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पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

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रक्षा क्षेत्र में 'आत्मनिर्भरता' को गति देने के लिए और 101 हथियारों व प्लेटफार्मों को स्वदेशी बनाने का ऐतिहासिक नीतिगत निर्णय

रक्षा मंत्री ने प्रमुख उपकरणों/प्लेटफॉर्मों की तीसरी सूची की घोषणा की

21 डीआरडीओ प्रौद्योगिकियों के हस्तांतरण के लिए घरेलू रक्षा उद्योग को 30 से अधिक समझौते सौंपे गए

ये हथियार व प्लेटफॉर्म घरेलू उद्योग को बढ़ावा देंगे और देश में अनुसंधान व विकास और विनिर्माण क्षमता को उच्च स्तर पर ले जाएंगे - श्री राजनाथ सिंह

हमारा उद्देश्य एक ऐसे वातावरण का निर्माण करना है, जहां सार्वजनिक, निजी क्षेत्र व विदेशी संस्थाएं मिलकर काम कर सकें और भारत को रक्षा निर्माण में अग्रणी देशों में से एक बनने में सहायता कर सकें: रक्षा मंत्री

रक्षा मंत्री श्री राजनाथ सिंह ने 7 अप्रैल, 2022 को नई दिल्ली में प्रमुख उपकरण/प्लेटफॉर्म वाली 101 वस्तुओं की तीसरी सकारात्मक स्वदेशीकरण सूची जारी की। रक्षा मंत्रालय के सैन्य मामलों के विभाग की ओर से अधिसूचित यह सूची उन उपकरणों/प्रणालियों पर विशेष ध्यान केंद्रित करती है, जिन्हें विकसित किया जा रहा है और अगले पांच वर्षों में इन्हें फर्म ऑर्डरों में रूपांतरित करने की संभावना है। इन हथियारों और प्लेटफार्मों को दिसंबर, 2022 से दिसंबर, 2027 तक क्रमिक रूप से स्वदेशी बनाने की योजना है। अब इन 101 वस्तुओं की खरीदारी रक्षा अधिग्रहण प्रक्रिया (डीएपी) 2020 के प्रावधानों के अनुरूप स्थानीय स्रोतों से की जाएगी। यह पहली सूची (101) और दूसरी सूची (108) को जारी करने का अनुसरण करती है। पहली और दूसरी सूची को क्रमशः 21 अगस्त, 2020 और 31 मई, 2021 को जारी किया गया था। युद्ध

उपकरण, जो एक लगातार बनी रहने वाली जरूरत है, के आयात प्रतिस्थापन पर विशेष जोर दिया गया है। स्थानीय स्तर पर निर्मित होने वाले 310 रक्षा उपकरणों वाली इन तीन सूचियों को जारी करने के पीछे की भावना घरेलू उद्योग की क्षमताओं में सरकार के इस बढ़ते विश्वास को दिखाती है कि वे सशस्त्र बलों की मांग को पूरा करने के लिए अंतर्राष्ट्रीय मानकों के उपकरणों की आपूर्ति कर सकते हैं। इससे प्रौद्योगिकी और विनिर्माण क्षमताओं में नए निवेश को आकर्षित करके स्वदेशी अनुसंधान व विकास (आरएंडडी) की क्षमता को प्रोत्साहित करने की संभावना है। इसके अलावा यह घरेलू उद्योग को सशस्त्र बलों के झुकाव और भविष्य की जरूरतों को समझने के लिए भी पर्याप्त अवसर प्रदान करेगा।

तीसरी सूची में अत्यधिक जटिल प्रणाली, सेंसर, हथियार और गोला-बारूद शामिल हैं। ये हैं: हल्के टैंक, माउंटेड आर्टी गन सिस्टम (155एमएमX 52सीएएल), पिनाका एमएलआरएस के लिए गाइडेड एक्सटेंडेड रेंज (जीईआर) रॉकेट, नौसेना के उपयोग के लिए हेलीकॉप्टर (एनयूएच), नई पीढ़ी की अपतटीय पेट्रोल पोत (एनजीओपीवी), एमएफ स्टार (जहाजों के लिए रडार), मध्यम रेंज की पोत-रोधी मिसाइल (नौसेना संस्करण), अत्याधुनिक हल्के टॉरपीडो (शिप लॉन्च), उच्च सहनशील स्वायत्त अंडरवाटर वाहन, मध्यम ऊंचाई की अधिक सहनशक्ति मानव रहित हवाई वाहन(मेल यूएवी), विकिरण रोधी मिसाइल और लॉटरिंग युद्ध सामग्री शामिल हैं। इन सबका विवरण रक्षा मंत्रालय की वेबसाइट पर उपलब्ध है।

इस अवसर रक्षा मंत्री ने लोगों को संबोधित किया। उन्होंने तीसरी सूची को प्रधानमंत्री श्री नरेन्द्र मोदी के 'आत्मनिर्भर भारत' की सोच को प्राप्त करने के लिए सरकार की ओर से किए जा रहे व्यापक प्रयासों का प्रतीक बताया। श्री राजनाथ सिंह ने विश्वास व्यक्त किया कि यह नई सूची घरेलू उद्योग के विकास में महत्वपूर्ण साबित होगी और देश की अनुसंधान व विकास और विनिर्माण क्षमता को उच्च स्तर पर ले जाएगी। उन्होंने बताया कि यह तीसरी सकारात्मक स्वदेशीकरण सूची सभी हितधारकों के साथ गहन विचार-विमर्श के बाद तैयार की गई है। इनमें **रक्षा अनुसंधान व विकास संगठन (डीआरडीओ), रक्षा उत्पादन विभाग (डीडीपी), सेवा मुख्यालय (एसएचक्यू) और निजी उद्योग शामिल हैं।** श्री राजनाथ सिंह ने आश्वासन दिया कि पिछली दो सूचियों की तरह ही इस तीसरी सूची में दी गई समय-सीमा का अनुपालन किया जाएगा। उन्होंने कहा कि रक्षा मंत्रालय और सेवा मुख्यालय उद्योग की हैंडहोल्डिंग करने सहित सभी जरूरी कदम उठाएंगे। रक्षा मंत्री ने एक ऐसे इकोसिस्टम के निर्माण को लेकर सरकार के प्रयास को दोहराया, जो रक्षा निर्माण में आत्मनिर्भरता सुनिश्चित करता है व निर्यात को प्रोत्साहित करता है।

वहीं, **डीआरडीओ ने भी 25 उद्योगों के साथ 30 प्रौद्योगिकी हस्तांतरण (टीओटी) समझौतों पर हस्ताक्षर करके स्थानीय विनिर्माण को मजबूत करने पर जोर दिया। रक्षा मंत्री ने पूरे देश में स्थित 16 डीआरडीओ प्रयोगशालाओं की विकसित 21 प्रौद्योगिकियों से संबंधित समझौतों को सौंपा। इन प्रौद्योगिकियों में डीआरडीओ युवा वैज्ञानिक प्रयोगशाला (डीवाईएसएल- क्यूटी, पुणे) की विकसित क्वांटम रैंडम नंबर जेनरेटर (क्यूआरएनजी), काउंटर ड्रोन प्रणाली, लेजर निर्देशित ऊर्जा हथियार प्रणाली, मिसाइल वारहेड, उच्च विस्फोटक सामाग्रियां, उच्च स्तरीय इस्पात, विशिष्ट सामाग्रियां, प्रणोदक, निगरानी व परीक्षण,**

रडार वार्निंग रिसीवर, सीबीआरएम यूजीवाई, माइन (सुरंग बम) बैरियर, फायर फाइटिंग शूट्स और सुरंग बम रोधी जूते शामिल हैं। अब तक डीआरडीओ ने भारतीय उद्योगों के साथ 1,430 से अधिक प्रौद्योगिकी हस्तांतरण समझौते किए हैं। इनमें से पिछले दो वर्षों में रिकॉर्ड संख्या में लगभग 450 समझौतों पर हस्ताक्षर किए गए हैं।

