

DRDO building Star Wars-like laser weapons

Developing Armoury of High-Energy Lasers Touted As Game-Changers

India is taking baby steps towards developing directed energy weapons (DEW) such as high-energy lasers and high-powered microwaves and catching up with the US, Russia and China in the field, reports Rajat Pandit. The DRDO has built and tested a 10-kilowatt DEW to be used against unmanned aerial vehicle-like targets with “technologies of precision tracking and laser beam combination“. The development of such sophisticated weapons has been identified as a top priority in the defence ministry's 15-year roadmap, as reported by TOI earlier.

From “heat rays” in H G Wells’ science fiction novel ‘The War of the Worlds’ of 1898 to galactic super-lasers in George Lucas’ continuing ‘Star Wars’ film saga, concentrated energy weapons have been fantasised about for long without them becoming operationally viable.

But advanced militaries now think directed energy weapons (DEWs) like highenergy lasers and high-powered microwaves will become strategic game-changers in the not-too-distant a future. While the US, Russia, China and others are leagues ahead in the race to develop advanced DEWs, though their actual operational deployment is still some distance away, India is also trying to make some headway towards such futuristic weapons.

The Defence Research and Development Organisation (DRDO) is already tomtomming its ongoing development of a 10-kilowatt DEW against UAV (unmanned aerial vehicle) like targets, with “the establishment of critical technologies of precision trackingpointing and laser beam combination”.

The “system” has been tested up to a range of 800 me ters at its Hyderabad-based Centre for High Energy Systems and Sciences (CHESS), and was also demonstrated to the armed forces at the Terminal Ballistics Rese arch Laboratory’s firing range at Ramgarh (Haryana) in September last year.

Development of DEWs and electromagnetic pulse (EMP) weapons has been identified as a top-priority area in the 15-year “technology perspective and capability roadmap” chalked out by the defence ministry, as reported by TOI earlier. The DRDO, often criticised for huge time and cost overruns in its projects, says smaller systems like laserbased ordnance disposal of IEDs and mines, hand-held laser dazzlers to overpower armed terrorists and vehicle-mounted laser dazzlers for controlling unruly mobs have already been developed.

But the real challenge will be in achieving the declared aim to develop solid-state laser DEWs for aircraft and warships, which can destroy enemy ballistic missiles in their “boost phase itself ”, somewhat akin to what is already being tested by the US.

The DRDO’s Laser Science & Technology Centre is working on an array of systems from “chemical oxygen iodine lasers” to “highpower fiber lasers” for strategic uses, which includes a 25-kilowatt laser to take on a ballistic missile during its “terminal phase” at a distance of 5-7 km.

All this has gained momentum after the government in February 2014 sanctioned Rs 115 crore for development of “experimental technology modules for directed energy laser systems” by CHESS, with the project completion date being set for July 2017.

THE FORCE AWAKENS

An artist's impression

WHAT ARE DIRECTED ENERGY WEAPONS (DEWS)?

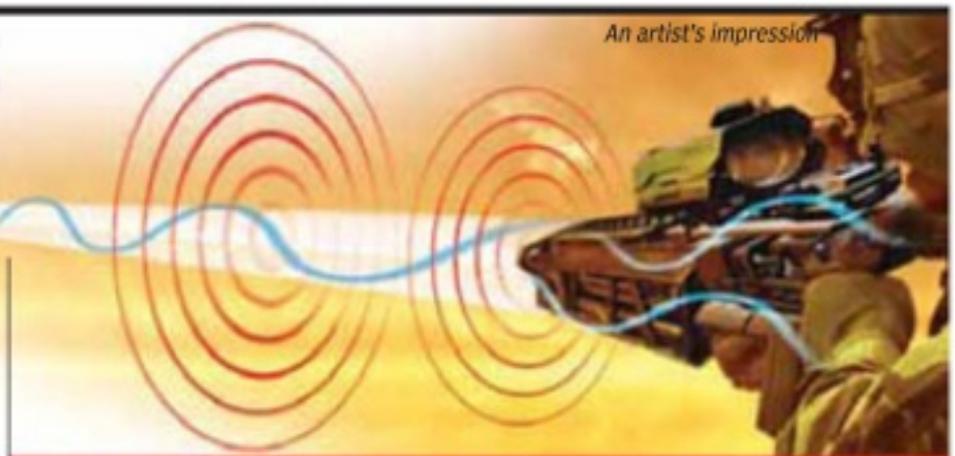
- Conventional weapons use **kinetic/chemical energy in missiles or other projectiles** to hit enemy targets
- DEWs are basically **beams of concentrated electronic magnetic energy** or subatomic particles to hit targets
- DEWs can be **high-energy/solid-state lasers**; high-power microwaves; charged-particle beams
- Militarily, a **laser weapon would require a 500-kilowatt beam** to destroy an incoming missile. Lasers with less power can shoot down drones, vehicles, boats, etc

