” The sources said the 83 LCA Mark 1A would help the IAF replace the MiG-series planes like the MiG-23 and the MiG-27 have already been phased out and the MiG-21s are also on the verge of being phased out.

<https://www.indiatoday.in/defence/story/make-in-india-iaf-focus-fighter-deal-tejas-1940442-2022-04-22>

Fri, 22 Apr 2022

For its USD 20 Billion 114 Fighter Jet Deal, IAF in Favour of 'Buy Global Make In India' Route

For over USD 20 billion tender for manufacturing 114 multi-role fighter aircraft (MRFA) the Indian Air Force (IAF) would prefer to take the 'Buy Global Make in India' route over the strategic partnership policy model to produce the planes within the country. 'Buy Global Make in India' is a category of procurement process provided in the Defence Acquisition Procedure 2020 under Defence Minister Rajnath Singh to smoothen the acquisition of foreign weapon systems and their production within the country under the 'Make in India' in the defence program. Along with the indigenous TEJAS and the 5th Generation Advanced Medium Combat Aircraft project, the 114 MRFA project would also be required by the IAF to maintain an edge over both the Northern and Western adversaries. We would prefer to go in for the Buy Global Make in India route which is preferred by the vendors also who are expected to take part in the program, government sources told ANI.

Three American aircraft including the F-18, F-15 and F-21 (modified version of the F-16), Russian Mig-35 and Su-35 along with the French Rafale, Swedish Saab Gripen and the Eurofighter Typhoon aircraft are expected to participate in the program. The Indian Air Force had also sought the views of these companies on the acquisition procedure that they would like to opt for in the program and most of them have shown a preference for the Buy Global Make in India route only, they said. The sources said that the force has also sought directions from the government on the project and when it can move the project for clearance from the Defence Ministry for further action. Sources said the two squadrons of the Rafale combat aircraft were fully functional with 35 aircraft which have already arrived from France and only one plane is left for delivery.

Sources said the IAF would certainly require a capability that is being provided by Rafale and more planes would be required as the two squadrons had only met the emergency requirements of the force. The sources said that the two Rafale squadrons played a major role in containing the situation after the Chinese started aggression in the Northern sector in Ladakh and were operationalised within few weeks of their arrival and induction into the IAF. The sources said the 83 TEJAS MK-1A would help the IAF replace the MiG-series planes as the MiG-23 and the miG-27 have already been phased out and the MiG-21s are also on the verge of being phased out. The 5th generation AMCA is expected to be rolled out soon by the Defence Research and Development Organisation but its induction and trials are expected to take at least five to seven years from now.

<http://www.indiandefensenews.in/2022/04/for-its-usd-20-billion-114-fighter-jet.html?m=1>

Thu, 21 Apr 2022

Indian Government Clashes with Foreign Defense Sector over Offset Demands

About half of India's offset obligations, which are worth \$13.52 billion across a set of 57 contracts, have resulted in either penalties or the threat of them, Defence Ministry officials told Defense News. The government has imposed penalties on several original equipment manufacturers from 2013 to 2021 for defaulting on their offset obligations, potentially deterring foreign defense companies from seeking business in the country. Those penalized OEMs include:

- Lockheed Martin (a U.S.-based company) during work related to C-130J Hercules aircraft.
- Textron (U.S.) for a Sensor Fuzed Weapon contract.
- Safran (France) during a Mirage aircraft upgrade project and the acquisition of Rafael aircraft.
- Dassault Aviation (France) during a Mirage upgrade project.
- Thales (France) during a Mirage upgrade project and rocket-related efforts with Hindustan Aeronautics Limited.
- European consortium MBDA for an effort involving MICA missiles for the Mirage-2000H and during the Rafael acquisition.
- Rosoboronexport (Russia) for contracts related to Kamov Ka-28 helicopter upgrades, MiG-29 fighter jet upgrades and Mi-17 helicopters.
- Fincantieri (Italy) for work on a fleet tanker.
- Pilatus Aircraft (Switzerland) during efforts related to the PC-7 MkII basic trainer aircraft.
- Israel Aerospace Industries for contracts involving Harop and Heron drones.