श्री राजनाथ सिंह ने डीआरडीओ और उद्योग जगत को बधाई दी। उन्होंने कहा कि उद्योग क्षेत्र को 30 प्रौद्योगिकी हस्तांतरण समझौते सौंपना, भारतीय उद्योगों की ओर से डीआरडीओ की विकसित स्वदेशी तकनीकों में बढ़ते विश्वास को दिखाता है। रक्षा मंत्री ने कहा कि यह रक्षा प्रणालियों और प्लेटफार्मों में विनिर्माण इकोसिस्टम को और अधिक मजबूत करेगा। उन्होंने उम्मीद व्यक्त की कि भारत को वैश्विक रक्षा विनिर्माण केंद्र बनाने के लिए निजी क्षेत्र, सरकार की ओर से प्राप्त अवसरों का पूरा उपयोग करेगा। रक्षा मंत्री ने घरेलू उद्योग की भागीदारी को अधिकतम करने के लिए सरकार की ओर से किए गए उपायों की जानकारी दी। उन्होंने कहा कि आत्मनिर्भरता को बढ़ावा देने और आयात निर्भरता को कम करने को लेकर पूंजीगत खरीद बजट का 68 फीसदी हिस्सा घरेलू खरीद के लिए निर्धारित किया गया है। इसके अलावा अन्य उपायों में उद्योग, स्टार्ट-अप और शिक्षा के लिए रक्षा अनुसंधान व विकास बजट का 25 फीसदी व आयुध निर्माणी बोर्ड का निगमीकरण शामिल है।

श्री राजनाथ सिंह ने कहा कि बाधाओं के बावजूद भारत ने अपने वैज्ञानिकों और शोधकर्ताओं के धैर्य तथा दृढ़ संकल्प के कारण परमाणु प्रौद्योगिकी और अंतरिक्ष प्रौद्योगिकी जैसे क्षेत्रों में हमेशा से अपनी ताकत पर असाधारण रूप से अच्छा प्रदर्शन किया है। उन्होंने कहा कि इसी संकल्प के साथ भारत जल्द ही एक ऐसे वैश्विक विनिर्माण केंद्र के रूप में रूपांतरित हो जाएगा, जो अंतर्राष्ट्रीय बाजार में एक प्रमुख शक्ति होने के अलावा घरेलू जरूरतों को भी पूरा करता है। उन्होंने इन तीनों सूचियों को एक आत्म-अधिरोपित संकल्प के रूप में वर्णित किया, जो एक मजबूत और आत्मनिर्भर 'नए भारत' का मार्ग प्रशस्त कर सकता है। उन्होंने रक्षा उत्पादन में आत्मनिर्भरता और निर्यात में प्रोत्साहन के महत्व को रेखांकित किया। इसके अलावा रक्षा मंत्री ने इसे एक महत्वपूर्ण पहलू बताया, जो देश की सामाजिक-आर्थिक स्थिति में सुधार सहित अर्थव्यवस्था और राष्ट्रीय सुरक्षा को भी मजबूत करता है।

रक्षा मंत्री ने इस बात पर जोर देते हुए कि विदेशी सॉफ्टवेयर कोड के साथ प्रणाली का आयात सुरक्षा तंत्र के लिए खतरनाक साबित हो सकता है, क्योंकि इससे सूचनाओं तक पहुंचने की आशंका होती है, उन्होंने रक्षा उपकरणों और प्लेटफॉर्म प्रौद्योगिकियों के स्वदेशी विकास का आह्वाहन किया। स्वदेशीकरण पर अधिक ध्यान देने की जरूरत पर जोर देते हुए उन्होंने कहा, "आज रक्षा का दायरा केवल सीमाओं तक ही सीमित नहीं है। अब कोई भी व्यक्ति विभिन्न संचार विधियों की सहायता से किसी देश की सुरक्षा व्यवस्था में सेंध लगा सकता है। यह कोई मायने नहीं रखता है कि प्रणाली कितनी मजबूत है, अगर इसे किसी दूसरे देश से जोड़ा जाता है तो सुरक्षा के भंग होने की आशंका रहती है। इससे पहले टैंक और हेलीकॉप्टर जैसे रक्षा उपकरण मुख्य रूप से यांत्रिक प्रकृति के थे। उन पर नियंत्रण पाना संभव नहीं था। लेकिन नई रक्षा

प्रणालियां व प्लेटफॉर्म इलेक्ट्रॉनिक और सॉफ्टवेयर से युक्त हैं। उन्हें कहीं से भी नियंत्रित या नष्ट किया जा सकता है।" श्री राजनाथ सिंह ने युद्ध उपकरणों के घरेलू उत्पादन पर जोर दिया, क्योंकि यह युद्धों के दौरान निर्बाध आपूर्ति सुनिश्चित करता है। उन्होंने इस बात की सराहना की कि पहली दो सकारात्मक स्वदेशीकरण सूचियों में युद्ध उपकरण के आयात प्रतिस्थापन पर पूरा ध्यान दिया गया है। श्री सिंह ने कहा कि जब रक्षा वस्तुओं के ऑर्डर घरेलू रक्षा उद्योग को दिए जाते हैं, तो इससे पूरे देश में फैले इस क्षेत्र से जुड़े एमएसएमई (सूक्ष्म, लघु और मध्यम उद्योग) में काम करने वाले लाखों लोगों को रोजगार मिलता है।

श्री राजनाथ सिंह ने कहा कि आत्मनिर्भरता का मतलब विश्व के बाकी अन्य हिस्सों से अलग रहकर काम करना नहीं है, बल्कि देश के भीतर उनकी सक्रिय भागीदारी के साथ काम करना है। उन्होंने कहा, "यहां तक कि 'आत्मनिर्भर भारत अभियान' के तहत हमारे पास ऐसे प्रावधान हैं, जो विदेशी कंपनियों को निवेश, सहयोग, संयुक्त उद्यम स्थापित करने और लाभ कमाने के लिए उपयुक्त अवसर व वातावरण प्रदान करते हैं।" रक्षा मंत्री ने एक ऐसा वातावरण बनाने के लिए सरकार के निरंतर प्रयास की पुष्टि की, जहां सार्वजनिक, निजी क्षेत्र व विदेशी संस्थाएं मिलकर काम कर सकें और भारत को रक्षा निर्माण में विश्व के अग्रणी देशों में से एक बनने में सहायता कर सकें।

इस अवसर पर रक्षा राज्य मंत्री श्री अजय भट्ट, रक्षा सचिव डॉ. अजय कुमार, वायु सेना प्रमुख एयर चीफ मार्शल वीआर चौधरी, नौसेना प्रमुख एडमिरल आर. हरि कुमार, थल सेना के उप-प्रमुख लेफ्टिनेंट जनरल मनोज पांडे, रक्षा अनुसंधान और विकास विभाग के सचिव व डीआरडीओ के अध्यक्ष डॉ. जी. सतीश रेड्डी, रक्षा मंत्रालय के अन्य वरिष्ठ नागरिक व सैन्य अधिकारी और उद्योग जगत के प्रतिनिधि उपस्थित थे। इससे पहले प्रधानमंत्री श्री नरेन्द्र मोदी ने बजट के बाद 25 फरवरी, 2022 को आयोजित एक वेबिनार 'रक्षा में आत्मनिर्भरता: कार्रवाई का आह्वाहन' में रक्षा मंत्रालय के स्वदेशीकरण प्रयासों की सराहना की थी और इस बात की घोषणा की थी कि तीसरी सकारात्मक स्वदेशीकरण सूची जल्द ही जारी की जाएगी।

https://pib.gov.in/PressReleasePage.aspx?PRID=1814600

THE HINDU

Thu, 07 Apr 2022

Defence ministry notifies 3rd positive indigenisation list

Self-reliance did not mean working in isolation from the rest of the world, but working in the country itself with their active participation and support, Defence Minister Rajnath Singh said on Thursday after formally releasing the third positive indigenisation list of 101 equipment and platforms, which the Services can procure only from the domestic industry. The list includes naval utility helicopters, light tanks, small Unmanned Aerial Vehicles, anti-ship missiles among others.

