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hindustantimes

Tue, 13 June, 2017

A new ecosystem for private players

Make the defence industry a centrepiece of the Make in India scheme but choose partners wisely

The government has recently unveiled the long-awaited 'Strategic Partnership' policy for defence production. This policy is aimed at creating and nurturing an ecosystem for private defence manufacturing in India. The government has all along insisted that the defence industry would be a centrepiece of Make in India. Strategic partnerships with select Indian firms have long been regarded as essential to enabling significant private sector participation in defence manufacturing. Over a decade ago, a committee led by Vijay Kelkar recommended that the government should identify certain firms based on their technical, managerial and financial strength as 'champions' or 'Raksha Udyog Ratna' and circulate tenders for major systems to these firms. A subsequent committee was constituted led by Probir Sengupta identified 13 Indian firms that could be designated along these lines.

But the government of the day baulked at the thought of being seen as favouring some companies over others. This concern was overblown and it effectively stymied private sector participation in defence. Although the NDA government has taken its time to approve the policy, it has done well in thinking through its underlying rationale as well as the practical steps needed to unleash the Indian private sector in this critical domain. Nevertheless, there are some lingering problems that the government will need to address as it moves along.

The policy acknowledges that there are few Indian private players with experience in integrating complex defence systems and subsystems. Hence, it seeks to provide a framework for nurturing such capabilities over time. In the initial phase, the government will identify one Indian private entity as a strategic partner to manufacture one major system: single-engine fighter aircraft, helicopters, submarines, and armoured vehicles. This at once caters for the systems most needed by the armed forces and encourages specialisation among Indian firms. The strategic partner will be picked through a well-defined process that will include an assessment not just of the technical capabilities of the entity, but also its plans for indigenisation over time and its ability to foster a network of domestic suppliers. Ultimately, though, the selection of the SP will be based on "the price quoted". L1 will remain the final arbiter.

In parallel with this process, the government will also prepare a short list of foreign Original Equipment Manufacturers (OEMs) with whom the aspiring strategic partners can tie up for technology transfer. The main criterion on which the OEMs will be identified is the extent of technology they are willing to pass on. The joint ventures between a strategic partner and an OEM cannot, however, have more than 49% FDI. They must be owned and controlled by resident Indian citizens. The OEMs, for their part, must obtain prior licence for technology transfer from their own governments.

These provisions are likely to prove onerous. For one thing, the FDI ceiling of 49% will give pause to foreign manufacturers in tying up with Indian firms. If the experience of the past few years is anything to go by, then OEMs will be reluctant to transfer significant technology for production in India under an arrangement that gives them insufficient control. To be sure, the policy does talk about protecting the property rights of OEMs. But this may not be sufficient assurance. What's more, the governments of the OEMs may also be disinclined to permit significant technology transfer under these conditions.

In consequence, OEMs may choose to supply the advanced sub-systems and components from abroad while enabling the Indian strategic partner to manufacture only lowerend technology in India. On the flip side, the Indian firms may be uncomfortable with the idea of being forced to bear all the risks associated with the venture without commensurate control over key technology.

Firms on both sides have voiced such concerns in the past. Instead of brushing them aside, the Ministry of Defence could consider other options to circumvent the problem of foreign producers being majority stakeholders. The government could mandate that the control of the entity cannot be transferred without its

concurrence, that it be managed and staffed exclusively by Indians. Such workarounds could help secure higher levels of technology transfer, which alone can ensure that the larger, strategic objectives of the policy are met.

THE TIMES OF INDIA

Tue, 13 June, 2017

Can def supplier be held liable for injuries during service, HAL asks SC

By Abhinav Garg

Challenging a Delhi high court verdict, Hindustan Aeronautics Ltd (HAL) asked the Supreme Court whether a defence supplier or manufacturer could be held accountable for injuries sustained in military service. Last month, Delhi HC held HAL -a government entity engaged in maintenance and servicing of fighter aircrafts of IAF liable, and asked it to pay Rs 50 lakh as compensation to an IAF pilot who suffered serious injuries after his MiG 21 aircraft crashed in Rajasthan in 2005.

"Whether a supplier of military equipment is liable to compensate for any injury which arises out of and in the course of military service, especially when the supplier has followed all standard operating procedures and took all reasonable steps to ensure that equipment is free from defect?" HAL stated in its appeal, on which the SC has stayed the HC verdict till further date.

The Statesman
PEOPLE'S PARLIAMENT, ALWAYS IN SESSION

Tue, 13 June, 2017

New concept may meet human resource needs of full Earth

Using different parts of sunlight's spectrum to produce crops, generate electricity, collect heat and purify water could provide food, energy and water resources for the world's growing population, a team led by an Indian origin scientist has proposed. The world's human population is expected to grow from seven billion to more than 10 billion over the next two to three generations, leading to a "full Earth" scenario.