OPERATIONAL ADVANTAGES

Pinpoint accuracy at speed of light	Can engage multiple targets	Silent & stealthy weapons
Very cost-effective and flexible compared to missiles	Can be used endlessly if power supply adequate (no stock or magazine capacity limitations)	Can limit collateral damage, especially in low-intensity conflicts

STATUS

- **Commercial use** of lasers in industry/ medicine **widely prevalent**. But development of higher-power lasers for use as deadly long-range weapons proving difficult
- **Smaller DEWs being used as close-in weapon systems**, as also for crowd control, airport defence, demining, etc
- **US has developed more powerful DEWs**, which are undergoing tests but yet to become fully operational. In 2014, for instance, a 33 kilowatt laser weapon was tested from a warship to shoot down drones & small boats



The Statesman
28 Mar, 2016

DRDO scouts for partners to develop defence tech

State of the art military systems and technologies to promote 'Make in India' will be displayed prominently at this year's Defence Expo in Goa with the Defence Research & Development Organisation (DRDO) hoping to forge new partnerships with industry and academia to develop indigenous advanced defence systems and platforms.

To be held between March 28 and 31, the ninth edition of the biennial land, naval and internal homeland security systems exhibition will be inaugurated by Defence Minister Manohar Parrikar and the theme this year is "Rise of Futurism".

DRDO's participation in this event is marked with the live demo of star products for first the time which includes Airborne Early Warning & Control System (AEW&C), Light Combat Aircraft Tejas, Arjun MBT MK II & I tanks, AKASH Air Defence System, Pinaka multi barrel rocket launcher, etc. besides, static display of other outdoor exhibits such as quick deployable mobile communication terminal, advanced torpedo defence system, remote operated vehicle -- Daksh, etc.

The DRDO participation will provide a platform for collaboration with industry, academia and research institutes towards indigenous development of defence systems and technologies.

"The DRDO has amply demonstrated capability to design, develop and realize highly complex multidisciplinary weapon platforms for Army, Navy and Air force," the Defence Ministry said.

"These systems are among the most extensively evaluated systems in harsh environmental conditions, meeting stringent quality requirements of our services," the ministry added.

KNN
28 Mar, 2016

DRDO participating in Defexpo 2016 for fruitful collaboration with industry & research institute

New Delhi, Mar 25 (KNN) - With the aim of 'Make in India', DRDO's is participating at the Defexpo 2016 for fruitful collaboration with various industry and research institute towards indigenous development of defence systems and platforms, Ministry of Defence said.

The display of state-of-the-art military systems and technologies by Defence Research & Development Organisation (DRDO) will narrate the saga of self-reliance & national pride with "Make in India" spirit in Defence Expo 2016 during 28th-31st March at Goa.

Defence Minister Manohar Parrikar will inaugurate the ninth edition of this biennial Land, Naval and Internal Homeland Security Systems Exhibition, on March 28 2016 at Naqueri Quitol in Quepem Taluka of South Goa.

This year the design theme of DRDO Pavilion is "Rise of Futurism". DRDO Futurism emphasises its vision to make India prosperous by establishing world class science and technology base and provide our Defence Services decisive edge by equipping them with internationally competitive systems and solutions.