At the event, the Defence Research and Development Organisation (DRDO) handed over 30 Transfer of Technology (ToT) agreements to 25 Indian industries for transfer of 21 technologies developed by 16 DRDO labs across the country. “The release of this list shows the fast pace of our self-reliance in the defence sector. This list is planned to be implemented from December 2022 till December 2027,” Mr. Singh said.

The DRDO stated that so far it had entered into more than 1430 ToT agreements with industries all over the country, out of which, 450 have been signed in the last two years. One of the big ticket items on the list is naval utility helicopters, the procurement for which was to be processed through the Strategic Partnership route and has been hanging fire for over couple of years now. This is now expected to go to Hindustan Aeronautics Limited (HAL).

Big systems in list

Other big systems in the list include sensors, weapons and ammunitions, rockets, patrol vessels, anti-ship missile, anti-radiation missile and several others which, Mr. Singh said, would fulfill the requirements of the armed forces. Underscoring the important of self-reliance, he observed, “We were denied access to knowledge of space technology and rocket science but the effort and dedication of our rocket scientists has placed us in the forefront in space domain and missile capability. Today we have been successful in reaching Mars.” As part of efforts to boost the domestic defence industry and promote defence exports, in August 2020, the government notified the first negative import list of 101 items and in May this year notified the second one, comprising 108 items, and renamed the third one as ‘positive indigenisation list’. The items on the lists cannot be imported by the Services and should be sourced from within the country. Since the announcement of the lists, contracts worth ₹54,000 crore have been signed for domestic procurement and orders worth ₹4.5 lakh crore were expected to be placed in the next 5 to 7 years, Mr. Singh stated.

Import substitution for ammunition

Like in the two earlier lists, special focus has been given to import substitution for ammunition in the third list, a defence official said. Similarly, one of the technologies handed over by the DRDO to the industry is 125 mm Fin Stabilised Armour Piercing Discarding Sabot (FSAPDS) practice ammunition for training the crews of T-72 and T-90 tanks that constitute the bulk of Army’s armoured fleet. The DRDO said the key attributes of the training ammunition were low-cost, less barrel wear, complete ballistic matching with in-service ammunition, compatible with sighting and fire control systems of T-72 and T-90 tanks, safe for firing at operational temperatures from -10 to +55 degree centigrade and excellent consistency and accuracy. “The ammunition will help Indian Army in conserving and building up stocks of operational ammunition. It has huge potential for export to countries with T-72 and T-90 tank fleets,” a DRDO official said. It was developed by the Armament Research and Development Establishment, Pune.

Strategically important time

S. P. Shukla, president, Society of Indian Defence Manufacturers, said, the third list came at a strategically important time. “Given the current geopolitical scenario, the importance of being self-reliant in defence production is more apparent than ever and the Industry is well poised to manufacture the 101 items indigenously and enhance the operational readiness of our forces.”

Welcoming the move Baba, Kalyani, Chairman and Managing Director, Bharat Forge Limited, said, "The Indian Defence Industry has been galvanised by the path-breaking policy reforms introduced by the Ministry of Defence in recent years." In addition, a percentage of the capital outlay of the Defence budget had been reserved for procurement from the domestic industry. For the year 2021-22, about 63% of the capital outlay or about ₹70,221 crore was reserved for procurement from domestic defence industry. Of the ₹1.52 lakh crore capital allocation in this year's Defence budget, which was meant for new purchases and payments for past procurements, 68% which was ₹84,598 crore from the allocation for the three Services had been reserved for procurement from the domestic industry.

Nirmala's announcement

Union Finance Minister Nirmala Sitharaman had announced in her Budget speech that in the annual Budget of 2022-23, Defence R&D will be opened up for industry, start-ups and academia and 25% of the Defence R&D budget has also been earmarked for this purpose. In addition, she announced that an independent nodal umbrella body will be set up for meeting wide-ranging testing and certification requirements. These measures were meant to incentivise the private sector to invest in defence manufacturing, which would also build competition for the Defence Public Sector Undertakings (DPSU) improving their efficiency. In this direction, the government recently corporatised the Ordnance Factory Board and converted it into seven DPSUs.

https://www.thehindu.com/news/national/defence-ministry-notifies-3rd-positive-indigenisation-list/article65299040.ece

Business Standard

Thu, 07 Apr 2022

DRDO transfers tech of Optronic Submarine Periscope to Paras Defence

Paras Defence and Space Technologies has been awarded the Technology of Optronic Submarine Periscope as developed by IRDE, DRDO. This technology has been transferred to the Company by way of a Licensing Agreement for Transfer of Technology of Optronic Submarine Periscope by IRDE, DRDO.

The DRDO Laboratory has also nominated Paras Defence and Space Technologies as the Production Agency for the Optronic Submarine Periscope.
The Optronic Submarine Periscope is the Eye of the Submarine and is used for Surveillance Applications. The company will be the first Indian company to manufacture Optronic Submarine Periscope on turnkey basis.

https://www.business-standard.com/article/news-cm/drdo-transfers-tech-of-optronic-submarine-periscope-to-paras-defence-122040700679_1.html

BusinessToday.In

Thu, 07 Apr 2022

Rajnath hands over DRDO's counter drone system docs to firms including Adani Defence, L&T

Defence Minister Rajnath Singh on Thursday handed over transfer of technology documents of DRDO-developed Counter Drone System to the Indian industry, including companies like Adani Defence Systems, Larsen & Toubro, Astra Microwave, in a conference in New Delhi. The other companies include ICOMM Tele Ltd and Electronics Corporation of India Limited (ECIL).

The handover to the Indian industries took place in the presence of Union and state defence ministers, other dignitaries at an event organised at DRDO Bhawan, tweeted DRDO. Transfer of Technologies developed by DRDO being handed over to the Indian industries in the presence by Hon'ble Raksha Mantri, Raksha Rajya Mantri and other dignitaries at an event organised at DRDO Bhawan Counter Drone System can detect, track and identify airborne drones using multiple sensors, transfer the information to associated systems and enable counter techniques to deny them the intended operation (soft kill) and/ or destroy them (hard kill). The detection of drone is done with the help of Radars and RF based detection system. The identification is done with the help of Electro Optic sensor and COMINT. The soft kill is carried out with RF jamming & Anti GNSS technologies, and Hard kill with the help of Laser Directed Energy Weapon (DEW). The system can detect, identify and neutralise different types of drones including Small Hybrid UAVs, Micro UAV/ Multi rotor, and Nano UAVs.

The transfer took place while Singh released the third positive indigenisation list of defence equipment. According to the Ministry of Defence, the third list builds on the first list of 101 items and the second list of 108 items that were promulgated on August 21, 2020 and May 31, 2021 respectively. The major items in the first list include 155mm/39 Cal Ultra-Light Howitzer, Light Combat Aircraft (LCA) Mk-IA - Enhanced Indigenised Content, conventional submarines and communication satellites GSAT-7C. The third list will consist of over 100 items, including complex equipment and systems which are being developed and likely to translate into firm orders over the next five years. Orders worth more than Rs 2,10,000 crore are likely to be placed on the Industry in the next five years as part of the items covered in the third list, the Defence Ministry had said.

With the notification, over 300 sophisticated items will be covered, ranging from complex weapon systems to critical platforms such as Armoured vehicles, combat aircraft, submarines etc. Since the notification of the first and second lists, contracts for 31 projects worth Rs 53,839 crore have been signed by the Armed Forces. Acceptance of Necessity (AoNs) for 83 projects worth Rs 1,77,258 crore have been accorded. In addition, cases worth Rs 2,93,741 crore will be progressed in the next five-seven years. The notification of the third list will supply equipment of international standards to meet the demand of the Armed Forces.

https://www.businesstoday.in/latest/story/rajnath-hands-over-drdos-counter-drone-system-docs-to-firms-including-adani-defence-lt-328997-2022-04-07

THE HANS INDIA

Fri, 08 Apr 2022

'Indian varsities should play key role in R&D'

Research and Development (R&D) has proved to be a crucial factor moving the world's technological frontiers and Indian Universities should play a key role in the advancement of research and innovation, said NSTL Director Y Sreenivas Rao here on Thursday. Inaugurating an international conference on 'Breakthrough in Heuristics and Reciprocation of Advanced Technologies (BHARAT-22), he mentioned that central research organisations like DRDO, ISRO and NSTL are showing interest to associate with HEIs to do collaborative research.