"This increase in population, coupled with rising per capita income and associated change in consumption habits, will put unprecedented stress on food, energy and water resources," said Rakesh Agrawal, professor at Purdue University in the US. "The grand challenge before us is to sustainably meet the needs of a full Earth using scarcer resources, and the sun is the key energy source to achieve this goal," said Agrawal.

He led a team which proposes a system that would use the entire solar spectrum to maximise resource production from a given land area. The concept, described in the journal Scientific Reports, works by separating and harvesting the three specific segments of the solar spectrum that are best suited to facilitate the production of food, energy and clean water.

In current practices, much of this spectrum is wasted because all of the sunlight falling on a given spot is used solely for one purpose, such as agriculture, energy production or water purification. The new approach would instead use the same land mass for all three purposes simultaneously through innovative technologies that split the spectrum into three segments and efficiently harvest sunlight.

A typical photovoltaic panel, when installed on farmland, casts a shadow and dramatically reduces plant growth and crop yield from the shadowed area. The proposed photovoltaic designs transmit photons responsible for plant growth while reflecting remaining photons in the solar spectrum to specially-designed

solar cells to generate electricity and collect heat for energy recovery and water purification. “The advantage of our proposed solution is clear,” Agrawal said. “With the three-way split, the entire spectrum is judiciously used for the production of food, energy and water resources,” he said.

Solar spectrum splitting to maximise electric power generation and heat recovery is well known, said Muhammad Ashraful Alam, Professor at Purdue. The proposed system could create solar-powered, selfsufficient communities - a major step towards full-Earth preparedness, Peter Bermel, an assistant professor at Purdue said. “Implementing this approach across agricultural land areas could supply extra electricity to the power grid, as well as freshwater supplies to other areas in need, thus improving global resilience,” he said.

THE ECONOMIC TIMES
WWW.ECONOMICTIMES.COM

Tue, 13 June, 2017

Musk's SpaceX Joins the Military

By Justin Bachman

US air force is trusting the billionaire to launch its secret space plane this summer, and the stakes are high

Not long ago, SpaceX founder Elon Musk cracked what he once labelled a monopoly for defence department space launches, successfully breaking into a business that was dominated by United Launch Alliance.

The defence department's appetite for space access is voracious, given the myriad reconnaissance, defence and communications roles there, coupled with a future where conflicts are almost certain to involve space assets. Musk's 2014 lawsuit against the government was settled out of court and the Pentagon cer tified SpaceX, also known as Space Exploration Technologies Corp., as a suitable supplier of military space launches.

SpaceX's first gig for t he military was in May when it launched a satellite for the National Reconnaissance Office. But in a very public sense, Musk and the government this summer will test the theory that cheaper space launches are suitable for sensitive military missions.

In August, SpaceX will carry one of the Pentagon's premiere yet highly classified platforms into orbit. The X-37B spy craft, an unmanned miniature version of the Space Shuttle, logs missions that are well over a year in length. The most recent X-37B sojourn ended in May after more than 700 days circling the Earth. Boeing has built two of the craft, with the first launched in 2010.The August blastoff will be the programme's fifth flight.

One major reason for SpaceX's appeal to Pentagon brass: Sticker price. With its launches starting around $ 61 million, Musk's company has been able to undercut its more established rival. United Launch Alliance, a Colorado-based joint venture of Boeing and Lockheed Martin, boasts an unblemished record of more than 100 launches, but it's still working to bring its cost below $100 million. It plans to do so by 2019.

SpaceX's new role as a military contractor is a key source of income for Musk's company and supplements its NASA contracts for resupply missions to the International Space Station. Its far more ambitious plan, flying astronauts to the ISS, is set for next year.

THE ASIAN AGE

Tue, 13 June, 2017

Wide variety of minerals found on Mars

Washington, June 12: Nasa's Curiosity rover has found a wide diversity of minerals in rock samples from Mars, which suggests that conditions changed in the water environments on the red planet over time.

Layers of rocks at the base of Mount Sharp on Mars accumulated as sediment within ancient lakes around 3.5 billion years ago.

Previous research has shown that the mountain's lowermost layers have variations in minerals that suggest changes in the area have occurred. In a study published in the journal *Earth and Planetary Science Letters*, scientists from Nasa's Johnson Space Centre in the US described on the first four samples collected from the lower layers of Mount Sharp.

"We went to Gale Crater to investigate these lower layers of Mount Sharp that have these minerals that precipitated from water and suggest different environments," said Elizabeth Rampe from Nasa.

"These layers were deposited about 3.5 billion years ago, coinciding with a time on Earth when life was beginning to take hold. We think early Mars may have been similar to early Earth, and so these environments might have been habitable," said Rampe.