Indian Defence Ministry officials and analysts said at least a dozen more offset contracts could be penalized in the near future. Offsets are compensation a buyer seeks from a seller for the purchase of goods or services. These can range from co-production agreements to investments in local partners to technology transfer. In India, offsets are supervised by the ministry's Defence Offset Management Wing, DOMW, which monitors the implementation of deals between original equipment manufacturers and domestic enterprises, the latter of which serve as local partners. However, the country is in the process of eliminating offsets.

“Without going into the merits of individual cases, it appears that several defense contractors have failed to fulfill their legally binding offset obligations, resulting in a levy of penalties,” Vivek Rae, a former chief of acquisitions for the MoD, told Defense News. The government's offset policy, he added, has been difficult to implement. But ministry officials told Defense News original equipment manufacturers failed to meet offset requirements due to their own lack of performance. The officials, who spoke on the condition of anonymity because they were not authorized to speak to the media, said the government's process is flexible and allows changes to be made to local partnerships and offset products.

MoD officials noted OEMs are now permitted to submit their respective offset plans a year before discharge. Previously, a complete offset plan had to be submitted when the primary and offset contracts were signed. Defense News contacted several OEMs who were penalized for defaulting on offset terms, but they refused to be identified for this story over concerns it would upset their prime customer — the Defence Ministry. However, some OEMs blamed the government for delays in offset implementation, citing excessive and inflexible regulations as well as a lack of expertise and accountability within the DOMW.

Any offset policy where one of every two contracts is penalized and forbids contracts signed since 2007 to close will harm a country's ability to conduct business, warned Mayank Patel, the managing director of Tri Polus, a London-based consultancy specializing in offsets.

In the last five years, there were 21 contracts where offset obligations were unfulfilled on time. The minister of state for defense, Ajay Bhatt, told lawmakers April 4 the MoD has so far imposed a total of \$43.5 million in penalties from 16 of those contracts. Deepak Sangha, a former executive with MBDA's British arm, said India's approach to offsets does not economically benefit the nation and its defense industry in the long run. Sangha said OEMs face a lack of government flexibility when seeking minor deviations from stated or perceived guidelines. Moreover, penalties harm their reputations and could negatively impact opportunities elsewhere, he added.

Industry war games

Insighteon Consulting, a Delhi-based analytics firm, conducted a war game Feb. 23-24 on penalization cases related to India's offset contracts. It found that in a majority of cases, an unfulfilled offset deal that led to a penalty was due to either overambitious offset programs or ambiguity in policies. The firm also determined a trust-based relationship and flexibility in offset guidelines would have largely reduced penalties. Rajiv Chib, a partner at Insighteon, said war game experts recommended that in legacy situations, where offsets contracts have long expired, the suppliers (or OEMs) should be given a second chance to fulfill their offset obligations.

Chib also recommended the ministry create an empowered dispute-resolution body, led by a senior bureaucrat or senior industry professional, to facilitate that second chance. The body's objective would be to close all expired offset contracts — largely from before 2012 — and achieve the best possible outcome, as DOMW may find it difficult to play the role of both facilitator and arbitrator. An OEM's second chance would come under a new broad policy framework, where the company is allowed to fulfill its offset obligations according to provisions from any Defence Procurement Procedure or Defence Acquisition Procedure governmental documents.

Levying penalties

According to the MoD's offset guidelines, if a vendor fails to fulfill its offset obligation in a particular year in accordance with the annual discharge plan, a penalty equivalent to 5% of the unfulfilled offset obligation will be levied on the vendor. The unfulfilled offset value will then be readjusted over the remaining period of the contract. The offset policy says the penalty may either be paid by the vendor, recovered from the bank guarantee of the main procurement contract, deducted from the amount payable under the main procurement contract or recovered from the performance bond of the offset contract.

