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A Daily Current Awareness Service



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Robotics: The Future of Indian Armed Forces Hitech Robotic Systemz Working towards Mminimizing Casualties

- Hi-Tech Robotic Systemz Limited is delivering world class Indigenized Robotics and Unmanned System products for keeping Armed/Civil personnel safe
- With more than 17 patents for various areas of robotics, THRSL provides cutting edge technologies in rugged Intelligent Surveillance and Reconnaissance (ISR) systems
- Hi-Tech Robotic Systems co-developed Robot “CBRNE” with DRDO which is successful for surveillance and rescue operations in high altitude, harsh environment conditions.
- Hi-Tech Robotic Systemz co-developing technology with DRDO in R&DE (E) Pune, VRDE Ahmednagar, CAIR Bangalore & CVRDE Chennai Research Laboratories respectively.
- The robots can Reduce deployment of Armed Forces in difficult terrains like Siachin, Rann of kutch etc.
- Disaster recovery operations, such as the recent Siachin Avalanche and Pathankot Terror Attacks.

The Defexpo India 2016, which is the ninth biennial Land, Naval and Internal Homeland Security Systems Exhibition, is being held at Naqeri Quitol in Quepem Taluka of South Goa, India. This edition of Defexpo has received an overwhelming and unprecedented national and international response. Though the scenario is changing now, if we take a stock of private involvement in Defense related technologies, we would find out that there were very limited numbers of player in the domestic scenario till the last decade or so. It is a matter of happiness that with the various schemes of the government say the Make in India etc even the defense sector has got an impetus. The change in scenario is bound to instill a renewed sense of pride in Indian industry by exhibiting the potential of design, innovation and sustainability across India's manufacturing sectors in the coming decade.

The Hi-Tech Robotic Systemz Ltd. (THRSL) is showcasing its products at the event. THRSL has also collaborated with DRDO to produce some unmanned Ground vehicles with various classes of robots with various payloads.

The Hi-Tech Robotic Systemz are the winner of Industrial Innovation award 2014 awarded by the Defence Robotics division of CII and MSME National Award winner for Research & Development. It is an Indian bootstrapped start-up focused towards developing and delivering world class Indigenised Robotics and Unmanned System products for keeping Armed/Civil personnel safe. With more than 17 patents for various areas of robotics, THRSL provides cutting edge technologies in rugged Intelligent Surveillance and Reconnaissance (ISR) systems. THRSL's mission critical ISR products bring actionable intelligence to a remote location for strategic and tactile planning, hence providing an operational edge to the defence personnel.

The products can be of great aid in:

1. Reducing deployment in difficult terrains like Siachin, Rann of kutch etc.
2. Disaster recovery operations, such as the recent Siachin Avalanche and Mumbai Terror Attacks.

Speaking at the sidelines of the event Mr. Anuj Kapuria, Director & CEO, The Hi-Tech Robotic Systemz Limited (THRSL) said, “ the state of affairs have changed drastically in the last one and half years, we foresee tremendous growth possibilities – we need to focus our energies to ensure a

sustained growth in the robotics sector. It will strengthen our armed forces and reduce the need for deployment in difficult terrains.”

Mr. S. Radhakrishnan , OS & Director - Industry Interface and Technology Management, DRDO said, "Today Military technology is becoming more and more complex and Robotics is going to play a big role in defense technology. Today number of conventional systems is coming into autonomous mode and Hitech Robotics who have been working in this area has got unique capabilities. Robotics is a multi disciplinary field and a good understanding of mechanics, automation, electronics, image processing is a must, it is a conclusion of all technologies into one and Hitech Robotics has excellent insight in each one of them. Hitech has taken technology transfer for the Daksh they are manufacturing.

They have added enormous value to the product and DRDO is very happy with the support they have received from Hitech Robotics. We are proud of Hitech Robotics contribution in the field of Robotics and DRDO is looking forward to more joint developments and more challenging task with Hitech Robotics.”



The Times of India
05 Apr, 2016

Def min probes claims of kickbacks against Italy co

The defence ministry is “examining“ reports of commissions allegedly being paid by Italian firm Elettronica SpA, which specialises in electronic warfare systems, in arms and spares contracts for the Indian armed forces through a web of offshore firms.

As per the ICIJ, references have been found in the leaked files of Mossack Fonseca to commissions, ranging between 5% and 17%, allegedly being paid to two companies, one owned by an Indian no longer alive, in the 1996-2000 timeframe. This was allegedly done through two offshore firms acting as “sales agents“ registered as a Panamanian company in Dublin (Ireland) in 1997, which were set up with the help of Mossack Fonseca.

The two firms, in turn, entered into sub-agency agreements with a company owned by the now deceased Indian. Incidentally, the Indian's company was also embroiled in a UN procurement scandal around a decade ago.

Elettronica SpA, however, has strongly denied any wrongdoing.

But there are no details of the contracts inked between Elettronica SpA and the Indian defence establishment in the leaked documents. "We are examining the reports but have nothing concrete yet," said a defence ministry official.

Interestingly, Italian defence and aerospace conglomerate Finmeccanica, which is currently under a "partial ban" in India after its UK-based subsidiary AgustaWestland got entangled in the infamous VVIP helicopter kickbacks case, owns a substantial stake in Elettronica SpA. The Italian government, in turn, owns 30% of Finmeccanica.

