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The Hindustan Times
12 May, 2016

FLYING INTO THE SUNSET

The Indian Navy phases out the iconic Sea Harrier maritime fighter after 33 years of service

FIGHTING FIT

The reconnaissance and strike fighters, inducted in 1983, operated for the last time from INS Viraat in March during the International Fleet Review off the Vizag coast

PACKING A PUNCH

- The Sea Harrier had vertical take-off and landing capability
- The fighter planes could be fitted with anti-ship Sea Eagle missiles, Derby air-to-air beyond visual range missiles and Matra Magic II missiles

FINAL STOP

The retired planes, built by British Aerospace, will be dispatched as mementos to various naval aviation bases and the naval academy. Two of them may be preserved on the INS Viraat

TOP GUN

UK's Royal Navy retired its Sea Harriers 10 years ago. The fighters served the British Navy for 30 years and saw action during the Falklands war in 1982, both Gulf Wars as well as in the Balkans

OLD WARRIOR

Indian Navy's Sea Harrier squadron was deployed during Operation Vijay in 1999 and embarked on the Viraat during Operation Parakram in 2001 when standoff with Pakistan was at an all-time high

SPARSE SPARES

The Indian Navy was facing a hard time maintaining the Harriers as British firm Rolls-Royce had stopped producing parts – the plane was powered by a Rolls-Royce Pegasus turbofan engine

> Today is the day to salute the pilots who flew Sea Harrier aircraft which made a mark for itself by protecting our seas... It's a distinct honour and proud privilege to induct the multi-role supersonic MiG 29K in the 300 squadron. It marks the induction of multi-role supersonic technology in Indian Navy

ADMIRAL R K DHOWAN,
Chief of Naval Staff

The Pioneer
12 May, 2016

After 33 Years in Service Sea Harriers Bid Adieu to Navy

In a composite air display symbolised a smooth transition from the old to the new, the Indian Navy on Wednesday phased out Sea Harrier fighter jets — which were the mainstay of Indian Naval air arm since 1983, thus paving way for the supersonic MiG 29K aircraft into the Indian Naval Air Squadron (INAS 300).

At an impressive ceremony held at INS Hansa in Goa which saw the Navy bid a farewell to the christened lately as LUSH (Limited Upgrade Sea Harrier) and induct MiG 29K aircraft into its fleet, Sea Harriers flew for one last time, with MiG-29K flanking their outgoing cousins and ceremoniously taking their place.

The air display included supersonic pass by MiG 29s and formation flying by two each Sea Harriers and MiG 29Ks.

On completion of the Air display, "washing down of the Sea Harriers" was carried out in a traditional manner.

The Navy, which initially had 28 Sea Harriers, de-inducted 11 remaining ones at Wednesday's ceremony.

Admiral RK Dhowan, Chief of the Naval Staff, Vice Admiral Sunil Lanba, Flag Officer Commanding in Chief Western Naval Command, serving and retired Officers and Men of the Indian Navy and all personnel who have served in the INAS 300 were present at the ceremony. Admiral Dhowan released a first day cover on the occasion marking the de-induction of Sea Harriers and induction of MiG 29Ks into the force. He unveiled a plaque marking the de-induction of Sea Harriers and induction of MiG 29Ks on the occasion.

Talking to media persons after the de-induction of Sea Harriers and induction of the Russian-make MiG 29K aircraft into the force, Admiral Dhowan said: "We have great pride in inducting supersonic multi-role MiG 29K aircraft with cutting edge technology into the 300 squadron" India had contracted 45 MiG-29K carrier-based fighters from Russia in two batches — 16 fighters in 2004 along with the contact for acquiring aircraft carrier INS Vikramaditya and another 29 fighters in 2010. Of the contracted aircraft, the Navy has till now accepted 31 MiG 29K aircraft of the 45 aircraft.

"The aircraft (MiG 29K) has already been integrated on board aircraft carrier Vikramaditya and will now perform the role of strike fighter and air defence for the fleet in the Indian Navy," Admiral Dhowan said.

Averring that the naval aviation was on a threshold of transformation through induction of additional helicopters and aircraft into the force, Admiral Dhowan said: "The Indian Navy has emerged as a multi-dimensional network force which is ready to take on any challenge in the maritime domain of the Indian Ocean region in the 21st century".