The policy also says any vendor failing to implement offset obligations could be banned from participating in future defense contracts for up to five years. The MoD changed the offset threshold — the minimum contract value before offsets deals are considered — from \$46 million to \$305 million in 2016 under defense procurement rules; from 2020 onward, offsets were excluded from government-to-government deals. This will eventually eliminate offsets related to Indian military procurement. However, implementation of present contracts will continue up to 2033. India introduced its offset policy in 2005. In the initial years, small companies executed defense exports through offsets; the majority of those businesses specialized in information technology or engineering. Later on, several manufacturing companies got a chance to export components and subassembly parts, particularly in the aerospace sector. The policy focused on compelling equipment suppliers to include local companies in their global supply chains.

<https://www.defensenews.com/industry/2022/04/21/indian-government-clashes-with-foreign-defense-sector-over-offset-demands/>



Fri, 22 Apr 2022

Moving Away from Western Tech – India Hints at Fully Indigenous Engines as Navy Launches its Sixth Scorpene-Class Submarine

The sixth and the final vessel of the French-origin Scorpene Class submarines (rechristened the Kalvari-class) — part of Project-75 — was launched recently at the Mumbai-based Mazagon Docks Limited (MDL).

It was handed over to the Western Naval Command of the Indian Navy in a function attended by Defence Secretary Ajay Kumar and Vice-Chief of Naval Staff Vice Admiral SN Ghormade among other dignitaries.

During the function, Kumar announced India's indigenous effort to develop homegrown marine engines. The statement assumes significance as India imports engines for warships from Europe.

Set for Mid-2023 Commission

INS Vagsheer will now begin its harbor acceptance, sea, and diving trials over the next year, and will be commissioned into service by mid-2023. Between 2015 till date, the five boats were released to the Indian Navy includes, including INS Kalvari (commissioned in December 2017); INS Khanderi (commissioned in November 2019); INS Karanj (March 2021); INS Vela (November 2021), and Vagir (launched on November 2020). Only the Vagir and the Vagsheer remain to be commissioned.

Made under a Transfer-of-Technology (ToT) agreement with France's Naval Group after the \$3.75 billion deal was inked in October 2005, the project involved installing an Air Independent

Propulsion (AIP) on the last two boats when they come in for their first refit and Mid-Life Upgrade (MLUG).

An indigenous AIP system has been developed by the Defense Research and Development Organization's (DRDO) Naval Materials Research Laboratory (NMRL), which was tested in March 2021.

New Technology

Based on the phosphoric acid fuel cell technology, the length of the Vagir and the Vagsheer will be increased to accommodate the system, where a section containing the AIP will be added.

Midway between conventional diesel-electric propulsion (SSK) and nuclear propulsion (SSN/SSGN/SSBN), an AIP-powered submarine (SSP), allows a submarine to stay underwater for at least a week without the need to snorkel (taking in atmospheric oxygen to recharge its batteries).

The AIP provides the stealth and lower acoustic levels of an SSK, unlike the relatively noisy turbines of nuclear-powered boats. However, it can't match the endurance and diving depths of a nuclear submarine.

Nuclear propulsion allows a submarine to stay underwater for months on end, with the latest British, French, and US vessels even have solved the noise issue with new acoustic suppression and propeller milling technologies.

Their only problem however remains the maintenance of the reactor and releasing and storing of nuclear fuel waste.

Project 75-India Lagging

However, Project 75-India (P-75I) class has been lagging, with the Strategic Partnership (SP) model turning out to be a sticking point. Such partnerships involve a foreign shipyard building six AIP SSPs boats in India with Indian shipyards.

“Two tenders for shortlisting the Indian shipyard and the other for identifying a foreign Original Equipment Manufacturer (OEM) were undertaken and both have been finished. Advice from the Ministry of Law and the Additional Solicitor General (ASG) is being taken,” Kumar said while interacting with the press.

Rosoboronexport (Russia), Navantia (Spain), Naval Group (France), Daewoo (South Korea), and ThyssenKrupp Marine Systems (Germany) are the five foreign bidders for the project. Experts have pointed to how additional submarine building capacity built at the MDL will go idle, with critical design and construction skills possibly being lost if the project is not finalized soon.