The Pioneer
05 Apr, 2016

Army to Float Global Tender for Bulletproof Jackets

In an effort to meet the critical shortage of bullet proof jackets, the Army is likely to issue a global tender or request for proposal(RFP) for more than 1,30,000 jackets in the next two to three days. These jackets are urgently needed for security personnel deployed in counter-insurgency operations in Jammu & Kashmir and the North-East.

Disclosing this here on Monday, officials said the defence ministry has instructed the Army to conclude the trials and contract negotiations in the shortest possible time. The last tender was cancelled in October last year after none of the jackets manufactured by some competitors could meet the stringent qualitative requirements.

The new proposed tender comes in the backdrop of the Army facing a shortage of more than 1,89,000 bulletproof jackets. The authorised number of jackets is nearly 3,54,000 and the Parliamentary Standing Committee in its report also expressed concern over such a big gap.

Meanwhile, a short term measure, the Defence Ministry has approved an Army proposal to buy at least 50,000 jackets at an urgent basis from Tata to meet critical operational requirements.

The Army wants light weight bulletproof jackets to enable the soldiers to move unhindered. The present lot of jackets are heavy and cumbersome.

The Tribune
05 Apr, 2016

Parrikar to host Carter in Goa

Defence Minister Manohar Parrikar will host his US counterpart Ashton Carter for three days beginning April 10. It will include a visit to Goa, the home state of Parrikar.

Meanwhile, the Defence Policy Group of the two countries shall be meeting in the run-up to the talks.

Carter commences his visit from Goa and a US Navy's warship, the USS Blueridge, shall be visiting the state – an important Indian Navy base. It's the home base of the MiG-29-K fighter jets which are docked on board the sea-borne aircraft carrier, the INS Vikramaditya.

The US-India ties are to move to the next stage with both countries discussing the joint design and technology of a 65,000-tonne sea-borne aircraft carrier. US companies Boeing and Lockheed Martin have submitted proposals for 'make in India' fighter jets. New Delhi is looking for additional fighter jets once it signs the Rafale fighter jet deal.

On March 4, Parrikar had categorically turned down a US proposal to jointly patrol the contested waters of South China Sea. “Our viewpoint will come, if at all we consider it. As of now, India has never taken part in any joint patrol, the question of joint patrol does not arise,” he had said.

The US is also keen that the much-talked-about Defence Technology and Trade Initiative (DTTI) can progress unhindered once India signs the ‘foundational agreements’.

The logistics support agreement (LSA), to share military logistics, is in advanced stages of talks. India has some issues on this which were flagged during Parrikar’s visit to the US in December last year.

India fears the LSA could turn out to be a binding commitment to support the United States in a war. It allows the two militaries to use each other’s land, air and naval bases for resupplies, repair and rest.

Defence Minister to visit China

India will diplomatically balance its separate military-level ties with the US with China. Manohar Parrikar will lead a delegation to China from April 18 to 20 to hold talks with the military leadership. India and China are looking to implement on ground the consensus reached between Prime Minister Narendra Modi and President Xi Jinping on ensuring peace and tranquility along the 3,448-km Line of Actual Control (LAC).

The Asian Age
05 Apr, 2016

India rethinks China policy after U. N. Veto

Beijing’s latest action in the UN has led to the Indian security establishment rethinking its China policy, especially while granting security clearance to investment from China. “The country-of-concern tag was removed from China. But the liberalised policy is not getting the desired results. There may be a re- thinking of the policy to grant security clearance to Chinese companies,” a source said. The security establishment now feels China has shown insensitivity as far as core security national issues relating to India are concerned. Around 25 Chinese companies were given security clearance by the government in the past two years to set up industrial projects, mostly in power, telecom, railways and infrastructure. According to the Department of Industrial Policy and Promotion (DIPP), India had received 3,066.24 crore in investment from China in 2014- 15 and 2,196.11 crore up to September 2015.

The home ministry gave security clearances in 2015 to more than twice the number of fresh investment proposals coming from across the globe compared to 2014.

The Asian Age
05 Apr, 2016

Barack Obama ‘lacks understanding’ of India’s defence posture: Delhi

In a strong reaction, India hit out at US President Barack Obama for his comments on Indian military doctrine, saying these remarks seemed to have been made due to a “lack of understanding of India’s defence posture”. The US President made these remarks at the Nuclear Security Summit press conference on the military doctrines of India and Pakistan. Prime Minister Narendra Modi attended the summit in Washington on March 31 and April 1.

On the US President’s remark that India and Pakistan must ensure that as they develop military doctrines, they are not continually moving in the wrong direction, the external affairs ministry said: “Yes, we have seen those remarks. There seems to be a lack of understanding of India’s defence posture. Conventionally, India has never initiated military action against any neighbour. We also have a no-first use nuclear weapons policy. Since the context was the Nuclear Security Summit, the

President's own remark that 'expanding nuclear arsenals in some countries, with more small tactical nuclear weapons which could be at greater risk of theft' sums up the focus of global concern." India is furious the US has once again hyphenated India and Pakistan together despite India's clean nuclear record and Pakistan's dubious record of nuclear proliferation. It was reported a few months ago that Pakistan had developed tactical nuclear warheads to attack the Indian Army's strike formations.