Focusing on “Make in India” and “Self-Reliance”, the DRDO participation will provide a platform for collaboration with industry and academia, said the Ministry in a press statement today.

DRDO welcomes one and all to its pavilion to get a first-hand account of Nation’s capabilities in the area of advanced defence technologies and opportunity to share the pride of the vibrant DRDO community, the press statement added.

Ibtimes
28 Mar, 2016

DRDO developing high energy beam weapons; project likely to be completed by 2017

In what is being dubbed as Star Wars-like weapons, India's premier defence research lab Defence Research and Development Organisation (DRDO) is said to be developing Directed Energy Weapons (DEW). This could include the use of high-energy lasers and high-powered microwaves as weapons of the future.

Countries like the U.S., Russia, China and others are far ahead of India in the research and development of DEW, and India too is "trying to make some headway towards such futuristic weapons," the Times of India reported.

DRDO is currently working on a 10-kilowatt DEW that will enable the armed forces to take down targets like UAV (unmanned aerial vehicle). It is also working on the "establishment of critical technologies of precision tracking/pointing and laser beam combination," the report said.

DRDO has already tested the "system" for a range of 800 meters at its Hyderabad-based Centre for High Energy Systems and Sciences (CHESS). It was reportedly shown to the armed forces at Ramgarh, Haryana, based Terminal Ballistics Research Laboratory in 2015.

DRDO has also developed smaller systems like laser-based ordnance disposal of IEDs and mines, hand-held laser dazzlers for use against terrorist and vehicle-mounted laser dazzlers to control mobs.

The New Delhi-based Laser Science and Technology Centre, a DRDO lab, is said to be working on a variety of weapon systems ranging from "chemical oxygen iodine lasers" to "high-power fiber lasers" for strategic applications. One of the projects in development is a 25-kilowatt laser that is being designed to target a "terminal phase" ballistic missile, at a range of 5 to 7 kms.

The government released Rs 115 crore in February 2014 to CHESS in order to develop "experimental technology modules for directed energy laser systems," and this added impetus to the project, which is scheduled to be completed by July 2017.

The DEW is not new to the defence ministry's planners, since the development of DEWs and electromagnetic pulse (EMP) weapons was classified as "top-priority area" in the 15-year "technology perspective and capability roadmap" that was prepared by the ministry.

The TOI report also noted the operational significance of such weapon systems -- cost-effective and flexible, can engage multiple targets, silent and stealthy, no limitation on stock or magazine capacity and has pinpoint accuracy.

However, one of the challenges for the DRDO scientists is to have a solid-state laser DEWs that can be used from aircraft and warships, and which can destroy enemy ballistic missiles in their "boost phase" itself and not wait until the "terminal phase."

SirG.co
28 Mar, 2016

India's Star Wars: DRDO working on Directed Energy Weapons

The epic 'Star Wars' movie franchise directed by the legendary George Lucas introduced fictional giant laser beams which could obliterate whole planets, and indeed during the heights of the Cold War, both the United States of America and the Union of Soviet Socialist Republics fantasised about having these so-called directed energy weapons available at their disposal. Though it was a

long shot from it becoming a reality, most military forces around the world believe that the super lasers – akin to the one depicted in the ‘Star Wars’ saga – would prove to be viable strategic weapons in the near future. India’s DRDO -Defence Research and Development Organisation – too, has started working on them.

Even though advanced countries such as the US and China have envisaged directed energy weapons such as high-energy lasers and microwaves, their operational deployment is still some time away. According to sources, India’s DRDO has already planned for the development of a 10-kilowatt directed energy weapon, which could be used against airborne targets such as unmanned aerial vehicles (UAVs). The two principal components of the device are the precision guiding/tracking and laser beam to destroy the target. At the Hyderabad-based Centre for High Energy Systems and Sciences (CHESS), the directed energy weapon has been tested up to a range of 800 meters. It has even been demonstrated to the military, at the Terminal Ballistics Research Laboratory’s firing range at Ramgarh (Haryana) last year.