Replying to queries from media persons, Admiral Dhowan said that INS Virat would be phased out in the coming years. "We are working out details with the Ministry of Defence and it (Virat) will now be phased out in the coming years...We have our new aircraft carrier INS Vikrant, which is being constructed at Kochi shipyard and it is scheduled for delivery in the end of 2018," Admiral Dhowan said.

Admiral Dhowan, however, chose not to answer questions relating to the AgustaWestland VVIP choppers controversy.

The de-induction of Sea Harriers marked the end of an era in Indian Naval aviation history. The Sea Harrier fighter jets were the mainstay of Indian Naval air arm for the past 33 years.

The Sea Harriers, part of INAS 300, were inducted into the navy in 1983 and were deployed onboard INS Vikrant and INS Viraat.

The first three Sea Harriers, flying via Malta, Luxor and Dubai, led by Lt Cdr Arun Prakash VrC, landed at Dabolim on December 16, 1983. This was followed by the first deck landing on the carrier, INS Vikrant, on December 20, 1983 and the arrival of the first Sea Harrier T Mk 60 trainer, on 29 Mar 1984.

The reborn, White tigers of the Indian Navy were now a totally professional outfit and came out with flying colours during frequent embarkations, joint exercises, Dissimilar Aircraft Combat Training and Air to Air gunnery exercises.

The white tigers' squadron was embarked on the carrier during the Operations Vijay and Parakram providing the essential offensive posture to the country and ensuring readiness to react to any escalation by the enemy.

Having undergone a weapon and avionics upgrade since 2007 to match up with any opposition, the upgraded Sea Harrier christened LUSH (Limited Upgrade Sea Harrier) came in handy for the Navy.

Business Standard
12 May, 2016

As Sea Harriers retire, Naval Tejas readies to fly off

By Ajai Shukla

The light combat aircraft will operate from India's indigenous aircraft carrier, INS Vikrant

At the end of thirty years of flying from Indian Navy aircraft carriers, the iconic Sea Harrier jump jet made its ceremonial last flight on Wednesday. Readying to take its place is the naval version of the Tejas Light Combat Aircraft (LCA), which recently completed a successful flight-test campaign in Goa.

While the Sea Harriers operated from the INS Vikrant and INS Viraat, now both retired, the Naval Tejas will operate from the Vikrant's successor, an indigenous aircraft carrier that is scheduled to be commissioned in 2018.

Commodore (Retired) CD Balaji, chief of the Aeronautical Development Agency (ADA), which oversees the Tejas development programme, told Business Standard that taking off and landing from a 200-metre deck has been fully established. So has "hot-refuelling" --- topping up the aircraft after a sortie with the engine running and the pilot in the cockpit --- which allows a rapid turnaround between sorties.

For the navy, it is vital to ready the Tejas for the INS Vikrant and, subsequently, INS Vishal. The MiG-29K will be the medium fighter on INS Vikrant, as it already is on INS Vikramaditya. The Tejas is crucial for filling in the light fighter slot.

Balaji reveals a committed navy is funding 40 per cent of the development cost of the Naval Tejas. The MoD has allocated Rs 3,650 crore for the naval programme.

The ADA chief described the flight trials in Goa between March 27 and April 25, in which two Naval Tejas prototypes flew 33 sorties from a Shore Based Test Facility (SBTF) -- a full-scale replica of an aircraft carrier deck. Built on land, the SBTF allows carrier deck take-offs and landings to be validated, without unduly endangering an aircraft carrier, or an aircraft prototype and pilot.

When taking off from an aircraft carrier, a fighter revs up its engine to the maximum, while held back by a "restraining gear system" (RGS). Then, the RGS is disengaged, and the fighter shoots forward, accelerating to take-off speed in just 200 metres of deck. At the end of the deck runway, a "ski-jump" lifts the aircraft upwards, after which it flies on its own power.

In December 2014, the Naval Tejas had taken off from the SBTF ski-jump after rolling 300 metres. Now, the fighter has proven it can take off from just 200 metres, even carrying two R-73 close combat missiles.