The Hindu
05 Apr, 2016

U.S. ship comes calling



Leading edge: The USS Blue Ridge (LCC 19), on a visit to the Western Naval Command, anchored off Mumbai on Monday. One of the most technologically advanced vessels, it is the command ship of the U.S. Seventh Fleet. — Photo: Prashant Nakwe.

The Asian Age
05 Apr, 2016

'US- led forces laying siege to North Korea'

Seoul, April 4: North Korea's top military body has accused US- led "hostile forces" of laying siege to the country like Leningrad in World War II and Cuba during the Cold War missile crisis.

In a statement carried Monday by the North's official KCNA news agency, a spokesman for the national defence commission also said the latest UN sanctions imposed on Pyongyang over its nuclear weapons programme were "anachronistic and suicidal" and could trigger a nuclear strike on the US mainland.

The UN Security Council adopted its toughest economic sanctions to date on North Korea after Pyongyang conducted its fourth nuclear test in January and a space rocket launch a month later that was widely viewed as a disguised ballistic missile test.

The NDC spokesman said the sanctions were the work of “the US and other hostile forces” who were intent on attacking North Korea “in a flock to swallow it up.”

“The Leningrad blockade which struck terror into the hearts of people ... And the Caribbean crisis in the Cold War era can hardly stand comparison with the situation,” the statement said.

Far from breaking the North, such treatment would only strengthen its resolve, it said, adding that Washington was engineering a crisis that could see the North “make a retaliatory nuclear strike at the US mainland any moment”.

The Statesman
05 Apr, 2016

S Korea Conducts Live Fire Drill near North Border

South Korea conducted a large-scale live fire exercise today on the East Sea, where North Korea has been upping tensions with a series of missile and rocket launches supervised by leader Kim Jong-Un.

The drill involving K-9 self-propelled artillery units and 130mm multiple rocket launchers was held in the coastal county of Goseong, which borders the North. The aim of the exercise was to role play “the scenario of a possible North Korean maritime provocation”, South Korean Defence Ministry spokesman Moon SangGyun told reporters.

It comes during an extended period of elevated military tensions on the Korean peninsula, triggered by Pyongyang's fourth nuclear test on January 6. Over the past month, Kim Jong-Un has personally monitored numerous rocket and missile launches into the East Sea, including the North's first test of a medium-range ballistic missile for two years.

Late last month, Kim watched what state media called the country's largest-ever longrange artillery drill, involving multiple batteries of heavy-calibre units pounding an offshore island from a beach about 120 kilometres (75 miles) North of Goseong. The muscle-flexing was largely a response to ongoing, large-scale military war games that South Korea and the United States hold every year -- much to Pyongyang's fury.

Deccan Herald
05 Apr, 2016

Nuclear terrorism, a major threat

The threat of nuclear terrorism dominated discussions at the just-concluded Nuclear Security Summit in Washington. US President Barack Obama drew attention to the possibility of the Islamic State (IS) group acquiring and using nuclear weapons. The issue has gained urgency especially in the wake of the recent terrorist attacks in Belgium. Investigations there have revealed that IS terrorists were planning to attack Belgium's nuclear power plants. While the problem of nuclear terrorism has global relevance, it is of particular concern to countries like India, which are at the receiving end of state-sponsored terrorism - the problem of Pakistan supporting anti-India terrorist groups. Given the close link between a nuclear-armed Pakistani state and anti-India terrorist groups that it nurtures, there is a possibility of state actors providing terrorist groups access to nuclear material or even weapons. While Obama was right in underscoring the problem of nuclear terrorism, he failed or was reluctant to speak about state-sponsored nuclear terrorism, which is a clear and present danger that the world must grapple with at the earliest. Shying away from calling a spade a spade will lead to flawed approaches to tackling nuclear terrorism.

India, which has often been criticised for its opacity on nuclear issues, took an important step towards transparency at the Washington summit. Prime Minister Narendra Modi announced several Indian initiatives in the area of nuclear security and non-proliferation, including countering nuclear smuggling and use of technology to prevent nuclear terrorism. He drew attention to the strong institutional framework, independent regulatory agency and trained and specialised manpower that India is using to beef up nuclear security. These steps are likely to not only safeguard India's nuclear material and weapons but also, they will add to India's status as a responsible nuclear power.

For decades, India was at the forefront of global campaign calling for a nuclear-free world. It must now take on a leadership role on the question of nuclear security especially relating to nuclear terrorism. It has done well to contribute \$2 million towards the Nuclear Security Fund, promise to participate in UN and IAEA joint mechanisms to strengthen nuclear security etc. It must work to keep the world's attention on nuclear terrorism. As in the past, the West is likely to focus on nuclear terrorism that threatens Europe and North America, neglecting the threat to South Asia, for instance. This is a deeply flawed approach as nuclear material passed on to a terrorist group will be shared with others. A regional approach to fighting nuclear terrorism is wrong.