Organised jointly by GITAM EECE department and IEEE Vizag Bay Section, the event saw participation of GITAM president M Sribharath, academic Pro Vice-Chancellor Jayasankar Variyar, EECE Department Head J B Seventline, engineering dean C Vijayasekhar, IEEE Vizag Bay Section chair S Lakshmi Narayana, CSE HoD R Sireersha, among others. Briefing about the government's new scheme for development of semiconductors and display manufacturing ecosystem at a cost of Rs 76,000 crore, the NSTL Director said it will position India as a global hub for hi-tech production and attract large chip makers.

NSTL Director Y Sreenivas Rao addressing a gathering at the international conference at GITAM in Visakhapatnam on Thursday

He informed that inviting private partners in defence R&D will give a scope of new innovations. Accenture Technology Solutions MD GS Rao said that Covid-19 has forced the companies to operate in new ways and IT is being tested like never before. He mentioned that most of the companies are investing more on technology upgradation and innovations. He advised faculty and students to prepare for a lifelong learning process to face the challenges.

https://www.thehansindia.com/news/cities/visakhapatnam/indian-varsities-should-play-key-role-in-rd-737036?infinitescroll=1

DRDO On Twitter

Defence News

Defence Strategic: National/International

FINANCIAL EXPRESS
Read to Lead

Thu, 07 Apr 2022

Third positive indigenisation: ARVs, light tanks, drones, NUH and more in the list; here's what Rajnath Singh said

Amidst the ongoing Ukraine-Russia crisis, on Thursday, the government has notified a list of items that will be produced indigenously here in India and will be in line with 'Atmanirbhar Bharat' initiative. The list is expected to help in further increase procurement of indigenous

military platforms for the Indian armed forces from the current USD 10 bn to USD 20 by 2025 and will help in meeting the export target of USD 5 bn for the same period.

Speaking at the launch of the Third Positive Indigenisation List on Thursday, defence minister Rajnath Singh said, “It is our endeavour to make India self-reliant in the defence sector, build the capabilities and ecosystems needed for defence exports in times to come.”

In the 90s, India was denied super computers by countries who cited various reasons for the refusal. After that, “Our researchers, engineers, and scientists, of The Centre for Development of Advanced Computing (C-DAC) in Pune established their own supercomputer.”The new list has complex systems and platforms including: Rockets, Naval Utility Helicopters, Patrol vessels for the Indian Navy and Coast Guard, Sensors, Weapons and ammunition, Anti-ship Missile, Anti-radiation missiles, and many more. The defence minister also talked about the denial of access to knowledge of rocket science and space technology, however with the efforts of the rocket scientists in the country; India has become one of the leading countries in missile technology and space.

Talking about the first and the second indigenisation lists, according to the minister a contract of Rs 54,000 crore has been made so far and in the next 5-7 years, an order of Rs 4.5 lakh crore is expected to be given. The systems and equipment in the list notified today would be manufactured locally for the Indian Armed Forces and will help in making India a defence manufacturing hub, said Rajnath Singh. Adding, “The third list released today builds on the 101 items in the first one and 108 items in the second, which were promulgated in 2020 and 2021 respectively.”

Major items in the first list

There were conventional submarines, 155mm/39 Cal Ultra-Light Howitzer, Light Combat Aircraft (LCA) Mk-IA – with more indigenised content, and communication satellites GSAT-7C.

Some major items in second list

The second list included 1000HP Engine for T-72 tank, next generation Corvette, Land based MRSAM weapon system, Onboard Oxygen Generation System (OBOGS) based integrated life support system for fighter aircraft, and Smart Anti-Field Weapon System (SAAW) Mk-I. As has been reported earlier, the third list includes 101 complex systems and equipment which are in the process of being developed and are expected to eventually translate into firm orders from the Indian Armed Forces in the next few years. Ahead of the announcement of the third list, the Ministry of Defence on Wednesday in an official statement indicated that orders more than Rs 2, 10,000 crore are expected to be placed on the industry over the next five years.

Some items from the third list include:

Mounted Artillery Gun System 155mm/ 52 Cal; 7.62mm x 54 (Sniper) Ammunition; See Through Armour; Light Weight Tanks; 155mm Terminal Guided Munition; Guided Extended Range (GER) Rocket for Pinaka Multiple Launch; Rocket System (MLRS); Armoured Recovery Vehicle (ARV) for MBT Arjun; Portable Helipad; Land Based Tactical Communication System; Next Generation Fast Attack Craft; Next Generation Fast Interceptor Craft; Ship Based Vertical Launched Short Range Surface to Air Missile (VL SRSAM); Instrumented Electronic Warfare Range (IEWR); Range extension Kit (REK) for 450 Kg High Speed (HS) Bomb; Anti-Radiation Missile (ARMs) up to 100 Km.

What is ARV for the MBT Arjun Tank?

In 2018, the Defence Acquisition Council (DAC) approved the procurement of Armoured Recovery Vehicles (ARVs) for the Indian Army's Main Battle Tank (MBT) `Arjun'. These ARVs are used by the Indian army for recovery and repair of broken down T-72 tanks and BMP-1 and infantry combat vehicles. This has been developed and designed by Defence Research and Development Organisation (DRDO) and as has been reported earlier, will be manufactured by Bharat Earth Movers Limited (BEML) for the Indian Army. Based on the basic Vijayanta chassis, this vehicle is expected to replace Centurion and Sherman ARVs and has the capacity to lift more than 8 tonnes and a pulling capacity of more than 20 tonnes. Today in the presence of the defence minister and all the stakeholders, DRDO, signed 30 Transfer of Technology (ToT) agreements with 25 industries. And agreements related to 21 technologies which have been developed by 16 laboratories under DRDO spread across the country. These technologies are related to Quantum Random Number Generator (QRNG), which has been developed by Pune based DRDO Young Scientist Lab; CBRN UGVs, Mine Barriers, Fire Fighting Suits, Boots for Anti Mine, Counter Drone System, Laser Directed Energy Weapon System, Missile Warhead, High Explosive Materials, High Grade Steel, Specialised Materials, Propellants, Surveillance & Reconnaissance, Radar Warning Receivers.Till date, 1,430 ToT agreements have been done with the Indian industries by DRDO and out of which, and in the last two years a record number of around 450 ToT agreements have been firmed up.

Views from the Industry

"Given the current geopolitical scenario, the importance of being self-reliant in defence production is more apparent than ever," says SP Shukla, President, SIDM. Adding, the industry is all set to manufacture the 101 items indigenously and will also enhance the operational readiness of the Indian Armed forces.

Strong India

The list reaffirms the government's trust on the capability of the Indian Defence Industry, says Jayant Patil, Immediate Past President, SIDM. "It will help to attain strategic independence in foreign policy- a much desired aim for all Nations in the current global geopolitical situation," he says. According to him, the third list will be a shot in the arm to the domestic Defence Industry to realise the Aatmanirbhar Vision of Prime Minister Modi. Said Baba Kalyani, Founding President, SIDM, "The Indian Defence Industry has been galvanised by the path-breaking policy reforms introduced by the Ministry of Defence in recent years."

https://www.financialexpress.com/defence/third-positive-indigenisation-arvs-light-tanks-drones-nuh-and-more-in-the-list-heres-what-rajnath-singh-said/2484889/

ThePrint

Thu, 07 Apr 2022

Naval utility chopper, light tanks on 3rd list of items India will stop importing

Giving a clear advantage to the state-run Hindustan Aeronautics Limited (HAL), the defence ministry Thursday released its third negative import list — which includes the Naval Utility Helicopter, a programme that has been in limbo for a long time. The list, officially known as the positive indigenisation list, details 101 items including light tanks which Russia had offered that will be barred for import progressively from December 2022 to December 2027.However, the NUH was the most significant inclusion, because the programme was being pursued under a strategic partnership model, whereby a foreign original equipment manufacturer (OEM) would tie up with an Indian private company. While Airbus was the frontrunner to win the mega contract, HAL also responded to the tender, putting the whole process on hold since the state-run firm wanted a way in — something that's not allowed under the strategic partnership model.