"With this campaign, ski-jump launches are no longer a challenge. We will now explore the limits the fighter can be taken to. We will further fine-tune the control law software to take-off with higher payloads," said Balaji. In aircraft carrier combat operations at sea, the Naval Tejas must take off with up to 3.5 tonnes of payload--- more fuel for longer range; and more weapons for a lethal punch. For this, the aircraft carrier would steam into the wind, ensuring a "wind-over-deck speed" of up to 20 knots. That would provide added lift to the aircraft, allowing higher payloads.

In aircraft carriers with catapult launchers, as the navy's next indigenous aircraft carrier, INS Vishal, could be, the catapult allows higher launch speeds and, therefore, higher payloads.

Similarly, fitting the Tejas Mark-2 with the more powerful General Electric F-414 engine (the current Mark -1 fighter has the smaller F-404 engine) will allow greater payloads and more ambitious mission objectives. Even more challenging than taking off from a 200-metre carrier deck is to land an aircraft back on the carrier. This requires touching down precisely at the edge of the runway, aligning the approach with the help of an "optical landing system" and a "landing control post". At landing, an "arresting gear system" --- including wire cables across the deck runway --- latches onto a hook on the fighter's tail and rapidly decelerates it to a halt. "In the current campaign, the Tejas did over 60 approaches (without actually touching down) to gather data for fine-tuning the control law software. In the next campaign this month, we will do "touch and go" approaches to validate the software and then graduate to full landings," explains Balaji. Finally, the Naval Tejas demonstrated its "fuel jettison" capability --- a safety feature that allows the fighter to quickly jettison on-board fuel if it encounters a problem soon after launch and must quickly return for an emergency landing on the carrier.

"By mid-2017, we will have established on the SBTF that the Naval Tejas can be flown off an actual carrier, and we will then graduate to ship-based testing. We currently have two prototypes in testing, and will build a third by then", says a satisfied ADA chief.

The Economic Times
12 May, 2016

€ 7.25-bn: France makes its 'Best' Price Offer for Rafale

By Manu Pubby

Will the deal take off now? This is a substantial cut from the € 8.8-billion figure that was being quoted during earlier negotiations

The Rafale fighter deal that has been stuck for the past several months on pricing issues is likely to move ahead with a new offer from Paris that could see India paying 7.25 billion for 36 new jets.The new offer from France is the lowest price being quoted for the Rafale fighters till now, though a weapons package is to be negotiated separately .

Officials involved in the negotiations have told ET that the latest French offer came just over two weeks ago and could be the last price being offered for the Rafale fighter jets that are being procured by India under a government to government deal.

This is a substantial cut from the 8.8 billion Euro figure that was be ing quoted for the deal in BJP circles and was even advertised by its IT department as a major win for the Modi government. Officials say that the negotiations will now only move forward after an Indian response to the offer.

The two sides are also negotiating a five-year support package for the fighter jets, down from the ten-year package that was being discussed earlier. Sources say that the weapons package will be signed separately as has been the norm but the original requirement has been pruned. This has been done as several weapons are common with the in service Mirage fighter fleet.

On April 21, Parrikar had said that the Rafale deal is "in quite an advanced stage and we intend to close it quite soon". The deal has to be first approved by the defence ministry followed by which it would go for a go ahead by the Cabinet.

The offer for 7.25 billion euros for the 36 aircraft would also include an offset clause that would see French companies like Dassault and Thales investing in the Indian defence and security sector. France agreed to a 50 percent offset clause as a special case for India after the direct intervention of the Indian PMO, sources said.

The investment of over 3 billion euros would be a boost for Indian defence and aerospace companies.Several Indian companies are partnering with French companies for the offsets, including a plan to assemble aircraft parts and even a low cost executive jet in India.Several aircraft technologies, including a special radar absorbing paint are likely to be transferred as well through the defence research and development organization.

Deccan Herald
12 May, 2016

US-India defence cooperation Act in Senate

Washington: Ahead of Prime Minister Narendra Modi's expected visit here next month, 2 top American senators have introduced a legislation to elevate the status of the Indo-US defence relationship.

The US-India Defence Technology and Partnership Act was introduced in the Senate by Senators Mark Warner and John Cornyn - co-chairs of the Senate India Caucus - on Tuesday, which if passed by Congress would elevate the status of the Indo-US defence relationship on par with that of America's closest allies like NATO and Israel.