The Statesman
05 Apr, 2016

Nuclear Security

Avast gathering of world leaders has just taken place in Washington to drive home the need for a more assured global regime on nuclear security. This is one of President Obama's important initiatives and he has promoted a number of summit meetings in the past on the same theme. This time, as on earlier occasions, there was a big turnout, with as many as fifty-three countries taking part besides several international agencies. The participants included leaders of powerful countries whose presence lent weight to the occasion. Mr Modi was there, as was President Xi of China, though President Putin kept away; Mr Nawaz Sharif was another who was not present, his projected visit having been cancelled owing to the terror attack in Lahore.

Nuclear dogmatists have never quite accepted India's nuclear deal with the USA that removed the fetters and restored India's role as an active participant in the global effort for nuclear restraint. Even after the concerned governments had acquiesced, forceful lobbies in several countries remained unconvinced and seemed to believe that India had not paid a sufficient price for what it had gained. There was a considerable last-ditch effort after the agreement was signed to persuade the US Congress to come out against it, and some embers from that unsuccessful attempt still smoulder. Thus it has not been plain-sailing for India to join the various international bodies on nuclear supplies and controls, like the Nuclear Suppliers' Group, among others. All the more reason, therefore, for India to play the prominent part it did during the recent summit, to emphasize its commitment to global nuclear restraint.

The summit itself, last of a sequence of four such meetings, did not set out to lay down fresh specific commitments on the subject but it reaffirmed earlier promises and drew attention, once again, to the grave dangers of nuclear proliferation, as well as the imperative need for the global community to do something about it. No new body was set up to continue the work of the summit, the participants preferring to alert existing international bodies, including entities established by the UN, and ask them to continue the effort. The challenge now is to maintain the momentum now that the succession of summits has come to an end.

Not every country that figures in the discussions on nuclear security was among those invited to be present. Among self-declared nuclear countries, North Korea, source of much controversy, was absent, which was hardly unusual, given Pyongyang's frequent turning away from international nuclear initiatives that could seek to place constraints on its nuclear capacity. North Korea has

developed nuclear weaponry and rocketry, has been a source of proliferation, not least to Pakistan, and has shrugged off remonstrance even from its close ally China. There was little the summit could have done to reverse that trend, though the powerful and advanced countries in the Korean neighbourhood remain deeply concerned, and will be unable to lower their guard.

Another prominent absentee, but for very different reasons, was Iran. This is less easy to understand, for it is only quite recently that Iran has come to terms on the nuclear issue with a group of countries led by the USA that had long kept it under the pressure of sanctions, so its place at the summit might have been a useful follow-up. But settling matters with Iran has not been an easy call domestically in the USA, and Iranian hardliners have also been disturbed by the deal between their country and the USA, and that may have had something to do with Iran's absence. India is one of the many countries that had welcomed the agreement between Iran and its interlocutors, and maybe New Delhi would have considered Iran's absence to be a missed opportunity, for what happens in that country affects the regional dynamics, and New Delhi has been working assiduously to develop its relations with Iran.

In his public remarks after the meeting ended President Obama spoke of the need for the USA and Russia, the two countries that between them possess by far the greatest stock of nuclear materials, to reduce their nuclear holdings as a way of encouraging others to do the same. This could be a useful step, especially as the 'official' nuclear countries, the P-5 of the UN Security Council, have tended to exclude themselves from global measures to monitor and control their nuclear stocks - such measures being a concern, in their estimation, that should fall on others. So Mr Obama's acknowledgement of the particular responsibilities that rest on his country and on Russia merits attention.

For India, the supervening concern within the broader framework of the debate on nuclear security, must be the shape and impact of Pakistan's nuclear policies. The Pakistani nuclear programme is unambiguously targeted on India, and represents a danger that has to be constantly in the forefront of Indian calculations. A particular recent addition to the problem is the reported willingness of the Pak armed forces, who are the custodians of their country's nuclear deterrent, to permit battlefield nuclear weapons to be placed in the charge of commanders in the field, supposedly to deter massed attack by India. This is something similar to what was undertaken decades ago by NATO to deter the supposed hordes from the Soviet east, but before long it was discarded as posing as much danger to the defenders as to the other side. Then, as now, a poorly considered scheme for tactical nuclear weapons has had the potential of adding to tensions without enhancing security. Besides, there are now risks of theft and terrorism that barely existed in the earlier era, and Pakistan is rife with fanatics of different ideologies, which can only add India's concerns.

In his post-conference remarks, Mr Obama spoke not only of the need for the USA and Russia to reduce their nuclear holdings but also for India and Pakistan to be on the same track. This is something that does not resonate well in India, whose record on proliferation is impeccable - in contrast to that of its neighbour. However, Mr Obama's words may reflect a wider opinion, for it is often said that South Asia is vulnerable to nuclear dangers owing to hostile relations between the nuclear powers in India and Pakistan. How best to tackle this danger is a subject on which both countries have been reticent, for obvious reasons of security. However, they have maintained annual information exchanges in fulfillment of some CBMs that they have jointly agreed. Maybe, taking into account current opinion as shown at the nuclear security summit, it is time for them to consider more elaborate nuclear CBMs, to serve their own security interests and to underline their credentials as responsible nuclear powers.

Pak tells US: Need nukes for defence against India

Pakistan has told the United States its nuclear weapons were aimed at defending itself from Indian aggression.

Foreign secretary Aizaz Chaudhry reacted to US President Barrack Obama's urge to contain nuclear weapons, saying that Pakistan had to defend itself against Indian aggression and resultantly it relied on its defensive measures.