Indian private companies were against HAL's inclusion in the programme, and the Navy, too, had its reservations.Sources explained that the cut-off period for NUH import is December 2023, before which the Navy could sign a contract involving a foreign manufacturer. However, they added that if HAL is able to prove its NUH, then the Navy will go for the indigenous product. The sources also pointed out that even under a strategic partnership, the helicopter would have been manufactured in India through a tie-up between a foreign OEM and an Indian private company.

Dangers of importing defence systems

Speaking at the release of the third list, Defence Minister Rajnath Singh said that more than Rs 2,10,000 crore's worth of orders would be placed with Indian industry in the next five to seven years. He called for the indigenous development of defence equipment and platform technologies, stressing that the import of systems with foreign software codes can prove to be dangerous for the security apparatus, as it opens a window of vulnerability.

Emphasising the need to focus more on indigenisation, he said, "Today, the scope of defence is not limited to borders only. Anyone can now break into the security system of a country with the help of different communication methods. No matter how strong the system is, if it is linked to another country, there is a possibility of a security breach." "Earlier, defence equipment, such as tanks and helicopters, was mainly mechanical in nature. It was not possible to control them. But newer defence systems and platforms are electronic and software-intensive. They can be controlled or subverted from anywhere," he added.

Singh also said that despite hurdles, India had always performed exceptionally well on its own in areas such as nuclear and space technology. He added that India would soon transform into a global manufacturing hub that caters to domestic requirements, besides being a dominant force in the international market. He described the three lists as a self-imposed vow that can pave the way for a strong and self-reliant "New India".

Industry welcomes third list

The 37 items that will be barred for import from December this year include counter-drone systems for both hard and soft kills — to physically destroy drones and to jam their electronics and communications, respectively. Starting from December 2023, India will not import any drone or unmanned aerial vehicle (UAV) that has a range of 100 km at an altitude of 4,000 metres, or loitering munitions with a range of 150 km. The cut-off date for bigger items such as the mounted artillery gun system and lightweight tanks kicks in from December 2025.

Welcoming the move, S.P. Shukla, president of the Society of Indian Defence Manufacturers (SIDM), told reporters, "The third positive indigenisation list comes at a strategically important time. Given the current geopolitical scenario, the importance of being self-reliant in defence production is more apparent than ever, and industry is well poised to manufacture the 101 items indigenously and enhance the operational readiness of our forces. We welcome this reform with enthusiasm." Jayant Patil, executive vice president, defence and aerospace at L&T, said that the new list provides the domestic defence industry with a shot in the arm to realise the 'Atmanirbhar' vision.

This third list follows the first (101 items) and second lists (108) that were promulgated on 21 August, 2020 and 31 May, 2021, respectively. The defence ministry in a statement said the list had been prepared after in-depth consultations with all stakeholders, such as the Defence Research and Development Organisation (DRDO), the Department of Defence Production (DDP), service headquarters (SHQs) and private industry. Defence Minister Singh said that, as with the previous lists, the time limits given in the third list will also be adhered to. He further said that the Ministry of Defence and the service headquarters would take all necessary steps — including the handholding of industry — reiterating the government's endeavour to create an ecosystem that ensures self-reliance in defence manufacturing and encourages exports.

https://theprint.in/defence/naval-utility-chopper-light-tanks-on-3rd-list-of-items-india-will-stop-importing/906950/

INDIA TODAY

Thu, 07 Apr 2022

Centre to announce 3-year Agnipath entry scheme for youngsters to join defence forces

The central government is all set to announce a new scheme called Agnipath under which youngsters would join the forces for a period of three years and serve the country. The scheme is a part of Prime Minister Narendra Modi's major reform towards reducing expenditure and age profile of the defence forces. Top government sources informed India Today that the youth would join the forces through the Agnipath entry scheme and be known as 'Agniveers' during their stint.

Forces are making final presentations to the government on the programme which would give them the option of retaining the best talent among the 'Agniveers' while releasing the others for

civilian jobs. Corporate houses have also been in touch with the government to take the military-trained youth into their fold. The recruitment cycles for soldiers in the armed forces has been severely curtailed in the past two years due to the Covid pandemic, with official records showing that 1.25 lakh vacancies are currently available in the defence forces.

While the contours of the final plan are yet to be revealed, the original concept was to bring in soldiers, both for general and specialised duties, for a fixed period of three years. This would be a shift from the earlier concept of permanent recruitment into the armed forces in which soldiers serve for varying lengths of time. The catchment areas for recruitment could also be significantly expanded. At the end of three years, most of the soldiers would be relieved from duty and would get assistance from the armed forces for further employment avenues. Several corporations will also have an interest in reserving jobs for such trained and disciplined youth who have served their nation.

Initial calculations by the Armed Forces had projected thousands of crores in savings in pay, allowances and pension if a considerable number of soldiers are taken in under the tour of duty concept. The best among the recruited youth could also get an opportunity to continue their service, in case vacancies are available.

https://www.indiatoday.in/india/story/centre-to-announce-3-year-agnipath-entry-scheme-for-youngsters-1934440-2022-04-07

Thu, 07 Apr 2022

India has strong defence against cyber attacks: power minister RK Singh

Power Minister R K Singh on Thursday said the country has a strong defence against any kind of cyber attacks, amid reports of Chinese state-sponsored hackers targeting power grid in Ladakh. "Our defence against cyber attack is strong. These were probing attacks in December, January and February. They did not succeed. But we are aware," Mr Singh said on the sideline of a clean energy ministerial senior officials meet in the capital. The minister also said that action was taken back in 2018 against suspected cyber attacks on the country's power supply system. "We had put protocols in place. Those protocols are working and we are strengthening those protocols everyday. So, our cyber defence against cyber attack is strong. We are confident about that," Mr Singh said.

There are reports that power sector in the country was targeted by hackers in a long-term operation which was carried out by a state-sponsored (Chinese) group. According to the reports, the hackers targeted seven Indian state centres responsible for carrying out electrical dispatch and grid control near a border area disputed by the two nuclear neighbours. The group reportedly used the trojan ShadowPad, which is believed to have been developed by contractors for China's Ministry of State Security, leading to the conclusion that this was a state-sponsored hacking effort. Meanwhile, in Beijing, Chinese government denied reports that its hackers targeted the

Indian power grid in Ladakh. "We have noted the relevant reports," China's Foreign Ministry spokesman Zhao Lijian said during a media briefing on Thursday. He was responding to a query about a report by private intelligence firm Recorded Future on Wednesday that claimed that suspected Chinese hackers targeted the Indian power grid in an apparent cyber espionage campaign.