The legislation has been sent to the Senate Foreign Relations Committee for necessary action.

The legislation, a similar version of the bill was introduced in the House of Representatives in March, institutionalises the US government's focus on the US-India security relationship while sending a powerful signal to India that the US is a reliable and dependable defence partner.

"This bill supports strengthening our bilateral relationship, particularly in defence, and bestows upon India the status it deserves as a partner in promoting security in Asia and around the world," Warner said in a statement issued by US India Business Council (USIBC) which applauded the bill.

दैनिक जागरण

12 मई, 2016

रूस का अमोघ अस्त्र होगी ये मिसाइल

सात किमी प्रति सेकेंड की रफ्तार। दस हजार किमी मारक क्षमता। लांचिंग के चंद सेकेंड में यूरोप के बड़े हिस्से को तबाह करने की ताकत। नाटो प्रतिरक्षा प्रणाली को गच्चा देने की कला। ये खूबियां हैं रूस की नई अंतर महाद्वीपीय बैलिस्टिक मिसाइल (आइसीबीएम) की। जिसका वह जल्द ही परीक्षण करने जा रहा है। नाम है आरएस-28 सरमट लेकिन नाटो देश प्यार से इसे साटन-2 बुलाते हैं। विजय दिवस परेड पर क्रेमलिन ने इस मिसाइल को शामिल करके दुनिया की महाशक्तियों को चौंका दिया है।

28
आरएस

7 किमी
प्रति सेकेंड चाल

100 टन
वजन

10,000
किमी मारक क्षमता

40 मेगाटन
मुखास्त्र

नाटो रोमानिया में एजिस अशोर मिसाइल शील्ड प्रणाली लगाने के करीब है, लेकिन विशेषज्ञ मानते हैं कि सरमट मिसाइल इस शील्ड को धता बताएगी।

संहारक

यह मिसाइल 40 मेगाटन मुखास्त्र (वारहेड) ले जाने में सक्षम है। यह 1945 में अमेरिका द्वारा हिरोशिमा और नागासाकी शहरों पर डाले गए एटम बम से 2000 गुना ज्यादा ताकतवर क्षमता है। छोड़े जाने के चंद सेकेंड में यह यूरोप का बड़ा हिस्सा तबाह करने का माद्दा रखती है। अपनी तेज रफ्तार और रास्ता बदलने की प्रवीणता से यह मिसाइल नाटो देशों के मिसाइल डिफेंस प्रणाली को भेदेगी।

यदि सरमट मिसाइल को लंदन के ऊपर छोड़ दिया जाए तो यह अधिकांश ब्रिटेन के साथ उत्तरी फ्रांस, बेल्जियम और नीदरलैंड्स को विश्व के नक्शे से खत्म कर सकती है। यह अमेरिका के पूर्वी और पश्चिमी तटीय शहरों को भी निशाना बनाने में सक्षम है।

रूस की जरूरत

रूसी मिसाइल विशेषज्ञों के अनुसार रूस के पास मुख्य मिसाइल एसएस-18 करीब 30 साल पुरानी हो चुकी है। 1988 में डिजायन इसी मिसाइल पर रूस की निर्भरता है। लिहाजा भले ही रूस के नाटो सहित दुनिया के गर्मजोशी भरे रिश्ते हों लेकिन उसे अपने मिसाइल जखीरे को आधुनिक करना होगा। सरमट का विकास 2009 से शुरू है और यह पुरानी पड़ रही आइसीबीएम की 2018 में जगह लेना शुरू करेगी।

The Statesman
12 May, 2016

Obama to call for nuke arms-free planet

During his historic visit to Hiroshima this month, Barack Obama would promote his vision of a nuclear weapons-free planet by becoming the first sitting US president to tour the site where America first dropped an atomic bomb in 1945, killing an estimated 140,000 people.

"The President intends the visit to send a much more forward-looking signal about his ambition for realising the goals of a planet without nuclear weapons," White House Press Secretary Josh Earnest said yesterday.

Obama would be the first American president to visit Hiroshima - the site of the first nuclear attack by the US on Japan - later this month. The visit is also an opportunity to highlight the remarkable transformation in the relationship between Japan and the US.

