

India and Russian Defence cooperation heading for joint research, development and production of advanced defence technologies and systems

During the Recent Visit of PM Modi to Russia, India and Russia signed the much-awaited agreement on setting up of two more units of a nuclear power plant in Tamil Nadu and decided to give a “new direction” to the defence cooperation between the two “great powers”.

India-Russia military technical cooperation has evolved from a simple buyer – seller framework to one involving joint research, development and production of advanced defence technologies and systems. BrahMos Missile System, Joint design and development of the Fifth Generation Fighter Aircraft, as well as the licensed production in India of SU-30 aircraft and T-90 tanks, are examples of such flagship cooperation. The two countries also hold exchanges and training exercises between their armed forces annually.

In a major boost to their military ties, India and Russia are for the first time planning to hold large-scale military exercises involving the three armed services armies, navies and air forces, under Indra bilateral drills. The armies and navies of India and Russia have been regularly holding the Indra joint exercises. The air forces of the countries held joint exercises in 2014.

Putin clearly stated that Russian relations with India were ‘based on trust’ and ties with other countries would ‘not

dilute' ties with one of its 'closest friends'. He went on to say that Russia's military ties with Pakistan were 'not tight'. He also emphatically supported India's fight against terrorism, "no matter where the threat comes, it is unacceptable." India had been concerned with growing military ties of Russia with China and Pakistan.

Addressing the media jointly with Putin after the talks, Modi said the relations between India and Russia have been unwavering, based on "mutual love, respect and strong trust". "From culture to security, our relations have been at par... We speak in one language," he added. He said the two leaders had decided to speed up the bilateral cooperation in all fields, for which an 'Action Plan' has been devised.

Russia has been a longstanding time-tested partner of India. Defence relations between India and the Russian Federation have a historical perspective. The Soviet Union was an important supplier of defence equipment for several decades, and that relationship was inherited by Russia after the break-up of the Soviet Union. In 1997, Russia and India signed a ten-year agreement for further military-technical cooperation. That agreement encompassed a wide range of activities, including the purchase of completed weaponry, joint development and production, and joint marketing of armaments and military technologies.

Russia is a major supplier of defence equipment to the India armed forces, with at least 60% of their arms inventory of Russian origin. India remains the second largest market for the Russian defence industry, and the largest dollar for-dollar importer of Russian defence products worldwide.

India is all set to order a fresh batch of 42 Sukhoi fighter aircraft from Russia leading to over 222 Sukhois in its fleet by 2020. This step is seen to placate Russia which is sour after being kept out of ongoing MMRCA deal evaluation process.

Indian armed forces include the delivery of the INS Vikramaditya, the joint development of the BrahMos missile system, and the extensive Indian employment of T-90 tanks.

Russia's T-90S tanks for deployment on its Western Borders

India has begun talks with Russia for a multi-million dollar deal to upgrade the army's nearly 1,000 T-90 tanks, under which the Russian firms will transfer the tank technology to Indian partners in a bid to shake off the armed forces' over-dependence on Russian supplies, according to reports

The Indian Army plans to buy 464 advanced T-90 battle tanks from Russia for deployment on its western borders with Pakistan. The Rs 13,448-crore contract will include a Make-in-India element for integration at the Heavy Vehicles Factory in Avadi near Chennai. India has already inducted 18 regiments of T-90 tanks which are deployed in Rajasthan and Punjab against on the Pakistan front. India has about 850 T-90 tanks currently and plans to induct 1,657 by the year 2020.

INS Vikramaditya

The INS Vikramaditya has been called a black stain on the otherwise snow-white sheet of the two countries' positive defence technology relationship. The project was a sound idea, but the execution has left much to be desired. Purchased by the Indian Navy from Russia in 2013, this Kiev-class aircraft carrier project was plagued by overspending and systems integration failures. The Vikramaditya should have been delivered three years ago, but it only began sea trials in the

first week of June 2012. Its cost has meanwhile risen threefold to about \$3 billion.

While the carrier has since entered service, it ultimately prompted the initiation of an indigenously built carrier project, the Vikrant, which is likely to be a joint venture with the US rather than Russia, indicating a potential souring of the two BRICS countries' relationship.

Vikramaditya, the 44,500 tonnes mega structure has an overall length of about 284 meters and a maximum beam of about 60 meters, stretching as much as three football fields put together. The 06 turbo alternators and 06 diesel alternators onboard generate a total electricity of 18 megawatts to power various equipment of the ship, enough to cater to the lighting requirement of a mini city. An extensive revamp of sensors including fitment of Long range Air Surveillance Radars, Advanced Electronic Warfare Suite makes the ship capable of maintaining a surveillance bubble of over 500 kms around the ship.

The ship is equipped with state of the art launch and recovery systems along with aids to enable smooth and efficient operation of ship borne aircraft. Major systems include the LUNA Landing system for MiGs, DAPS Landing system for Sea Harriers and Flight deck lighting systems

The ship has the ability to carry over 30 aircraft comprising an assortment of MiG 29K/Sea Harrier, Kamov 31, Kamov 28, Sea King, ALH-Dhruv and Chetak helicopters. The MiG 29K swing role fighter is the main offensive platform and provides a quantum jump for the Indian Navy's maritime strike capability. These fourth generation air superiority fighters provide a significant fillip for the Indian Navy with a range of over 700 nm (extendable to over 1,900 nm with inflight refueling) and an array of weapons including anti-ship missiles, Beyond Visual Range air-to-air missiles, guided bombs and rockets.