The Indian defence ministry has laid down a ‘technology perspective and capability roadmap’, spanning for the next 15 years, which describes the development of such advanced laser-based and electro-magnetic pulse (EMP) weapons as the top-most priority. Compared to conventional weapons, directed energy weapons carry a broad range of advantages: cost effective, seemingly unlimited use of adequate power source available, accurate and stealthy. Officials in the DRDO reported that similar small-scale weapons, such as laser-based ordnance disposal of IEDs and mines, laser systems to dazzle armed terrorists and unruly mobs have already seen practical applications. Long criticised for time and cost overruns in its projects, the DRDO believes that directed energy weapons might prove to be a game-changer. In February 2014, the Centre sanctioned Rs. 115 crores towards the development of ‘experimental weapons’, and the deadline has been set for July 2017.

DNA

28 Mar, 2016

DRDO building Star Wars-like laser weapon systems

High-energy lasers have achieved much popularity in popular sci-fi movies like 'Star Wars'.

The Defence Research and Development Organization (DRDO) is reportedly taking steps towards developing directed energy weapons (DEW) in an attempt to develop futuristic weapons. DRDO is in the process of developing a 10-kilowatt DEW against UAV (unmanned aerial vehicle) like targets, with 'the establishment of critical technologies of precision tracking/pointing and laser beam combination', **a report** by a leading daily said.

The system has reportedly been tested up to a range of 800 metres at its Hyderabad-based Centre for High Energy Systems and Sciences (CHESS). However, the actual operational deployment of such directed energy weapons will still take some time, although the US, Russia, China and others are leagues ahead in the race, the report added. High-energy lasers have achieved much popularity in popular sci-fi movies like 'Star Wars'.

Pune Mirror
28 Mar, 2016

Drdo Develops First Sonar Dome for Navy Warships

Defence minister Manohar Parrikar will hand over the first product, made with state-of-the-art technology, to the naval forces on Mar 29

The Research & Development Establishment (Engineers) [R&DE(E)], a Defence Research and Development Organisation (DRDO) laboratory based in Pune, has developed a sonar dome —a protective cover for sonar equipment of surface warships.

Dr S Guruprasad, chief controller of DRDO's R&D, told *Mirror*, "Sonar dome is made with a state-of-the art technology, which is developed indigenously. The first product will be handed over to the navy by the defence minister on March 29."

Defence minister Manohar Parrikar will flag off a huge bow mounted sonar dome at Defexpo site in Goa on March 29. DRDO director general Dr S Christopher, who is also the secretary, department of defence (R&D), will be present on this important occasion. The dome will be delivered to Mazgaon Docks in Mumbai.

The ability to design such structures rests only with a handful of companies worldwide. This sonar dome is a unique initiative, which has been manufactured by a composites manufacturing company in India and can be seen as a significant contribution by the Indian industry to the 'Make in India' movement.

A sonar array is fitted below the waterline to all anti-submarine warfare (ASW) ships, which will function as the vessel's navigator under water. The dome is fitted over the sonar array in order to ensure that its electronics and sensors are not exposed to the hostile environment in its surroundings. The dome must be structurally sound and also acoustically transparent.

R&DE(E), located at Alandi Road in Vishrantwadi, has been successful in developing process technologies for large composite structures, which can be used in naval ships and submarines. Technologies related to integral composite armour, used in combat vehicles, have also been developed by the laboratory. It has also contributed to the development of aerospace structures. Naval Physical and Oceanographic Laboratory in Kochi, a major R&D laboratory of DRDO, played a crucial role in the development of the sonar dome.

The ninth edition of Defexpo India, a biennial exhibition on land, naval and internal homeland security systems, is being organised by the Defence Exhibition Organisation of the defence production department under the Ministry of Defence from March 28 to 31 at Naqueri Quitol, Quepem taluka and Goa.