"As I repeated many times, we firmly oppose and crackdown on all forms of hacking activities. We will never encourage, support or condone such activities," he said. China routinely denies allegations of hacking by its state-sponsored hackers, demanding evidence. It also claims that it is a victim of hacking from US networks.About fears of looming power crisis in the country in the backdrop of low coal stocks at thermal plants, Mr Singh said availability of power is sufficient. "The concerned states need money to buy power. That is the only thing... today there is no question of any state being power deficit. They can buy power. If they don't have money to buy power, then I cannot help it." He also stated that he was confident of meeting the increasing power demand. "The great thing is that our demand has increased. It shows that the economy is growing and it is growing at 9 per cent. Power consumption is indicative of economic growth. We are capable of handling whatever demand is," he stated. According to the latest coal stock report, the overall dry fuel stock was 37 per cent of the required level as on April 5. At non-pit head plants, the coal stock was at 29 per cent of the required stocks. In September last year, there were coal shortages at various power plants. Thereafter, power ministry took a series of steps to perk up supplies.

https://www.ndtv.com/india-news/india-has-strong-defence-against-cyber-attacks-power-minister-rk-singh-2869205

अमर उजाला

Thu, 07 Apr 2022

विदेश मंत्रालय: 11-12 अप्रैल को अमेरिका का दौरा करेंगे जयशंकर और राजनाथ सिंह, रूस के साथ कारोबार पर कही ये बात

विदेश मंत्री डॉ. एस जयशंकर और रक्षा मंत्री राजनाथ सिंह 11 और 12 अप्रैल को अमेरिका के दौरे पर रहेंगे। विदेश मंत्रालय के प्रवक्ता अरिंदम बागची ने गुरुवार को एक प्रेस वार्ता में इसकी जानकारी दी। बागची ने बताया कि रक्षा मंत्री और विदेश मत्री चौथे भारत-अमेरिका मंत्रिस्तरीय टू प्लस टू वार्ता में भारतीय प्रतिनिधिमंडल का नेतृत्व करेंगे। इसका आयोजन 11 अप्रैल को वाशिंगटन डीसी में होना है। बागची ने बताया कि यह वार्ता वार्ता दोनों पक्षों के संबंधों को और मजबूत करने के लिए रणनीतिक मार्गदर्शन और दृष्टि प्रदान करने के उद्देश्य से विदेश नीति, रक्षा और सुरक्षा से संबंधित भारत-अमेरिका द्विपक्षीय एजेंडा में क्रॉस-कटिंग मुद्दों की व्यापक समीक्षा करने में सक्षम बनाएगी। उन्होंने कहा कि विदेश मंत्री एस जयशंकर अपने अमेरिकी समकक्ष एंटनी ब्लिंकन के साथ एक अलग बैठक भी करेंगे।

भारत-अमेरिका विस्तृत वैश्विक रणनीति भागीतारी को और आगे बढ़ाने के लिए जयशंकर अमेरिकी प्रशासन के वरिष्ठ सदस्यों के साथ भी बैठक करेंगे। रूस के साथ कारोबार को लेकर पश्चिमी दबाव की खबरों पर बागची ने कहा कि कोई दबाव नहीं है। प्रतिबंधों की बात चल रही है लेकिन यह पूरे कारोबार पर नहीं है। हमारा ध्यान रूस के साथ हमारे आर्थिक संबंधों को बनाए रखने और उन्हें स्थिर करने पर है। रूस के साथ कारोबार को लेकर अमेरिका के उप राष्ट्रीय सुरक्षा सलाहकार दलीप सिंह की टिप्पणी को लेकर बागची ने कहा कि हमने रूस के साथ आर्थिक संबंध स्थापित किए हैं। हमारा ध्यान वर्तमान परिस्थितियों में इन संबंधों को स्थिर करने का है। हम इस बारे में बहुत खुले विचार रखते हैं। बागची ने आगे कहा कि मैं समझता हूं कि हमारा रुख बहुत स्पष्ट है। हमारे कार्यों का राजनीतिकरण नहीं किया जाना चाहिए। लद्दाख के पास बिजली वितरण केंद्रों को निशाना बनाने के लिए चीनी हैकर्स की ओर से की गई दो असफल कोशिशों को लेकर प्रवक्ता ने कहा कि मैं केवल इतना कह सकता हूं कि अपने महत्वपूर्ण बुनियादी ढांचों की सुरक्षा के लिए हमारे पास एक व्यवस्था है, एक तंत्र है। बिजली मंत्रालय ने इस मामले में बयान जारी किया है।

आर्थिक संकट से निपटने में श्रीलंका की हर संभव मदद कर रहे हैं

श्रीलंका में बने भीषण आर्थिक संकट पर विदेश मंत्रालय के प्रवक्ता ने कहा कि हम पड़ोसी हैं और करीबी मित्र हैं। हमने पिछले दो-तीन महीनों में 2.5 अरब डॉलर की सहायता श्रीलंका को उपलब्ध कराई है। इसमें ईंधन और भोजन के लिए क्रेडिट सुविधा भी शामिल है, जिसकी सबसे ज्यादा जरूरत है। उन्होंने कहा कि मार्च मध्य से 2.70 लाख मीट्रिक टन से अधिक डीजल-पेट्रोल श्रीलंका पहुंचाया जा चुका है। इसके अलावा एक अरब डॉलर की क्रेडिट सुविधा के अलावा हमने 40 हजार टन चावल की आपूर्ति भी की है। बागची ने कहा कि भारत और श्रीलंका के संबंध साझा सांस्कृतिक मूल्यों और हमारे लोगों की आकांक्षाओं पर आधारित हैं। हाल के महीनों में समानता और रुचि पर आधारित हमारे सहयोग को मजबूत किया गया है। हम हाल के घटनाक्रम को इसी परिप्रेक्ष्य में देखते हैं। उन्होंने कहा कि कोरोना के बाद तेज आर्थिक रिकवरी के लिए हम श्रीलंका के साथ काम करना जारी रखने के लिए तैयार हैं। यह हमारी पड़ोसी प्रथम नीति के तहत है और हम श्रीलंका हो इस संकट से उबरने के लिए हर संभव मदद उपलब्ध कराएंगे।

यमन में युद्ध विराम के एलान का स्वागत किया, सकारात्मक उम्मीद

अरिंदम बागची ने कहा कि हम यमन विवाद में दो अप्रैल से शुरू गुए दो महीने के युद्ध विराम की घोषणा का स्वागत करते हैं। हम उम्मीद करते हैं कि यह समझौता एक व्यापक और टिकाऊ युद्धविराम की ओर ले जाएगा और आठ साल के लंबे संघर्ष को समाप्त करने के लिए एक समावेशी राजनीतिक प्रक्रिया की दिशा में सकारात्मक गति का निर्माण करेगा।

पाकिस्तान के राजनीतिक संकट को बताया उसका आंतरिक मामला

वहीं, पाकिस्तान में बने राजनीतिक संकट को लेकर बागची ने कहा कि यह उनका आंतरिक मामला है। फिलहाल मैं इस पर कोई टिप्पणी नहीं कर सकता हूं। हम वहां के घटनाक्रमों को देख रहे हैं लेकिन हम पाकिस्तान के आंतरिक मुद्दों पर टिप्पणी नहीं कर सकते।

नेपाल में स्कूल, स्वास्थ्य केंद्र, सिंचाई परियोजना निर्माण के तीन समझौते

वहीं, नेपाल में स्कूल, स्वास्थ्य केंद्र, सिंचाई परियोजना निर्माण के लिए भारतीय दूतावास और नेपाल सरकार के संघीय मामले, सामान्य प्रशासन मंत्रालय ने तीन समझौतों पर हस्ताक्षर किए हैं। भारतीय दूतावास ने बताया कि पहला समझौता धारचूला में दुहुन रूरल नगर पालिका से जनबिकाश सेकेंडरी स्कूल, दूसरा नौगढ़ रूरल नगर पालिका से इयरकोट स्वास्थ्य केंद्र इमारत और तीसरा धाडिंग की गालछी रूरल नगर पालिका से महेशफाट सिंचाई परियोजना निर्माण का है। भारत-नेपाल विकास सहयोग के तहत बनने वाले इन सामुदायिक विकास प्रोजेक्ट के लिए वित्त पोषण भारत सरकार करेगी। इनकी लागत 70.87 करोड़ रुपये आंकी गई है। निकट पड़ोसी भारत और नेपाल विभिन्न क्षेत्रों में सहयोग करते हैं।

https://www.amarujala.com/india-news/eam-s-jaishankar-and-defence-minister-rajnath-singh-will-visit-america-on-11-and-12-april-says-mea-also-talked-about-trade-with-russia-china-pakistan-updates-in-hindi

[N] WORLD

Thu, 07 Apr 2022

India to boost domestic weapons production over fears of shortfall from Russia

India plans to increase its domestic production of military equipment over fears that its main supplier Russia might not be able to meet demand because of the war in Ukraine. Defence Minister Rajnath Singh announced the decision on Thursday while releasing a list of military equipment that will be produced domestically and no longer imported, including helicopters, tank engines, missiles and airborne early warning systems.