With her complete stock of provisions, she is capable of sustaining herself at sea for a period of about 45 days. With a capacity of over 8,000 tonnes of LSHSD, she is capable of operations up to a range of over 7,000 nautical miles or 13000 kms.

The heart of the operational network that infuses life into the combat systems onboard the ship is the Computer aided Action Information Organisation (CAIO) system, LESORUB-E. LESORUB has the capability to gather data from ship's sensors and data links and to process, collate and assemble comprehensive tactical pictures. Vikramaditya also boasts of a very modern communication complex, CCS MK II, to meet her external communication requirement. Installation of Link II tactical data system allows her to be fully integrated with the Indian Navy's network centric operations..

Russian rotorcraft

Russia and India are also cooperation is also continuing in Helicopters. About 400 Ka-226T multi-mission helicopters to be license-built in a JV between Hindustan Aeronautics and Russian Helicopters as a replacement for outdated French models. The Ka-226T underwent testing in India as part of the Reconnaissance and Surveillance Helicopter (RSH) acquisition programme, where this helicopter out-performed its Western counterparts during flights in India's hot conditions and mountainous areas.

The Ka-226T is a light, twin-engine multi-role helicopter offered by Russian Helicopters, for military and civilian missions. The military version of Ka-226T is designed for operation in hard-to-reach upland conditions as well as hot and cold climates.

The Ka-226T is produced by Kumertau Aviation Production

Enterprise, a part of Russian Helicopters, and is currently in service with the Russian Air Force. It performs surveillance, reconnaissance, search and rescue (SAR), targeting, and transportation of cargo and troops.

The helicopter can fly at a maximum speed of 250km/h and cruise speed of 220km/h. It has a maximum flight range of 600km with main fuel tanks. The operational and hover (OGE) ceilings of the helicopter are 5,700m and 4,100m respectively and the maximum rate of climb is 10m/s.

Joint development of the BrahMos missile system

The BrahMos is a ramjet powered supersonic cruise missile developed in a joint venture between India and Russia. It is the world's fastest operational cruise missile. Cooperation between the Indian Defense Research and Development Organisation and Russia's Mashinostroyeniye Company began in 1998, with the first successful test of the BrahMos missile conducted in 2001. Since then, the missile has been employed aboard at least eight warships of the Indian Navy, and by three regiments of the Indian Army.

In April 2017, the Indian Navy successfully carried out the first-ever test of a supersonic land-attack cruise missile (LACM). A "land attack version of BrahMos supersonic cruise missile was fired for the first time from an Indian Navy's stealth frigate, off the eastern coast, at a land target," an unnamed Indian Ministry of Defense source noted. To date, the only variants of the BrahMos tested by the Indian Navy were the anti-ship variants.

The missiles are capable of Mach 2.8 flight. The variant

tested on Friday has a range of 290 kilometers, but India is working toward longer-range variants with ranges of up to potentially 800 kilometers.

India is developing a second generation BrahMos-II missile in collaboration with Russia based on the scramjet technology. The BrahMos-II is expected to have a range of 600 km. The missile is expected to be ready for testing by 2020.

Advanced Medium Combat Aircraft / Fifth Generation Fighter Aircraft (FGFA)

This \$35 billion project is designed to produce an aircraft analogous to the American F-22 Raptor. In 2007 Russia and India signed an agreement on joint development of fifth generation fighter FGFA (Fifth-Generation Fighting Aircraft), based on the Russian Sukhoi PAK FA (PAK FA). It is expected that the launch customer for the aircraft will be Indian Air Force, and later it would be delivered to third countries.

On 11 July 2016 it was reported that India's talks with Russia on the joint development and creation of a fifth generation fighter (FGFA, Fifth Generation Fighter Aircraft) had resulted in an agreement for an equal investment of the parties in the amount of \$ 4 billion at the stage of development work. This was reported by the newspaper Times of India citing Defense Ministry of India.

According to the prepared project, India and Russia will invest \$4 billion to develop prototypes of their test and establish the necessary infrastructure for the next six years. The total cost of production of 127 single-seat fighters in India is about \$ 25 billion."

To date, the stage of conceptual design was completed the FGFA, at a cost of \$ 295 million, and the parties decided all

the questions, and the Russian developers considered more than 40 modifications proposed by the Indian side. As the military expert, "Russia not only has met with technical and financial issues," but also "allowed the Indian Air Force to acquire FGFA prototypes for flight testing now."

The Medium Combat Aircraft [MCA] was envisioned as a replacement for the British Jaguar and Mirage 2000 the IAF flies, which as of 2002 were to be phased out by 2015.

In December 2010, a further joint venture was announced between HAL and the Russian firm Ilyushin, to design and build a new mediumlift transport aircraft. Known as the Multirole Transport Aircraft (MTA; with a range of 2500 km and payload of 20 tonnes), this will be based on the existing design of the Ilyushin 214. This twin-turbofan aircraft is as yet still on the drawing board and its maiden flight is not expected before 2025.

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