Meanwhile, addressing the event, Kumar said that the Vagsheer was built with modular construction, where sections were built separately and then joined together, a mark of advancement toward Western standards of warship construction.

While talking about achieving “90% indigenization” in the floating front of warship construction, Kumar said even the ‘move’ aspect where marine power plants are traditionally imported will see change with the government tying up with private industry to develop engines.

The engines will be developed under the ‘Make 1’ category of the Defense Acquisition Procedure (DAP) where 70% of the development costs will be borne by the Indian government.

MKU (Germany) and Zorya (Ukraine) are two of the leading suppliers of ship engines like Combined Gas and Gas (COGAG) and Combined Diesel and Gas (CODAG) for Indian warships.

Kumar also talked about US naval warships possibly coming to India for repair and maintenance, following a discussion between Defense Minister Rajnath Singh and US Secretary of Defense Lloyd Austin during their 2+2 meeting last week in Washington.

External Affairs Minister S. Jaishankar and Secretary of State Anthony Blinken had also met as a part of the format.

“At 2+2 in the US, Defense Minister Rajnath Singh told the US Secretary of Defense about the kind of work being done in Indian shipyards. The Secretary of Defense has said a team of US officials will visit India for examining and identifying the shipbuilding facilities here. While there will be other shipyards, MDL is one of them,” Kumar added.

<https://eurasianimes.com/india-hints-at-fully-indigenous-engines-as-navy-launches-submarine/>

Science & Technology News



पत्र सूचना कार्यालय
भारत सरकार

विज्ञान एवं प्रौद्योगिकी मंत्रालय

Thu, 21 Apr 2022 4:44 PM

विशेषज्ञों ने विचार-मंथन सत्र में विद्युत वाहन प्रौद्योगिकी के रोड मैप को लेकर विचार-विमर्श किया

अग्रणी विशेषज्ञों ने एक विचार-मंथन सत्र के दौरान विद्युत वाहनों की अनुसंधान एवं विकास आवश्यकताओं पर चर्चा की और इलेक्ट्रिक यानी विद्युत वाहन प्रौद्योगिकी के लिए एक रोड मैप पर विचार-विमर्श किया। डॉ. अखिलेश गुप्ता, वरिष्ठ सलाहकार, विज्ञान और प्रौद्योगिकी विभाग (डीएसटी) ने कहा, “भारत को 2070 तक कार्बन तटस्थता हासिल करने के लिए, कई क्षेत्रों में व्यापक स्तर पर अर्थव्यवस्था को कार्बन मुक्त करने की आवश्यकता होगी। उनमें एक क्षेत्र परिवहन है जहां इलेक्ट्रिक वाहनों और हरित हाइड्रोजन में परिवर्तन महत्वपूर्ण होगा।” सत्र में विविध हितधारक समूहों की बड़ी भागीदारी की सराहना करते हुए उन्होंने कहा कि डीएसटी ने पिछले कुछ वर्षों में ईवी में अनुसंधान एवं विकास को बढ़ावा देने की दिशा में काफी काम किया है। ऐसे प्रयासों को जारी रखने की जरूरत है।

20 अप्रैल 2022 को डॉ अखिलेश गुप्ता की अध्यक्षता में विज्ञान और प्रौद्योगिकी विभाग (डीएसटी) द्वारा दिनभर के विचार-मंथन सत्र का आयोजन किया गया था। डॉ. के बालासुब्रमण्यम, निदेशक एनएफटीडीसी ने कहा, "एक व्यापक प्रौद्योगिकी कार्यक्रम की आवश्यकता है जिसमें ठोस-अवस्था की बैटरी जैसी उपयुक्त बैटरी प्रणालियों का विकास शामिल है, जो उष्णकटिबंधीय क्षेत्रों में उच्च परिवेश के तापमान का सामना कर सकती हैं। इसके अलावा, संचालित होने वाले कार्यकलापों की बड़ी संभावना और कार्यक्रम प्रबंधन में कार्यक्रम प्रबंधन में उपयुक्त लचीलेपन की आवश्यकता को देखते हुए, अनुसंधान कार्यक्रमों को विशेष प्रयोजन वाहनों के रूप में आयोजित करने की आवश्यकता है जो कई उद्योगों और शैक्षणिक संस्थानों के साथ समन्वय कर सकते हैं।"