"If you would have imagined that one of our closest partners and allies in Asia was Japan just 70 years ago, it would have been very difficult to imagine, given the hostilities between our two countries.

"But yet that's exactly what has occurred, based on a commitment of the leaders of our two countries to forge closer bonds. We've also seen deeper ties between our peoples. And even as we speak, there are thousands of US military service members who are stationed in Japan," Earnest said.

They operate on bases in Japan that enhance not just the national security of the US but also contribute in important ways to the national security of our Japanese allies, he said.

The US and Japan also work effectively together, including through our militaries on humanitarian relief efforts, on other emergency response efforts, including the natural disaster that the Japanese people suffered as a result of the Tsunami and an ensuing crisis at the nuclear facility in Fukushima, Earnest said.

"All of this is a testament to the way that the US Japan relationship has dramatically changed over the last 70 years and the president is certainly interested in further marking the progression of that relationship by visiting Hiroshima," he said.

Obama is visiting Japan to attend the G-7 meeting. Obama's visit to Hiroshima follows that of US Ambassador to Japan and Secretary of State John Kerry.

The Tribune
12 May, 2016

After long wait, US to unveil European missile shield

Proposed in 2007, meant to shoot down Iranian missiles | System will soon be handed over to NATO command

The United States' European missile defence shield goes live on Thursday almost a decade after Washington proposed protecting NATO from Iranian rockets and despite Russian warnings that the West is threatening the peace in central Europe.

Amid high Russia-West tension, US and NATO officials will declare operational the shield at a remote air base in Deveselu, Romania, after years of planning, billions of dollars in investment and failed attempts to assuage Russian concerns that the shield could be used against Moscow.

"We now have the capability to protect NATO in Europe," said Robert Bell, a NATO-based envoy of US Defence Secretary Ash Carter. "The Iranians are increasing their capabilities and we have to

be ahead of that. The system is not aimed against Russia," he told reporters, adding that the system will soon be handed over to NATO command.

The United States will also start construction on a second site in Poland on Friday that is due to be ready in 2018, giving NATO a permanent, round-the-clock shield in addition to radars and ships already in the Mediterranean.

The readying of the shield also comes as NATO prepares a new deterrent in Poland and the Baltics, following Russia's 2014 annexation of Crimea. In response, Russia is reinforcing its western and southern flanks with three new divisions.

The shield relies on radars to detect a ballistic missile launch into space. Tracking sensors then measure the rocket's trajectory and intercept and destroy it in space, before it re-enters the earth's atmosphere. The interceptors can be fired from ships or ground sites.

The Russian ambassador to Denmark warned a year ago that Danish warships would become targets for Russian nuclear missiles if Denmark joined the shield project by installing radars on its vessels. Denmark is upgrading at least one frigate to house a ballistic missile sensor.

Turkey is already hosting a US radar and the Netherlands has equipped ships with radars. The United States also has four ships in Spain as part of the defences, while all NATO nations are contributing funding.

US officials dismiss the Russian view as "strategic paranoia" and blame Moscow for breaking off talks with NATO in 2013 that were aimed at explaining how the shield would operate. The US says Russia was seeking a treaty limiting the capability and range of ballistic missile interceptors. "No government could agree to that," US adviser Bell said. — Reuters

Sole aim: Protection from rogue states

- First agreed by the US 2007 and then cancelled and re-launched by the Barack Obama in 2009, the missile defence shield's stated aim is to protect North America and Europe from so-called rogue states such as Iran and North Korea
- The United States completed construction of its missile defence ground site in Deveselu, Romania, last year and in 2018 Polish missile defence site is due to be operational
- Despite a historic deal between world powers and Tehran to limit Iran's nuclear programme, the West believes Iran's Revolutionary Guards continue to develop ballistic missile technology, carrying out two tests late last year

Russia feels the heat

- Russia is incensed at such of show of force by its Cold War rival in formerly communist-ruled Eastern Europe where it once held sway
- Moscow says the US-led alliance is trying to encircle it close to the strategically important Black Sea, home to a Russian naval fleet and where NATO is also considering increasing patrols
- Despite US assurances, the Kremlin says the missile shield's real aim is to neutralise Moscow's nuclear arsenal long enough for the United States to make a first strike on Russia in the event of war