"Our reliance on nuclear arsenal is basically because of the threats from India. If threat level is lowered, reliance on nuclear arsenal will decrease as well," he said in an interview.

Mr Chaudhry said that Pakistan agreed to the US suggestion but "what's important is that the underlined causes or conflicts are resolved first."

He said Pakistan had already proposed to India to resolve the outstanding conflicts, bring conventional balance and apply nuclear middle restraints.

"An overall comprehensive strategic restraint can ensure long lasting peace," he insisted, adding that Pakistan had told the US already that an even-handed, non-discriminatory, level-playing field will ensure strategic stability in the region. The secretary said the US signed a civil nuclear deal with India in 2008 which let India increase its nuclear arms exponentially.

The Times of India
05 Apr, 2016

'Mobile, ransomware pose big cyber threats'

Intel Security has its largest global development site in India. It's a site where people develop products and service solutions that are sold all over the world. Chris Young, senior vice-president and general manager of the business, says the attack landscape moves so quickly in modern times that one has to make sure that they plan not only for today but also for tomorrow. Excerpts from an interview with TOI on a visit to Bengaluru:

Do you think Indian companies are as aware of cyber security threats as globally?

Indian companies are quite sophisticated in their views on cyber security. The traditional companies such as healthcare and manufacturing as well as the new age e-commerce companies have a good understanding of the cyber security problems and solutions they need to be effective. In fact, some of the biggest Indian companies are on a par with their western counterparts when it comes to protecting their enterprises.

Are Indian companies proactive or reactive towards cyber security issues?

Earlier, organizations did not motivate themselves to move quickly to deal with cyber security by implementing the right tools. But that is changing as all corporates are aware of the threats they face. The biggest indication of change is it has become a boardroom and CEO-level issue in most companies, something that was not true even three years back. Even Prime Minister Modi has talked of the importance of cyber security.

What are the new age companies doing to protect themselves?

The challenges of startups will be different from a manufacturing or an IT company due to the nature of the business. The ecommerce guys are on the cloud and mobile and it is important to determine how they leverage their IT infrastructure. Since their store-front is digital, they have to worry more about denial of service attacks than a manufacturing company, which has to worry

about data breaches. They are also doing a lot of detection to understand threats that may be operating inside their environment.

What are some emerging new threats?

The latest threats are more in mobile. Lots of people and organizations have not viewed mobile as the attack factor that they need to worry about protecting in the same way they think about PCs. There is a rise in the number of malware and mobile specific threats. Since there is a growth in use of mobile and the size of its user population in India, companies need to pay more attention to this.

The other threat lies in ransomware, an activity which we will see continue to rise. Ransomware is an attack type mostly used by criminals as they try to extract money from users. They make the user download an encryption programme that encrypts their file and they ask for money in return for the files to be decrypted. It attacks both businesses and consumers.

*The Asian Age
05 Apr, 2016*

HACKERS TEMPORARILY TAKE DOWN HUNGARY GOVERNMENT'S WEBSITE



Hungary's government says its computer network came under attack from outside the country, temporarily blocking access to several websites.

Officials said Saturday that over 62,000 cyberattacks had been registered in a single day, affecting the main government web-

site and that of the Hungarian Academy of Sciences, among others.

The interior ministry said it had been able to restore access to the overloaded networks despite the constant attacks but had not been able so far to identify the perpetrators.

— AP

Rocket makes third vertical landing

American space firm Blue Origin successfully completed the third launch and vertical landing of its reusable New Shepard rocket on Saturday, company founder and Internet entrepreneur Jeff Bezos said, reports AFP from Washington.

"Flawless BE-3 restart and perfect booster landing," tweeted Bezos, referring to the BE-3 engine used to land the rocket back at the company's testing site in Texas.

The unmanned crew capsule also landed safely, using parachutes, said the executive, who founded online giant Amazon and also owns The Washington Post newspaper. The breakthroughs by Blue Origin and parallel efforts by rival Internet mogul Elon Musk's SpaceX open up the potential for cutting costs for space travel and making rockets as reusable as airplanes.

In November, Bezos called the accomplishment a "game-changer" which opens the door to lower costs in space travel and his vision of people living and working in space.

Bezos said in a tweet on Friday that the rocket's engines would be restarting just 3,600 feet (1.1 kilometers) from the ground during the vertical landing attempt on Saturday, with the rocket hitting the ground in six seconds if they failed to work properly.

The New Shepard can reach an altitude of 333,000 feet, considered the boundary between earth's atmosphere and space.

Previous test flights for the New Shepard were in January and November.

4 Indian teams to take NASA's Human Exploration Rover Challenge

Four groups of Indian students are among 80 teams that will participate in Nasa's Human Exploration Rover Challenge to create human-powered rovers designed to explore the surface of Mars, distant planets, asteroids or moons.

Almost 80 teams from India, US, Italy, Germany, Mexico, Colombia, Russia and Puerto Rico, will compete in the Nasa's annual Rover Challenge which starts on April 8 at the US Space and Rocket Centre in Alabama. These include teams from the Mukesh Patel School of Technology Management and Engineering in Maharashtra, IIT-Roorkee in Uttarakhand, Sathyabama University in Tamil Nadu and Sky-line Institute of Engineering and Technology in Uttar Pradesh. The rover challenge requires student teams to design, construct, test and race human-powered rovers through an obstacle course that simulates the terrain potentially found on distant planets, asteroids or moons.