डॉ. टाटा नरसिंह राव, निदेशक, एआरसीआई ने इलेक्ट्रिक वाहन बैटरी में शामिल विभिन्न उप-प्रणालियों का विश्लेषण किया और साथ ही बैटरी सिस्टम की सुरक्षा सुनिश्चित करने में शामिल असंबली और निर्माण प्रक्रियाओं का भी विश्लेषण किया ताकि वे अग्नि सुरक्षा को लेकर खतरों का कारण न बनें। उन्होंने उच्च गुणवत्ता और सुरक्षित बैटरी पैक सुनिश्चित करने के लिए आवश्यक तत्काल कार्रवाई के संबंध में विस्तार से बताया। बुनियादी अनुसंधान से लेकर अनुप्रयुक्त अनुसंधान, अनुप्रयोग, इंजीनियरिंग और औद्योगिकीकरण तक इलेक्ट्रिक वाहन के विभिन्न घटकों के लिए भारत में प्रौद्योगिकी विकास के लिए एक व्यापक रोड मैप पेश करते हुए, प्रोफेसर कार्तिक अथमनाथन, आईआईटी मद्रास ने उन इलेक्ट्रिक वाहन प्लेटफार्मों और मॉडलों की विविधता पर विचार करने पर जोर दिया जो भारत में होगा और कहा कि सभी स्तरों पर काम करने और जबरदस्त प्रौद्योगिकी क्षमता हासिल करने का अवसर है।

श्री साजिद मुबाशीर, वैज्ञानिक डीएसटी ने देश में इलेक्ट्रिक मोबिलिटी को बढ़ावा देने के लिए भारत सरकार की विभिन्न पहलों में डीएसटी के प्रमुख योगदान के बारे में विस्तार से बताया और इस बात पर प्रकाश डाला कि विभाग ने ईवी चार्जिंग इंफ्रास्ट्रक्चर के लिए आवश्यक भारतीय मानकों के पूर्ण सेट को विकसित करने में मदद की है और हाल ही में स्कूटर और ऑटोरिक्शा जैसे हल्के ईवी के लिए एक सेवा (जिसे बैटरी स्वैपिंग के रूप में भी जाना जाता है) के रूप में बैटरी के लिए मसौदा मानकों का योगदान दिया।

सत्र में भाग लेने वाले मंत्रालयों, अनुसंधान एवं विकास प्रयोगशालाओं, शिक्षाविदों और उद्योग के लगभग 200 हितधारकों ने बैटरी, मोटर और पावर इलेक्ट्रॉनिक्स जैसे प्रमुख ईवी उप-प्रणालियों में क्षमता हासिल करने पर ध्यान केंद्रित करने की आवश्यकता और वर्ष 2030 तक लगभग 30 फीसदी वाहनों की संख्या तक पहुंचने के लिए इलेक्ट्रिक मोबिलिटी की ओर एक बड़ा बदलाव लाने के सरकार के लक्ष्य को पूरा करने की विभिन्न चुनौतियों से पार पाने के तरीकों पर चर्चा की।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1818797>



**Press Information Bureau
Government of India**

Ministry of Science & Technology

Thu, 21 Apr 2022 4:44 PM

Experts discuss road map for electric vehicle technologies at a brainstorming session

Leading experts discuss the R&D needs of electric vehicles and deliberated on a road map for electric vehicle technologies at a brainstorming session. “For India to achieve carbon neutrality by 2070, it would need de-carbonisation of the economy in a big way in several sectors. Transportation is one of them where transition to electric vehicles and green hydrogen will be of critical important,” said Dr. Akhilesh Gupta, Senior Advisor, Department of Science and Technology (DST). Appreciating the large participation from the diverse stakeholder groups at the session he said that DST has already done considerable work in promoting R&D in EV in the last few years. There is a need to continue such efforts.