One India
28 Mar, 2016

Goa hosts India's Largest Defexpo Till-date

The 9th edition of Defexpo India, a biennial exhibition on Land, Naval and Internal Homeland Security Systems is being organised by Defence Exhibition Organisation of Department of Defence Production, Ministry of Defence from 28-31 March 2016 at Naqueri Quitol, Quepem Taluka, South Goa, Goa.

The defexpo was inaugurated by Defence Minister Manohar Parrikar.

India's defence prowess:

India is among a handful of countries in the world with indigenous capabilities in the defence fields such as multi-level strategic deterrence, ballistic missile defence, nuclear powered submarines, main battle tank, stealth destroyers, aircraft carriers and 4th generation fighter aircraft.

With the changes in government policies on defence acquisition and Make in India campaign, considerable impetus is being given to indigenisation in the defence sector.

Defexpo:

The exhibition would be showcasing India's capabilities in Land, Naval and Security Systems as well as its emergence as an attractive destination for investment in Defence Sector. The event provides a platform for forging alliances and joint ventures in the defence industry. The event also provides an excellent opportunity to the Indian Defence Public Sector Undertakings (DPSUs), Private Sector and other defence related industries to demonstrate their capability to design, develop and deliver a wide range of military and civil products and services.

Spotlight on DRDO as spirit of Make In India is brought alive:

The display of state-of-the-art military systems and technologies by Defence Research & Development Organisation (DRDO) will narrate the saga of self-reliance and national pride with "Make in India" spirit in Defence Expo 2016.

This year the design theme of DRDO Pavilion is "Rise of Futurism". DRDO Futurism emphasises its vision to make India prosperous by establishing world class science and technology base and provide our Defence Services decisive edge by equipping them with internationally competitive systems and solutions.

DRDO's participation in this event is marked with the live demo of star products for first the time at Defexpo which includes Airborne Early Warning & Control System (AEW&C), Light Combat Aircraft Tejas, Arjun MBT MK II & I, Wheeled Armoured Platform (WHAP), AKASH Air Defence System, Pinaka the Multi Barrel Rocket Launcher System, Radars, BLT T-72, Bridging System Sarvatra, Modular Bridge and Mountain Foot Bridge etc., besides, static display of other attractive outdoor exhibits such as Quick Deployable Mobile Communication Terminal; Aslesha, Bharani and Coastal Surveillance Radars (CSR); MRSAM and Nirbhay launcher; Pinaka launcher & Rocket Mk I & Mk II; Advanced Torpedo Defence System (ATDS), Remotely Operated Vehicle Daksh, etc.

The indoor models and exhibits covers nearly the entire gamut of R&D from aeronautics, armaments and combat engineering, missiles, electronics and communication systems, materials, naval systems, life sciences, micro-electronic devices and computational systems.

Some indoor exhibits includes: Model of Akash and Brahmos missiles; Aslesha, Bharani and SWATHI the Weapon Locating Radar, IR Guided Missile Tester, Laser Guided Bomb Kit Tester, Hand-held Stand-off Explosive Detector, Short Range Laser Dazzler, Advanced Towed Artillery Gun System (ATAGS), Nakshatra the Aerostat System, Combat Free Fall System, Bio-toilet model, Computerised Pilot Selection System (CPSS) model, Multimode Hand Grenade, Family of small Arms, Sonars and Torpedoes, Night Vision and Microwave Devices, Bullet Proof Jacket, Robotics and Unmanned Systems, Telemedicine, Ready to Eat Food Technologies etc.

Focusing on "Make in India" and "Self-Reliance", the DRDO participation will provide a platform for collaboration with industry and academia. DRDO has amply demonstrated capability to design, develop and realise highly complex multidisciplinary weapon platforms for Army, Navy and Air force.

These systems are among the most extensively evaluated systems in harsh environmental conditions, meeting stringent quality requirements of our services.

With the aim of 'Make in India', DRDO's is participating in this event for fruitful collaboration with various industry and research institute towards indigenous development of defence systems and platforms.