The minerals found in the four samples drilled near the base of Mount Sharp suggest several different environments were present in ancient Gale Crater. There is evidence for waters with different pH and variably oxidising conditions.

Studying such rock layers can yield information about Mars' past habitability, and determining minerals found in the layers of sedimentary rock yields much data about the environment in which they formed.

At the base are minerals from a primitive magma source; they are rich in iron and magnesium. Moving higher in the section, scientists saw more silica-rich minerals. In the "Telegraph Peak" sample, scientists found minerals similar to quartz. In the "Buckskin" sample, scientists found tridymite.

Tridymite is found on Earth in rocks that formed from partial melting of Earth's crust or in the continental crust — a strange finding because Mars never had plate tectonics.

In the "Confidence Hills" and "Mojave 2" samples, scientists found clay minerals, which generally form in the presence of liquid water with a near-neutral pH, and therefore could be good indicators of past environments that were conducive to life.

The other mineral discovered here was jarosite, a salt that forms in acidic solutions. The jarosite finding indicates that there were acidic fluids at some point.

There are different iron-oxide minerals in the samples as well. Hematite was found near the base; only magnetite was found at the top.

Hematite contains oxidised iron, whereas magnetite contains both oxidised and reduced forms of iron. The type of iron-oxide mineral present may tell scientists about the oxidation potential of the ancient waters.

"We have all this evidence that Mars was once really wet but now is dry and cold," Rampe said.

"Today, much of the water is locked up in the poles and in the ground at high latitudes as ice," he said. "We think that the rocks Curiosity has studied reveal ancient environmental changes that occurred as Mars started to lose its atmosphere and water was lost to space," he added. — *PTI*

THE ASIAN AGE

Tue, 13 June, 2017

GSLV MK III: LAUNCHPAD FOR SPACE

Isro on Monday successfully launched its heaviest satellite yet, the G-SAT 19, into Geo-Transfer Orbit (GTO) onboard the agency's heaviest launcher to date — the GSLV Mk III — from the Satish Dhawan Space Centre, Shar, Sriharikota in Nellore, catapulting India into the small league of space-faring nations that are capable of launching four-tonne class satellites.

It was the GSLV Mk III's first orbital mission, with an indigenous cryogenic stage. GSLV Mk III can help the country to launch its manned space mission.

Currently, only three countries — the US, Russia and China — have the capability of launching manned missions.

Experts said the government would have to allocate ₹11,000 crore for taking the manned space mission.

BIG SUCCESS

43.43 metres
length of the rocket

3,136 kg
weight of GSAT-19, the heaviest satellite to be launched from the country yet

GSAT-19
will augment India's communication resources.

■ **MONDAY'S** GSLV mission is significant for India as Isro had been depending on foreign launchers for orbiting communication satellites weighing more than 2,300 kg

THE HINDU

Tue, 13 June, 2017

Harnessing the solar spectrum

Three-way split of sunlight can meet food, energy and water needs, says study

Using different parts of sunlight's spectrum to produce crops, generate electricity, collect heat and purify water could provide food, energy and water resources for the world's growing population, a study has said.

"Increase in population, coupled with rising per capita income and associated change in consumption habits, will put unprecedented stress on food, energy and water resources," said Rakesh Agrawal, professor at Purdue University in the U.S.

"The grand challenge before us is to sustainably meet the needs of a full Earth using scarcer resources, and the sun is the key energy source to achieve this goal," said Prof. Agrawal.

He led a study that talks of a system that would use the entire solar spectrum to maximise resource production from a given land area.

The concept, described in the journal Scientific Reports , works by separating and harvesting the three specific segments of the solar spectrum that are best suited to facilitate the production of food, energy and clean water. In current practices, much of this spectrum is wasted because all of the sunlight falling on a given spot is used for one purpose: agriculture, energy production or water purification.

The new approach would instead use the same land mass for all three purposes simultaneously through innovative technologies that split the spectrum into three segments and efficiently harvest sunlight.

A typical photovoltaic panel, when installed on farmland, casts a shadow and dramatically reduces plant growth and crop yield from the shadowed area.

The proposed photovoltaic designs transmit photons responsible for plant growth while reflecting remaining photons in the solar spectrum to specially designed solar cells that can help generate electricity and collect heat for energy recovery and water purification.

Global resilience

Solar spectrum splitting to maximise electric power generation and heat recovery is well-known, said Muhammad Ashraful Alam, a professor at Purdue University.

The proposed system could create solar-powered, self-sufficient communities, said Peter Bermel, an assistant professor at Purdue University. “Implementing this approach across agricultural land areas could supply extra electricity to the power grid, as well as freshwater supplies to other areas in need, thus improving global resilience,” he added.