The day-long brainstorming session was organized by the Department of Science & Technology (DST) on 20th April 2022 chaired by Dr. Akhilesh Gupta. A comprehensive technology program is needed that includes the development of appropriate battery systems like a solid-state battery which can withstand the high ambient temperature in tropical regions. Besides, given the large scope of activities required to be conducted, and the need for suitable flexibility in program management, there is a need to organise research programs as special purpose vehicles that can coordinate with several industries and academic institutions,” said Dr. K Balasubramanian, Director NFTDC.

Dr. Tata Narasingha Rao, Director, ARCI analysed the various subsystems involved in the electric vehicle battery as also the assembly and manufacturing processes involved in ensuring the safety of battery systems so that they do not lead to fire safety hazards. He also explained the immediate action required for ensuring high quality and safe battery pack. Presenting a comprehensive road map for technology development in India for the various electric vehicle components starting from basic research to applied research, application, engineering, and industrialization, Prof. Karthick Athmanathan, IIT Madras emphasised that considering the diversity of electric vehicle platforms and models that will be in India there is an opportunity to work at all levels and gain tremendous technology capabilities.

Mr. Sajid Mubashir, Scientist DST elaborated on the major contributions by DST in the various initiatives by the Governments of India in promoting electric mobility in the country and highlighted that the department has helped to develop the full set of Indian Standards required for EV Charging Infrastructure, and recently contributed the draft standards for Battery as a Service (also known as Battery Swapping) for Light EV like scooters and autorickshaws. Around 200 stakeholders from ministries, R&D labs, academia, and industry, who participated in the session, discussed the need to focus on acquiring capability in the major EV subsystems like the battery, motor, and power electronics and ways to overcome the various challenges to meet the

Government target to bring about a big shift towards electric mobility to reach about 30% of vehicle population by the year 2030.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1818726>



Thu, 21 Apr 2022

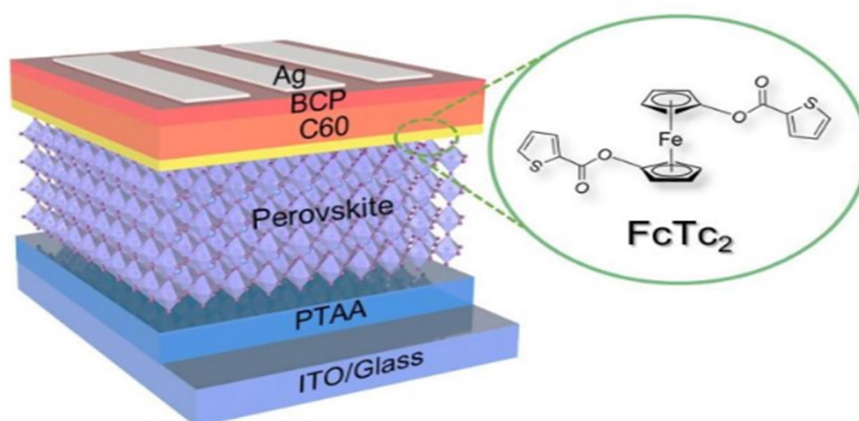
OneWeb inks pact with ISRO commercial arm for satellite launches

Bharti group-backed OneWeb and New Space India Limited, the commercial arm of the Indian Space Research Organisation, have entered into an agreement that will help ensure OneWeb completes its satellite launch programme, a statement said on Thursday. The first launch with New Space India is expected in 2022 from the Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota. The launches will add to low Earth orbit (LEO) satellite communications firm OneWeb's total in-orbit constellation of 428 satellites — 66 per cent of the planned total fleet — to build a global network that will deliver high-speed, low-latency connectivity. Announcing the pact for the satellite launch programme with New Space India, OneWeb, in the statement, said it remains on track for developing its satellite constellation network, delivering industry-grade secure connectivity.