Teams race to finish the three-quarter-mile-long obstacle course in the fastest time, vying for prizes in various divisions. The event concludes on April 9 at the Davidson Centre for Space Exploration, where awards will be presented for best design, rookie team, pit crew award and other accomplishments, Nasa said. This year's event incorporates two new and important changes. Teams now are required to design and fabricate their own wheels. Any component contacting the course surface for traction and mobility, including, but not limited to wheels, tracks, treads or belts cannot be purchased or considered an off-the-shelf product.

The second new feature is an optional Sample Return challenge. Teams competing in this separate competition will collect four samples, liquid, small pebbles, large rocks and soil samples, using a mechanical arm or grabber they design and build. The Human Exploration Rover Challenge highlights Nasa's goals for future exploration to Mars and beyond. Inspired by the lunar roving

vehicles of the Apollo moon missions, the competition challenges students to solve engineering problems.

Mail Today
05 Apr, 2016

Gravitational wave detector in India

With the Department of Atomic Energy and Department of Science and Technology signing a memorandum of understanding with the US National Science Foundation last week, India has moved one step closer to having an advanced gravitational-wave detector.

At present, the Laser Interferometer Gravitational wave Observatory (LIGO) project operates three gravitational-wave detectors — two at Hanford in Washington state and another at Livingston in Louisiana. These observatories are being upgraded to their advanced configurations called Advanced LIGO.

Under the agreement signed between India and the US, one Advanced LIGO detector from Hanford will be moved to India. Research institutes in India would develop infrastructure for installation of the detector and would be responsible for its commissioning. The observatory would be part of a single network along with the detectors in America and Italy. Once fully operational, scientists say it will allow them to better 'triangulate' the sources of gravitational waves and to determine their location with greater accuracy.

A global network of multiple detectors increases the likelihood of that several of them will be actively observing at any given time.

Deccan Herald
05 Apr, 2016

Moon helps in supporting earth's magnetic field

London, PTI: The Moon may play a major role in maintaining earth's magnetic field that permanently protects us from the charged particles and radiation that originate in the Sun, a new study said.

The magnetic field is produced by the geodynamo, the rapid motion of huge quantities of liquid iron alloy in the Earth's outer core.

To maintain this magnetic field until the present day, the classical model required the earth's core to have cooled by around 3,000 degrees Celsius over the past 4.3 billion years.

Now, a team of researchers from the National Centre for Scientific Research (CNRS) and Universite Blaise Pascal in France suggests that, on the contrary, its temperature has fallen by only 300 degrees Celsius.

The action of the Moon, overlooked until now, is thought to have compensated for this difference and kept the geodynamo active, researchers said.

The classical model of the formation of earth's magnetic field raised a major paradox. For the geodynamo to work, earth would have had to be totally molten four billion years ago, and its core would have had to slowly cool from around 6,800 degrees Celsius at that time to 3,800 degrees Celsius today.

However, recent modelling of the early evolution of the internal temperature of the planet, together with geochemical studies of the composition of the oldest carbonatites and basalts, do not support such cooling.

With such high temperatures being ruled out, the researchers propose another source of energy in their study.

Earth has a slightly flattened shape and rotates about an inclined axis that wobbles around the poles. Its mantle deforms elastically due to tidal effects caused by the Moon.

The researchers show that this effect could continuously stimulate the motion of the liquid iron alloy making up the outer core, and in return generate earth's magnetic field.

The earth continuously receives 3,700 billion watts of power through the transfer of the gravitational and rotational energy of the earth-Moon-Sun system.

The Times of India
05 Apr, 2016

Philippines launches world's first mass dengue vaccination

Philippines on Monday launched the first public immunisation programme for dengue, seeking to administer to a million schoolchildren the world's first licensed vaccine against a mosquito-borne disease that the WHO estimates infects 390 million people a year globally.

Hundreds of fourth-graders at a public school in Manila's Marikina city were given the first of three shots of Dengvaxia. Philippines had the highest dengue incidence in WHO's western Pacific region from 2013 to 2015, recording 2,00,415 cases last year. Health secretary Janette Garin called it "a historic milestone" in public health.

The government is spending \$76 million to administer the vaccine. The health department said the drive can reduce dengue cases by 24.2% in Philippines. Dengvaxia, developed by French company Sanofi Pasteur, obtained its first licence in Mexico in 2015 for use in individuals.

Deccan Herald
05 Apr, 2016

Statins help those at average-risk too

Miami: An international study Saturday suggested that healthy people may reduce their risk of developing heart problems before its onset by taking cholesterol-lowering drugs, known as statins.

The findings came from three trials, which included more than 12,000 people in 21 countries, and were released at the American College of Cardiology conference in Chicago.

Until now, statins have mainly been recommended for people at high-risk of heart disease, which kills 18 million people around the world each year and causes some 50 million heart attacks and strokes.

"The implications for practice are huge," said senior researcher Salim Yusuf, professor of medicine at McMaster University.

"I think we certainly should consider using statins much more widely than we have used them thus far."