How big is Defexpo:

As a clear indicator of India's growing prominence and stature internationally; this year's exhibition is the largest Defexpo held till to date. In all, over 1000 companies, both foreign and Indian, are taking part in the exhibition this year, which is over one and a half times in number of participants in Defexpo 2014. Remarkably, with a total of 510 companies, participation by Indian companies has doubled since 2014 which saw a participation by 256 Companies. A total number of 490 foreign companies are participating this year against 368 in Defexpo 2014. Around 950 delegations against 511 in 2014 are expected to visit the exhibition this year providing great synergy in business to business (B2B) activities during the short span of 4 days.

The exhibition will thus provide an excellent platform to enhance growth in the sector in the coming years. 204 official delegations from 44 countries and around 750 non official business delegations are attending the show.

The net area sold during this edition is 40725 square meters against 27,515 Square Meters in 2014. The gross area of exhibition has increased over three folds to 150,000 square meters against 45,000 Square Meters in 2014.

Participating countries:

47 countries from different continents will be taking part in the exhibition against 30 countries which participated in the last edition of Defexpo. These are Australia, Austria, Belarus, Belgium, Brazil, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Egypt, Finland, France, Germany, Hong Kong, Hungary, India, Israel, Italy, Japan, Lithuania, Malaysia, Netherlands, New Zealand, Nigeria, Norway, Panama, Poland, Portugal, Republic of Korea, Romania, Russia, Serbia, Singapore, Slovak Republic, South Africa, Spain, Sudan, Sweden, Switzerland, Taiwan, Turkey, UK, Ukraine, United Arab Emirates and United States of America.

Seminars at the Defexpo:

On the side-lines of the exhibition, seminars will provide a platform to showcase developments and opportunities in the defence sector.

The topics of Seminars being conducted on 29 and 30 March are advances in shipbuilding technology, Make in India for defence sector, India - Korea Defence Cooperation, Modernisation Programme of Indian Army and Challenges and opportunities of Defence Offset.

Goa as host for Defexpo:

The strong tourism and hotel industry of Goa allows the defence expo to expand to the scale as it has done this year. In turn, the exhibition will also provide an enhanced income to the local economy in terms of hotel bookings, taxi services and visits to tourist spots. Care is being taken to preserve the ecology of the site. How can people visit the Defexpo: The event will be open to public on 31 March 2016 and by prior registration on other days. People who wish to visit the site on other days may do so by registering on the website www.defexpoindia.in.

Domain-b
28 Mar, 2016

DRDO to hand over first sonar dome to defence minister at Defexpo

Defence minister Manohar Parrikar will hand over the sonar dome, designed and developed by the Defence Research and Development Organisation (DRDO) to the naval forces on 29 March.

A DRDO laboratory based in Pune developed the sonar dome - a protective cover for sonar equipment of surface warships - and the first state-of-the-art technology developed for protecting sonar equipment of surface warships.

Defence Minister Manohar Parrikar will flag off a huge bow mounted Sonar Dome designed and developed by DRDO at a ceremony to be held at Defexpo site in Goa on 29 March 2016. The sonar dome will be delivered to Mazgaon Docks, Mumbai.

The Defexpo is being held at Quitol, Goa, the first time the mega event is being hosted outside Delhi.

The sonar dome, a first of its kind in the country, has been manufactured by a composites manufacturing company in India.

"This is a huge contribution by Indian Industry to the 'Make in India' movement. Only a couple of companies worldwide have the capability of realising such structures," says a defence ministry release.

All anti-submarine warfare (ASW) ships have a sonar array fitted to the ship structure below the waterline. The sonar functions as the ship's underwater eyes and ears. The sonar dome is a structure fitted over the sonar array so that its electronics and sensors are not exposed to surrounding hostile environment. The sonar dome has to be structurally sound as well as acoustically transparent.

R&DE (E), DRDO Pune has successfully developed the process technologies to realise large composite structures that can be used in naval ships and submarines. The laboratory has also developed technologies related Integral composite armour that can be used in combat vehicles. The laboratory is also significantly contributing in development of aerospace structures.

NPOL, a DRDO laboratory at Kochi played a significant role in development of the sonar dome.