The Statesman
12 May, 2016

National Technology Day marked

Prime Minister Narendra Modi has called upon people to make increasing use of technology in their daily lives to make a 'positive difference' in society. Mr Modi's comments came on the occasion of 'National Technology Day' today. "Best wishes to all citizens, especially our outstanding scientists and technology enthusiasts on National Technology Day,"he said."Let's further increase the use of technology in our daily lives to bring a positive difference in our society. Jai Jawan, Jai Kisan, Jai Vigyan!," Mr Modi said. National Technology Day, celebrated on 11 May every year since 1999, marks India's progress in regard to three important milestones in the field of science and technology.

India's first indigenously built Hansa-3 aircraft successfully took to the skies on this very day in Bengaluru. India carried out its three crucial underground nuclear tests in Pokhran,Rajasthan, also on this day. The country's first short range surface to air missile and anti-sea skimmer Trishul was test fired on 11 May and later inducted into defence service. President Pranab Mukherjee and Union Minister for Science and Technolgy and Earth Sciences Harsh Vardhan took part in separate events to celebrate National Technology Day.

Mr Mukherjee attended an event titled 'Technology enablers of Startup India'~ theme of this year's technology day celebrations ~ to mark the occasion. Dr Harsh Vardhan inaugurated a science and technology exhibition along with his junior colleague Minister of State for Science and Technology and Earth Sciences Y S Chowdary to commemorate the day.

The Times of India
11 May, 2016

National Technology Day: 5 Desi innovations to boast

Every year May 11 is celebrated as the National Technology Day. On this day in 1999, India witnessed one of its greatest technological advancements as the scientists flew the first indigenous aircraft "Hansa III" at Bangalore. On the same day, the country also saw successful test firing of the Trishul missile.

As nation once again proudly celebrates feats of its scientists, here's a glimpse into 5 biggest technology innovations India has given to the world.

Scripting space history, India on September 24, 2014, successfully placed its low-cost Mars spacecraft in orbit around the Red Planet on its very first attempt, breaking into an elite club of three nations.

ISRO had launched the Mars Orbiter Mission's spacecraft on its nine-month-long odyssey on a homegrown PSLV rocket from Sriharikota in Andhra Pradesh on November 5, 2013, and it had escaped the earth's gravitational field on December 1, 2013.

The Indian Space Research Organisation (Isro) has accomplished the task of developing the country's own navigation system with the successful launch of IRNSS-1G, the last in the series of seven navigation satellites.

With the constellation of satellites complete, India has joined the league of countries that has indigenous navigation system. The system will reduce the country's dependency on US Global Positioning System.

The first indigenous aircraft HANSA-III took its maiden flight on this day. The two-seater trainer aircraft is designed and built by National Aerospace Laboratories, Bangalore. The funding for this aircraft has been supported by CSIR & IIT Kanpur.

It has a cruising speed of 213 kmph and a range of 842km. It is ideal for sport and hobby flying. It comes with lightning protection and can be flown at night.

BrahMos missile system is the most lethal and potent weapon system for precision strike available with the Indian Army.It is the world's fastest anti-ship cruise missile that is in operation. The land-attack version of BrahMos has been operational since 2007.

The fire-and-forget BrahMos has the capability to take on surface-based targets by flying a combined hi-lo trajectory, thus evading enemy air defence systems.

India's first lunar probe, Chandrayaan-1 was launched by ISRO in 2008 and remained in operation until late 2009. The probe carried high-resolution remote sensing equipment for visible and X-ray frequencies.

Despite suffering from technical issues, the Chandrayaan mission achieved 95% of its planned objectives. Its greatest achievement has been the discovery of water molecules in lunar soil.

The Hindu
12 May, 2016

India ready to import gas for idle power plants, says Goyal

The government is ready to import at least 70 to 80 million metric standard cubic metres (mmscm) of natural gas for India's idle gas-based power plants if it can secure long-term 'affordable' rates, Piyush Goyal, Minister of Power, said."This will enable India to operate its idle gas-based power capacity," Mr. Goyal said addressing a conference on 'The Future of Electricity'. Obtaining the required gas will lead to the re-starting of 20,000 MW of idle power capacity in India. The minister recently visited Australia and secured assurances for gas supply at $5 per mmbtu but suppliers were not willing to sign long-term contracts.