The trials, called Heart Outcomes Prevention Evaluation-3 (HOPE-3), were the first of their kind to examine the impact of using statins, sometimes in combination with blood-pressure lowering drugs and other times with a placebo, in a large, globally diverse population.

Those enrolled in the trial were considered at "intermediate risk for developing cardiovascular disease" because they had at least one risk factor, such as smoking, a large waist to hip ratio, or a family history of heart disease.

However, none had been diagnosed with heart disease at the start of the trial.

For the study, people were randomly assigned to either a cholesterol-lowering drug (rosuvastatin, which is also known as Crestor) or a placebo pill daily.

Some were also given a blood pressure lowering drug -- a combination pill with candesartan (Atacand) and hydrochlorothiazide (Microzide) -- or a placebo.

They were followed for a median of 5.6 years as researchers noted how many people died or suffered heart attack or stroke.

Statin therapy was able to "significantly and safely reduce cardiovascular events by 25 %," said the findings published in the New England Journal of Medicine.

Drugs to lower blood pressure did not reduce major cardiovascular events like heart attack or stroke in the overall population, including those who did not have elevated blood pressure.

"There was no benefit in those with lower blood pressure and even a tendency towards harm in those in the lowest third of the blood pressure distribution," said Eva Lonn, professor of cardiology at McMaster University.

"These data suggest blood pressure lowering medications are appropriate for people with hypertension but that people with lower blood pressure who have no other reasons to use blood pressure reducing drugs should avoid taking these drugs."

Anti-hypertensives did help people with high blood pressure, and those who took statins in addition to anti-hypertensive drugs reduced cardiovascular events by 40 %.

"The take-home message is that statins are safe and effective, and that because benefits were similar irrespective of pretreatment cholesterol levels or levels of inflammatory markers, no baseline blood tests are required to identify the patients who will derive benefits from this treatment," said Jackie Bosch, associate professor of rehabilitation science at McMaster University.

"Our results were remarkably consistent across all subgroups."

The research was funded by the Canadian Institutes of Health Research and AstraZeneca, the manufacturer of the drugs tested... *AFP*

Deccan Herald
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'Tanning may block vitamin D synthesis'

Washington, PTI: Tanning may naturally protect your skin against harmful ultraviolet (UV) radiation, but could limit its ability to produce more vitamin D, a new study has found.

Even people exposed to high levels of sunlight may be deficient in serum vitamin D because it is mainly induced by UV irradiation and synthesised in the skin, researchers from University of Pernambuco Medical School in Brazil said.

"Our research showed that, in a large sample of individuals living in a tropical region located 8 degrees south of the equator with very high rates of sun exposure and extremely high UV irradiation, most people had serum vitamin D below 30 nanogrammes per millilitre (ng/ml), the cutoff for normal," said Francisco Bandeira from the University of Pernambuco.

"Our findings suggest that skin tanning, which is a natural protection against the harmful effects of UV irradiation, limits the progressive rise in serum vitamin D towards optimal concentrations," said Bandeira.

Researchers evaluated 986 people between 13 and 82 years of age, with roughly equal numbers of males and females.

All study participants had high rates of daily sun exposure and did not regularly use sunscreen or take vitamin D supplements.

Researchers evaluated each participant's Fitzpatrick skin phototype scale to estimate the response of different skin types to UV light.

Sun index

In general, higher Fitzpatrick scale scores indicate deeper colour and tendency to tan rather than burn in the sun.

They also calculated each participant's sun index, the number of hours of sun exposure per week multiplied by the fraction of body surface area exposed. They measured everyone's serum vitamin D levels and compared them with their skin phototype and sun index scores.

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Testosterone therapy may reduce heart attack risk

Washington, PTI: Testosterone therapy may help reduce risks of major adverse cardiovascular events, including stroke and heart attacks, in elderly men with coronary artery disease, a new study has found.

The study showed that patients who received testosterone as part of their follow-up treatment fared much better than patients who did not.

Non-testosterone-therapy patients were 80 % more likely to suffer an adverse event, researchers said.

"The study shows that using testosterone replacement therapy to increase testosterone to normal levels in androgen-deficient men doesn't increase their risk of a serious heart attack or stroke," said Brent Muhlestein, from the Intermountain Medical Centre Heart Institute in US.

"That was the case even in the highest-risk men - those with known pre-existing heart disease," said Muhlestein.

The researchers studied 755 male patients between the ages of 58 and 78 who all had severe coronary artery disease.

They were split into three different groups, which received varied doses of testosterone administered either by injection or gel.

After a year, 64 patients who were not taking testosterone supplements suffered major adverse cardiovascular events, while only 12 who were taking medium doses of testosterone and nine who were taking high doses did.

After three years, 125 non-testosterone-therapy patients suffered major adverse cardiovascular events, while only 38 medium-dose and 22 high-dose patients did.

"Although this study indicates that hypo-androgenic men with coronary artery disease might actually be protected by testosterone replacement, it does not provide enough evidence.

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3D 'mini-retinas' grown from human stem cells

Berlin, PTI: Scientists have developed an efficient way to make 3D 'mini retinas', which mimic the organ's tissue organisation, from mouse or human stem cells.