DRDO has already developed composite material technologies relevant to Indigenously developed missiles. DRDO is also fielding live demonstration of number of systems with cutting edge technologies for the first time in Defexpo.

The ninth edition of Defexpo India, a biennial exhibition on land, naval and internal homeland security systems, is being organised by the Defence Exhibition Organisation of the defence production department under the ministry of defence from 28 to 31 March at Naqueri Quitol, Quepem taluka and Goa.

The exhibition would be showcasing India's capabilities in land, naval and security systems as well as its emergence as an attractive destination for investment in defence sector.

The event will provide private sector and other defence related industries to demonstrate their capability to design, develop and deliver a wide range of military and civil products/services besides providing a platform for forging alliances and joint ventures in the defence industry.

DRDO to Hand over Sonar Dome to Defence Minister

Goa will have its own proud moments during the prestigious Defexpo being held at Quitol, Goa apart from hosting the mega event first time outside Delhi.

A huge bow mounted Sonar Dome designed & developed by Research & Development Establishment (Engineers) [R&DE(E)], a DRDO laboratory based in Pune is going to be flagged off by Defence Minister Manohar Parrikar, Secretary Department of Defence (R&D) & DG DRDO Dr. S. Christopher will also be present on this important occasion. The ceremony will be held at Defexpo site in Goa on March 29, 2016. The Sonar dome will be delivered to Mazgaon Docks, Mumbai.

The Sonar Dome, a first of its kind in the country has been manufactured by a composite manufacturing company in India. This is a huge contribution of Indian Industry to the 'Make in India' movement. Only a couple of companies worldwide have the capability of realising such structures.

Epic Stream
28 Mar, 2016

India Is Developing Its Own Star Wars-Like Weapons

It looks like the line between science fiction and reality is slowly starting to fade. India is now creating a weapon similar to that to the Death Star from the *Star Wars* saga.

Directed energy weapons (DEW) such as high-energy lasers isn't a new thing that's being explored by advanced militaries. In fact, US, Russia, and China are already ahead with their own developments, though actual operations are far from actually happening. Well, according to Times of India, India is also trying to get into the DEW development game.

The website claims that India's Defence Research and Development Organisation (DRDO), which has been developing a 10-kilowatt DEW over the past years, is now testing its DEW against UAV (unmanned aerial vehicle) targets with "the establishment of critical technologies of precision tracking/pointing and laser beam combination."

India's DEW has apparently been tested up to 800 meters already at the country's Hyderabad-based Centre for High Energy Systems and Sciences (CHESS). In September last year, the capabilities of the 10-kilowatt DEW was demonstrated to the country's ed forces at the Terminal Ballistics Research Laboratory's firing range at Ramgarh (Haryana).

The DRDO has reportedly been highly criticized due to its projects' "huge time and cost overruns," but the organisation has already developed smaller laser-based "IEDs and mines" against terrorists and "vehicle-mounted laser dazzlers" against mobs. The challenge now is reaching the "boost phase" level of the weapons like what's already being tested by the United States. This level can aim for aircraft and warships and "destroy enemy ballistic missiles."

Earlier this month, a British physicist has explained **why lightsabers won't be able to work in the real world**. The physicist's explanation certainly seems plausible, but with advanced government militaries creating Death Star-like weapons, I guess it's a different story when bigger weapons are created and militaries are involved.

The DRDO's DEW project is set for completion on July 2017.

WHAT ARE DIRECTED ENERGY WEAPONS (DEWS)?

DEWs are beams of concentrated electronic magnetic energy or subatomic particles to hit targets. Can be high-energy/solid-state lasers; high-power microwaves or charged-particle beams

A laser weapon would require a 500-kw beam to destroy a missile

Lasers with less power can shoot down drones, vehicles, boats, etc

OPERATIONAL ADVANTAGES



The central image shows a person in a white silhouette operating a handheld laser weapon. A bright red laser beam extends from the weapon towards a drone in flight. The drone is surrounded by a purple and blue energy field, indicating it is being targeted. The background is a blurred landscape with trees and a sky.