“This is yet another historic day for collaboration in space, thanks to the shared ambition and vision of New Space India and OneWeb.” This most recent agreement on launch plans adds considerable momentum to the development of OneWeb's network, as we work together across the Space industry toward our common goal of connecting communities globally,” Sunil Bharti Mittal, OneWeb Executive Chairman, said. This launch contract follows a separate agreement announced in March 2022 between OneWeb and SpaceX to enable the company to resume satellite launches. “OneWeb has already activated service with its network at the 50th parallel and above, as demand for the company's broadband connectivity services continues to grow from multiple sectors and markets,” the company said. The terms of the agreement with New Space India were not disclosed.

<https://www.financialexpress.com/lifestyle/science/oneweb-inks-pact-with-isro-commercial-arm-for-satellite-launches/2498956/>

New Materials Enable Cheaper Solar Cells That Are Easier To Make



The solar cell with the ferrocene layer highlighted. Credit: Li et al. 2022

Traditional solar cells are made of silicon, which has high efficiency and stability but is very expensive to produce and can only be manufactured in rigid panels. Perovskite solar cells offer an intriguing alternative; they can be printed from inks, making them low cost, thin, lightweight, high efficiency, and flexible. They have, however, lagged behind silicon solar cells in terms of efficiency and, more crucially, stability, breaking down under normal environmental circumstances.

New metal-containing materials called ferrocenes may be able to help solve these problems. Researchers from City University of Hong Kong (CityU) have added Imperial-made ferrocenes into perovskite solar cells, vastly improving their efficiency and stability. The results are published today (April 21, 2022) in the journal *Science*. Co-lead author Professor Nicholas Long, from the Department of Chemistry at Imperial, said: “Silicon cells are efficient but expensive, and we urgently need new solar energy devices to accelerate the transition to renewable energy. Stable and efficient perovskite cells could ultimately allow solar energy to be used in more applications – from powering the developing world to charging a new generation of wearable devices.

“Our collaboration with colleagues in Hong Kong was beautifully serendipitous, arising after I gave a talk about new ferrocene compounds and met Dr. Zonglong Zhu from CityU, who asked me to send over some samples. Within a few months, the CityU team told us the results were

exciting, and asked us to send more samples, beginning a research program that has resulted in perovskite devices that are both more efficient and more stable.”

The power of ferrocenes

Perovskite forms the ‘light-harvesting’ layer of solar cell devices. However, these devices have been less efficient at converting solar energy into electricity than silicon-based solar cells, primarily because the electrons are less ‘mobile’ – they are less able to move from the harvesting layer to the electricity conversion layers.

Ferrocenes are compounds with iron at their center, surrounded by sandwiching rings of carbon. The unique structure of ferrocene was first recognized by Imperial’s own Nobel Prize-winner Professor Geoffrey Wilkinson in 1952, and ferrocenes are still being researched around the world today for their unique properties. One property their structure gives them is excellent electron richness, which in this case allows electrons to move more easily from the perovskite layer to subsequent layers, improving the efficiency of converting solar energy to electricity. Tests performed by the team CityU and in commercial labs show that the efficiency of perovskite devices with an added ferrocene layer can reach 25%, approaching the efficiency of traditional silicon cells.

Two birds with one stone

But this isn’t the only problem the ferrocene-based materials solved. The team at Imperial have been experimenting with attaching different chemical groups to the carbon rings of ferrocene, and after sending the Hong Kong team several versions of these, made by PhD student Stephanie Sheppard, the collaborators discovered a version that significantly improves the attachment of the perovskite layers to the rest of the device. This added attachment power improved the stability of the devices, meaning they maintained more than 98% of their initial efficiency after continuously operating at maximum power for 1,500 hours. The efficiency and stability gained thanks to the addition of a ferrocene layer brings these perovskite devices close to current international standards for traditional silicon cells.

Lead researcher Dr. Zonglong Zhu from CityU said: “We are the first team to successfully boost the inverted perovskite solar cell to a record-high efficiency of 25% and pass the stability test set by the International Electrotechnical Commission.” The team has patented their design and hopes to license it, eventually bringing their perovskite devices to the market. In the meantime, they are experimenting with different ferrocene designs to further improve the performance and stability of the devices.

<https://scitechdaily.com/new-materials-enable-cheaper-solar-cells-that-are-easier-to-make/>