The research offers new perspectives on the growth, injury and repair of retina - the part of the eye that is sensitive to light.

"The goal isn't just to make the closest thing next to a real retina, but also to possibly harness the flexibility of the system to create more diverse ways of studying retina tissue," said Mike Karl of the German Centre for Neurodegenerative Diseases (DZNE).

Stem cell technologies have the potential to develop therapies for the treatment of diseases such as age-related blindness. Stem cell biologists have been working to understand the regeneration of neurons from lower vertebrates to humans, which can aid regenerative medicine in more indirect ways.

For example, the 3D retinal organoids developed in Karl's lab efficiently replicate the formation of the retina.

This specifically includes the light-detecting cone cells, which now can be produced in high quantities in their mini-retinas.

Cone photoreceptors, which are responsible for high acuity and colour vision, are the most precious retinal cell type with regard to potential future cell replacement therapies in patients affected by retinal degeneration.

Researchers' comparative studies on pluripotent stem cell-derived human and mouse retina organoids and mouse retina in vivo support the power of the new organoid protocol.

"Tissue heterogeneity is a major challenge in organoid systems, and here our work provides new insight, which will help to develop specific organoid-based models, specifically to reliably study retinal disease mechanism," said Karl.

The Karl Lab's change to the mini-retina protocol involves cutting a retina organoid grown from stem cells into three pieces at an early stage of eye development.

Each of these pieces, which look like little half moons, eventually grows into the full suite of cells found in the retina, thereby increasing the yield of retinal organoids up to 4-fold compared to previous protocols.

A trisection also spurs the surviving organoids to grow to reach sizes similar to uncut organoids. These mini-retinas swim around in the dish and because they are not attached to a surface, better reflect the structure of retinal tissue during development.

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3D-printed structure to mitigate pollution

Washington, PTI: For the first time, researchers have used commercial 3D printers to create a chemically active structure the size of handheld sponge that acts to mitigate pollution.

The experiment, created with many off-the-shelf materials common to makers, hobbyists and home enthusiasts, puts the power of chemistry invention into the hands of people taking advantage of the 3D printing revolution, researchers said.

The researchers led by Matthew Hartings, professor at the American University, designed a small structure the size of handheld sponge.

They dispersed throughout plastic chemically active titanium dioxide (TiO₂) nanoparticles. Using the same filament hobbyists use in the printing process of 3D-printed figures, researchers added the nanoparticles.

Using a 3D thermoplastic printer, ubiquitous in manufacturing, the researchers printed a small, sponge-like plastic matrix.

Pollutants break down when natural light interacts with TiO₂, which has potential applications in the removal of pollution from air, water and agricultural sources.

To demonstrate pollution mitigation, they placed the matrix in water and added an organic molecule (pollutant). The pollutant was destroyed. TiO₂ also photocatalysed the degradation of a rhodamine 6G, a highly fluorescent dye in solution.

"It's not just pollution, but there are all sorts of other chemical processes that people may be interested in. There are a variety of nanoparticles one could add to a polymer to print," Hartings said.

Nanoparticles

One limitation of the research is that for the structure to print, the concentration of nanoparticles needed to be less than 10 % of total mass of the structure.

To have an efficient structure, a higher concentration could be needed, Hartings said.

The structure printed for this study was a simple shape. Harnessing the power of 3D-printing, the researchers' next step will be to print many exotic shapes to understand how printed structure affects the chemical reactivity.

Mail Today
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Dilli Haat to house Abdul Kalam memorial

Delhi will soon have a memorial for late former president APJ Abdul Kalam even though the original plan to convert his residence in Lutyens' zone had to be amended.

The proposal was amended as the bungalow was allotted to Union Tourism and Culture Minister Mahesh Sharma forcing the AAP government to find an alternate location for the 'knowledge centre' in memory of Kalam. The centre will showcase his simple lifestyle, his contribution in the field of science before becoming the first citizen of the country.

The memorial will come up at Delhi Haat—a popular cultural and commercial centre frequented by tourists. Delhi Tourism and Culture minister Kapil Mishra is scheduled to travel to Rameshwaram on Tuesday, Kalam's native place, to get his belongings, which will be part of the memorial. Till the time a permanent structure is built, his belongings will be housed at the Delhi Assembly.

AAP criticised the central government's move to allot Kalam's bungalow to Sharma and said Kalam had been 'insulted' as the late President's residence into was not converted into a 'knowledge centre'. Kalam stayed at his 10, Rajaji Marg residence after his term as President ended in 2007.

"The proposal to erect his memorial was raised in the Assembly and was passed. Everyone wanted his official residence to be converted into a knowledge centre but it was allotted to a Union minister. Limiting Dr Kalam's work to Rameswaram and shifting all his documents, books and Veena to Rameswaram is his insult. I am visiting Rameswaram tomorrow to bring back APJ Kalam's belongings to Delhi," Mishra said and added that several things related to the former President, including books, veena and spectacles are at his native place.

Mishra highlighted that Kalam's possessions from his residence at 10, Rajaji Marg were sent to Rameswaram in Tamil Nadu by the Centre after his death. "Our final plan is to make a permanent memorial for which we have identified Dilli Haat at INA market as the place receives high footfall. His belongings will be kept inside the Delhi Assembly till July 27," Mishra said.