"Our objective is to develop India as a defence manufacturing hub," Mr Singh said. India depends on Moscow for about 60 per cent of its defence equipment but Russia's losses in Ukraine are creating uncertainty over future supplies. Defence Ministry officials say India, with the world's second-largest army, fourth-largest air force and seventh-largest navy, cannot sustain itself through imports. The ministry's website said military orders worth 2,100 billion rupees ($28 billion) are likely to be placed with domestic state-run and private defence manufacturers in the next five years.

New Delhi and Moscow agreed to transfer some weapons manufacturing to India during a visit last year by Russian President Vladimir Putin, said D S Hooda, a retired Indian army general. Imports of helicopters, navy corvettes, tank engines, missiles and airborne early warning systems will cease eventually. "The requirements of the Russian military itself, with the kind of losses that it is suffering, may mean some of those spares that we need will probably get diverted," Gen Hooda told Associated Press. Defence Ministry officials said India might consider purchases from former Soviet republics and Warsaw Pact countries to meet its short-term requirements.

Bulgaria, Poland, Georgia, Kazakhstan and Ukraine could help India with spare supplies for Russian Sukhoi and MiG-29 fighter jets and with upgrading tanks and armoured vehicles, because they have similar Soviet-origin platforms and spares, a ministry official said.

India's Foreign Affairs Minister Subrahmanyam Jaishankar told his British counterpart Liz Truss during her visit to India last week that there was now an emphasis on "made in India" and that "the more collaborative we are, the possibilities of working together are more". The two sides discussed ways to strengthen Indo-British defence ties, apparently to reduce India's strategic dependence on Russia. India's Defence Ministry has so far identified a "positive indigenisation list" of more than 300 items, with a timeline for banning imports of these items.

India's air force has more than 410 Soviet and Russian fighter aircraft with a mix of imported and licence-built platforms, including Su30s, MiG-21s and MiG-29s. All require Russian spares and components. India also has Russian tanks, helicopters, frigates, submarines and missiles. Rahul Bedi, a defence analyst, said India was awaiting deliveries of Russian missile systems, frigates, an Akula-class nuclear-powered submarine and assault rifles. Sanctions on Moscow over its war in Ukraine could jeopardise India's recent $375 million order from the Philippines for BrahMos cruise missiles. Russia's rocket developer NPO Mashinostroyenia, which formed a joint venture with India's government-run Defence Research and Development Organisation (DRDO) to design, upgrade and manufacture BrahMos, is responsible for providing the missile system's engines and seekers. Prime Minister Narendra Modi's government is pushing for greater self-reliance, but India lacks a strong industrial base for military equipment. The process of shifting manufacturing of spare parts to India has begun, but Gen Hooda said it was unclear if it could quickly make up for any supply shortfall. "I would say if you really want to see significant progress it will take at least five years," he said.

The Defence Ministry has also signed nearly 60 offset contracts worth more than $13 billion by 2027 for purchases of fighter aircraft and weapons from the United States, France, Russia and Israel. The deals require 30 per cent to 50 per cent of the contract value to be returned to India as offsets or re-investments. An offset involves an obligation by a foreign supplier to buy a certain amount of goods from the importing country as part of the contract. India's government wants part of that money to benefit its defence industry or to allow the country to gain in terms of technology. It involves setting up joint ventures with Indian companies to manufacture defence equipment.

The government announced in the 2022-2023 budget that 68 per cent of all capital defence procurement would be from local manufacturers. Meanwhile, defence trade with the US increased from nearly zero in 2008 to $15bn in 2019. Major Indian purchases from the United States included long-range maritime patrol aircraft, C-130 transport aircraft, missiles and drones. In 2020, India announced that foreign companies could invest up to 74 per cent in its defence manufacturing units, up from 49 per cent, without government approval. The aim is to

attract foreign companies with advanced technologies to set up factories in India in collaboration with local companies.

India fully opened its defence sector, previously confined to state-run companies, to the private sector in 2001. However, only 110 of the 330 private companies with industrial licences for such manufacturing have begun production, according to the Defence Ministry. Starting from scratch, the DRDO began trying to develop advanced defence technologies in 1958. It has worked on short-range and long-range Agni and Prithvi missiles, Tejas light combat aircraft, tanks, multi-barrel rocket launchers, air defence systems and a wide range of radar and electronic warfare systems. The Defence Ministry earmarked 10 billion rupees for procurement from start-ups in 2020-2021. The government has established two defence industrial corridors, in northern Uttar Pradesh and southern Tamil Nadu states, with investments of $2.7bn by 2024 by state-run and private sector companies.

https://www.thenationalnews.com/world/asia/2022/04/07/india-to-boost-domestic-weapons-production-over-fears-of-shortfall-from-russia/

Science & Technology News

Thu, 07 Apr 2022

Solar Nanowire-Nanotube purification filter offers easy access to clean drinking water

Even today, clean water is a privilege for many people across the world. According to the World Health Organization (WHO), at least 1.8 billion people consume water contaminated with feces, and by 2040, a large portion of the world will endure water stress because of insufficient resources of drinking water. Meanwhile, the United Nations Children's Fund (UNICEF), around 1,800 children die every day from diarrhea because of unsafe water supply, which causes diseases like cholera.

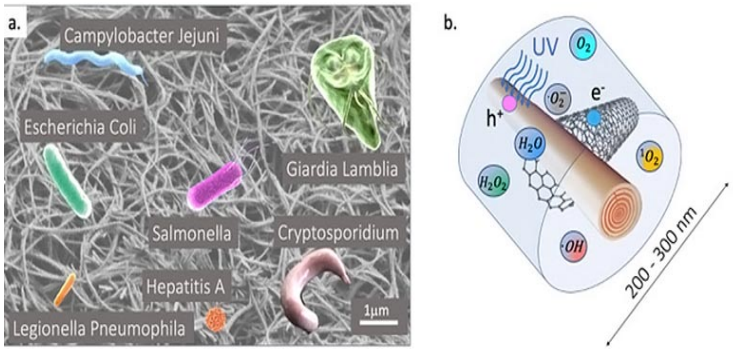
The prototype of the water purificator held by the Master project student Jerome Gabathuler.

It has become imperative then that we develop efficient and cost-efficient ways to decontaminate water. And that is exactly what a team of scientists led by László Forró at EPFL have accomplished, with a new water purification filter that combines titanium dioxide (TiO_2) nanowires and carbon nanotubes powered by nothing but sunlight.

The scientists first show that the TiO_2 nanowires by themselves can efficiently purify water in the presence of sunlight. But interweaving the nanowires with carbon nanotubes forms a composite material that adds an extra layer of decontamination by pasteurizing the water –

killing off human pathogens such as bacteria and large viruses. The idea is that when UV light – from the visible spectrum of sunlight – hits the filter, it causes it to produce a group of molecules called Reactive Oxygen Species (ROS). These include hydrogen peroxide (H_2O_2), hydroxide (OH), and oxygen (O_2-), and are known to be effective pathogen killers. The researchers tested their device with E. Coli, bacteria, the "gold-standard" for bacterial survival studies, but it should work with other bacteria (a common diarrhea including pathogen in the developed world) Giardia Lambila (a microorganism cause the intestinal inflection

pathogens, such as Campylobacter Jejuni giardiasis), Salmonella, Cryptosporidium (causes diarrheal cryptosporidiosis), the Hepatitis A virus, and Legionella Pneumophila (causes Legionnaires' disease). The device is exceptionally adept at removing all the pathogens from water, and shows promising results even for eliminating micropollutants, such as pesticides, drug residues, cosmetics etc.