-  Pinpoint accuracy at speed of light
-  Can engage multiple targets
-  Silent & stealthy weapons
-  Can limit collateral damage
-  Can be used endlessly, only need power supply
-  Very cost-effective & flexible compared to missiles

Blast from the Future: Indian Military Close To High-Tech Energy Weapons

Just in time for the release of Star Wars: The Force Awakens on DVD next month, India's Defense Research and Development Organization (DRDO) has announced that it is close to developing a 10-kilowatt directed energy weapon (DEW) capable of taking down errant drones.

A number of militaries around the world are in hot pursuit of futuristic energy weapons. Russia, the US, and China have all made major strides in high-energy laser and microwave technology, which could completely alter the battlefield.

The device has already been successfully tested at the Center for High Energy Systems and Sciences (CHESS) up to a range of over 2,600 feet. A demonstration for the military was also performed at the Terminal Ballistics Research Laboratory last September.

According to the Times of India, the DRDO is prioritizing DEW development, outlining a 15-year "technology perspective and capability roadmap."

The agency claims it has already built a number of smaller DEW systems. These include devices designed to disarm mines and other IEDs, vehicle-mounted crowd control units, and hand-held devices capable of overpowering armed individuals.

Long-term plans include "chemical oxygen iodine lasers," "high-power fiber lasers," and a 25-kilowatt laser that can knock out a ballistic missile during its "terminal phase" from up to four miles away.

Mounting energy weapons aboard aircraft and naval ships is also a priority, but could prove to be more challenging since directing a focused energy beam from a moving platform offers its own challenges.

Still, the difficulties are well worth the payoff. DEWs offer a number of advantages, including cost-effectiveness and an ammunition supply limited only by the weapon's power source. Energy weapons also fire at the speed of light, are virtually silent, and can limit collateral damage.

Earlier this month, defense giant Lockheed Martin announced that it could produce an effective energy weapon.

"The technologies now exist. They can be packaged into a size, weight, power and thermal which can be fit onto relevant tactical platforms, whether it's a ship, whether it's a ground vehicle or whether it's an airborne platform," Paul Shattuck, director for DEWs at Lockheed, told Defense News.

A US Navy report from December expressed Washington's admiration for Moscow's energy weapons capability.

"Russia maintains a mid-term high-energy system of chemical and gas lasers and solid-state lasers as medium-energy systems."

We're a long way from building a Death Star-style megaweapon, but maybe not so far from adding a real-life blaster to your Han Solo Halloween costume.

Business insider
28 Mar, 2016

May the force be with us: DRDO is working on Star Wars-like energy weapons

Star Wars, the epic space opera franchise, has given a lot of ideas to scientists to adopt high-tech weapons and vehicles in real life, one of them being concentrated energy weapons. Very soon, these directed energy weapons (DEWs), like high-energy lasers and high-powered microwaves, will become a reality.

While many countries, like the US, Russia, China and others are in advanced stages of this race, India is also not very far behind.

The Defence Research and Development Organisation (DRDO) is in process of developing a 10-kilowatt DEW against UAV (unmanned aerial vehicle) like targets, with "the establishment of critical technologies of precision tracking/pointing and laser beam combination".

The unnamed "system" has already been tested up to a range of 800 meters at DRDO's Hyderabad-based Centre for High Energy Systems and Sciences (CHESS). It was also demonstrated to the armed forces at the Terminal Ballistics Research Laboratory's firing range at Ramgarh (Haryana) last September.

DRDO is treating the development of these DEWs and electromagnetic pulse (EMP) weapons as a top-priority area, especially for the 15-year "technology perspective and capability roadmap" which was chalked out by the defence ministry.

The DRDO, which is often criticised for consuming huge time and having high cost overruns in its projects, has said that it has already developed smaller systems like laser-based ordnance disposal of IEDs and mines, hand-held laser dazzlers to overpower armed terrorists and vehicle-mounted laser dazzlers for controlling unruly mobs.