"If the government gets gas at $5 per mmbtu, gives custom duty waiver, reduces marketing margins and gas transportation charges by half and reduces inter state transmission charges to zero, the industry will be able to absorb the price" Sushil Maroo, MD & CEO, Essar Power Limited, told The Hindu.

As to what 'affordable' price sellers would agree to for long-term contracts, Anish De, Partner, KPMG, said, "The international market is oversupplied on gas."

Adding that this could go on for five years or more, he said, "Earlier, suppliers were not looking at long-term contracts in the region of 7-10 years, he said. "They might look at it now."

The Hindu
12 May, 2016

Virtual heart tool to predict sudden cardiac death risk

Helps doctors in identifying patients in need of implant

Washington: Scientists have developed a non-invasive, personalised 3-D virtual heart assessment tool to help doctors determine whether a patient faces a risk of life-threatening arrhythmia, a condition when the heart rhythm is irregular or abnormal.

When electrical waves in the heart run amok, sudden death can occur, researchers said. To save the life of a patient at risk, doctors currently implant a small defibrillator to sense the onset of arrhythmia, and jolt the heart back to a normal rhythm.

However, it is difficult to decide which patients truly need the invasive, costly electrical implant.

Non-invasive - "Our virtual heart test significantly outperformed several existing clinical metrics in predicting future arrhythmic events," said Natalia Trayanova from Johns Hopkins University in the U.S.

"This non-invasive and personalised virtual heart-risk assessment could help prevent sudden cardiac deaths and allow patients who are not at risk to avoid unnecessary defibrillator implantations," said Dr. Trayanova. Researchers made predictions by using the magnetic resonance imaging (MRI) records of patients who had survived a heart attack but were left with damaged cardiac tissue that predisposes the heart to deadly arrhythmias.

The study involved data from 41 patients who had survived a heart attack and had an ejection fraction — a measure of how much blood is being pumped out of the heart — of less than 35 per cent.

Researchers used pre-implant MRI scans of the recipients' hearts to build patient-specific digital replicas of the organs.

Using computer-modelling techniques, the geometrical replica of each patient's heart was brought to life by incorporating representations of the electrical processes in the cardiac cells and the communication among cells.

In some cases, the virtual heart developed an arrhythmia, and in others it did not. The result — a non-invasive way to gauge the risk of sudden cardiac death due to arrhythmia — was dubbed VARP, short for virtual-heart arrhythmia risk predictor.

Impact of scar tissue - The method allowed researchers to factor in the geometry of the patient's heart, the way electrical waves move through it and the impact of scar tissue left by the earlier heart attack.

"We demonstrated that VARP is better than any other arrhythmia prediction method out there," said Dr. Trayanova.

"The approach will provide doctors with a tool to identify patients truly in need of the costly implantable device, and those for whom the device will not provide any life-saving benefits," she said.

SKY FALL

Astronomers have discovered 1,284 more planets beyond our solar system, nine of which are possibly in orbits suitable for surface water – which bolsters their prospects of supporting life. This is the single largest finding of planets to date

4,302 potential planets identified, of which 1,284 were confirmed as being planets

550 could be rocky planets, like Earth

3,264 are the number of confirmed planets outside our solar system

9 planets are at the right distance from a star to support temperatures at which water could pool, a discovery that brings to 21 the total number of known planets with conditions that could permit life

A NEW MODEL

The new planets were identified during the Kepler space telescope's four-year primary mission and a new analysis technique that applied statistical models to confirm the batch as planets, while ruling out scenarios that could falsely appear to be orbiting planets

Kepler looked for slight changes in the amount of light coming from about 1,50,000 target stars

Some of the changes were caused by orbiting planets passing across, or transiting, the face of their host stars, relative to Kepler's line of sight

› Planet candidates can be thought of like bread crumbs. If you drop a few large crumbs on the floor, you can pick them up one by one. But if you spill a whole bag of tiny crumbs, you're going to need a broom. This statistical analysis is our broom.

TIMOTHY MORTON, an astronomer at Princeton University who developed the analysis technique