The filtering and sterilization process of the water purification device. On the left is an example of microorganisms that commonly contaminate drinking water. The pathogens are trapped at the surface of the nanowire-carbon nanotube composite-based filte

"In a close collaboration between chemists, physicists, and biologists, we have developed a very efficient water purification device, which does not need any energy source but sunlight," says Forró. "Our prototype can supply clean drinking water even at remote places to small populations and could be easily scaled-up. It is a great achievement and an important "side-product" of this project is that it has attracted a large number of talented and motivated students who care for environmental issues, for sustainability." In their paper, published in the Nature partner journal Clean Water, the researchers showcase a prototype of the filter and make suggestions for further improvements. "I am convinced that it will create a strong follow-up in versatile scientific communities and hopefully funding agencies," says Endre Horváth, the lead scientist on the project.

https://scitechdaily.com/solar-nanowire-nanotube-purification-filter-offers-easy-access-to-clean-drinking-water/

The Indian EXPRESS

Thu, 07 Apr 2022

Hubble finds a new Jupiter-like planet forming in an unusual way: NASA

The Hubble Space Telescope has photographed a Jupiter-like protoplanet forming through a process that researchers have described as "intense and violent". According to NASA, this discovery supports a long-debated theory called "disk instability," which tries to explain how

planets similar to Jupiter are formed. According to Encyclopedia of Astrobiology, this model is for giant planet formation where a protoplanetary disk becomes dense and cool enough to be unstable to gravitational collapse and thereby resulting in the formation of a gaseous protoplanet. A protoplanetary or circumstellar disc is a disc of gas and dust orbiting a newly formed star, out of which planets are hypothesised to form.

According to the Disk Instability theory, matter slowly moves inwards in this disc as dust particles grow to centimetre-sized pebbles. This is seen as the first step towards the formation of kilometre-sized planetesimals that eventually come together to form planets. The newly forming planet captured by Hubble is called AB Aurigae b and embedded in a protoplanetary disk with distinct spiral structures swirling around and surrounding a young star that is estimated to be about 2 million years old. That is also about the same age our solar system was when planet formation was underway. This protoplanet is probably around nine times the size of Jupiter and orbits its host star at a distance of 8.6 billion miles, over two times the distance between our Sun and pluto.

This has led researchers to conclude that disk instability is what enabled this planet to form at such a great distance from its host star. The observations are also in striking contrast to the expectation of planet formation by the widely accepted core accretion model. “Nature is clever; it can produce planets in a range of different ways,” said Thayne Currie of the Subaru Telescope and Eureka Scientific, lead researcher on the study, in a press statement. “Interpreting this system is extremely challenging. This is one of the reasons why we needed Hubble for this project – a clean image to better separate the light from the disk and any planet. We could not detect this motion on the order of a year or two years. Hubble provided a time baseline, combined with Subaru data, of 13 years, which was sufficient to be able to detect orbital motion,” added Currie.

According to NASA, nature itself provided a helping hand to the discovery since the vast disk of dust and gas swirling around the star AB Aurigae is tilted nearly face-on to our view from earth. This new discovery presents strong evidence that some gas giant planets can form by the disk instability mechanism.

https://indianexpress.com/article/technology/science/hubble-photographs-planet-nine-times-larger-than-jupiter-forming-in-an-unusual-way-7857908/lite/

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Researchers engineer electrically tunable graphene devices to study rare physics

An international team, co-led by researchers at The University of Manchester's National Graphene Institute (NGI) in the UK and the Penn State College of Engineering in the US, has developed a tunable graphene-based platform that allows for fine control over the interaction between light and matter in the terahertz (THz) spectrum to reveal rare phenomena known as exceptional points. The team published their results today in Science. The work could advance

optoelectronic technologies to better generate, control and sense light and potentially communications, according to the researchers. They demonstrated a way to control THz waves, which exist at frequencies between those of microwaves and infrared waves. The feat could contribute to the development of 'beyond-5G' wireless technology for high-speed communication networks.

Weak and strong interactions

Light and matter can couple, interacting at different levels: weakly, where they might be correlated but do not change each other's constituents; or strongly, where their interactions can fundamentally change the system. The ability to control how the coupling shifts from weak to strong and back again has been a major challenge to advancing optoelectronic devices—a challenge researchers have now solved. "We have demonstrated a new class of optoelectronic devices using concepts of topology—a branch of mathematics studying properties of geometric objects," said co-corresponding author Coskun Kocabas, professor of 2D device materials at The University of Manchester. "Using exceptional point singularities, we show that topological concepts can be used to engineer optoelectronic devices that enable new ways to manipulate terahertz light." Kocabas is also affiliated with the Henry Royce Institute for Advanced Materials, headquartered in Manchester.

Exceptional points are spectral singularities—points at which any two spectral values in an open system coalesce. They are, unsurprisingly, exceptionally sensitive and respond to even the smallest changes to the system, revealing curious yet desirable characteristics, according to co-corresponding author Şahin K. Özdemir, associate professor of engineering science and mechanics at Penn State. "At an exceptional point, the energy landscape of the system is considerably modified, resulting in reduced dimensionality and skewed topology," said Özdemir, who is also affiliated with the Materials Research Institute, Penn State. "This, in turn, enhances the system's response to perturbations, modifies the local density of states leading to the enhancement of spontaneous emission rates and leads to a plethora of phenomena. Control of exceptional points, and the physical processes that occur at them, could lead to applications for better sensors, imaging, lasers and much more."

Platform composition

The platform the researchers developed consists of a graphene-based tunable THz resonator, with a gold-foil gate electrode forming a bottom reflective mirror. Above it, a graphene layer is book-ended with electrodes, forming a tunable top mirror. A non-volatile ionic liquid electrolyte layer sits between the mirrors, enabling control of the top mirror's reflectivity by changing the applied voltage. In the middle of the device, between the mirrors, are molecules of alpha lactose, a sugar commonly found in milk. The system is controlled by two adjusters. One raises the lower mirror to change the length of the cavity—tuning the frequency of resonation to couple the light with the collective vibrational modes of the organic sugar molecules, which serve as a fixed number of oscillators for the system. The other adjuster changes the voltage applied to the top graphene mirror—altering the graphene's reflective properties to transition the energy loss imbalances to adjust coupling strength. The delicate, fine tuning shifts weakly coupled terahertz light and organic molecules to become strongly coupled and vice versa.

"Exceptional points coincide with the crossover point between the weak and strong coupling regimes of terahertz light with collective molecular vibrations," Özdemir said. He noted that these singularity points are typically studied and observed in the coupling of analogous modes or

systems, such as two optical modes, electronic modes or acoustic modes. "This work is one of rare cases where exceptional points are demonstrated to emerge in the coupling of two modes with different physical origins," Kocabas said. "Due to the topology of the exceptional points, we observed a significant modulation in the magnitude and phase of the terahertz light, which could find applications in next-generation THz communications."

Unprecedented phase modulation in the THz spectrum

As the researchers apply voltage and adjust the resonance, they drive the system to an exceptional point and beyond. Before, at and beyond the exceptional point, the geometric properties—the topology—of the system change. One such change is the phase modulation, which describes how a wave changes as it propagates and interacts in the THz field. Controlling the phase and amplitude of THz waves is a technological challenge, the researchers said, but their platform demonstrates unprecedented levels of phase modulation. The researchers moved the system through exceptional points, as well as along loops around exceptional points in different directions, and measured how it responded through the changes. Depending on the system's topology at the point of measurement, phase modulation could range from zero to four magnitudes larger."We can electrically steer the device through an exceptional point, which enables electrical control on reflection topology," said first author M. Said Ergoktas. "Only by controlling the topology of the system electronically could we achieve these huge modulations."

According to the researchers, the topological control of light-matter interactions around an exceptional point enabled by the graphene-based platform has potential applications ranging from topological optoelectronic and quantum devices to topological control of physical and chemical processes.

https://phys.org/news/2022-04-electrically-tunable-graphene-devices-rare.html