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IIT-DELHI SIGNS MoU WITH ENERGY FIRM

New Delhi: In order to promote research in the field of renewable energy in the country, the Indian Institute of Technology (IIT) Delhi has signed a memorandum of understanding (MoU) with renewable energy company ReNew Power Ventures. The signing and exchange of the MoU took place at Rashtrapati Bhavan in the presence of President Pranab Mukherjee. Under the MoU, ReNew Power Ventures will set up a research facility at the campus of IIT-Delhi that will focus on renewable energy and storage. "The research facility will act as a catalyst for the promotion of research in the field of renewable energy in the country and will provide encouragement to students to go for research in renewable energy. This will help the renewable energy sector of Indian economy, which is growing at a very high rate," the MoU said. As part of the collaboration, both the company and IIT-Delhi will jointly propose research projects to be taken up by the research facility.

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Foreign students to pay ₹6 lakh annual fee at IITs

HT Correspondent

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NEW DELHI: Foreign students will have to pay ₹6 lakh annual fee for undergraduate and post-graduate courses in the IITs, according to the ministry of human resource development directive.

The ministry has asked all IITs to issue necessary directions in this regard.

The ministry said it felt that the international students' fee should at least compensate the expense incurred on their education. Indian students, however, pay about ₹2 lakh per year, officials said.

The proposal of conducting Joint Entrance Exam (JEE) abroad was cleared by the IIT council in August and exams will be conducted in Dubai, Bangladesh, Nepal, Sri Lanka and Ethiopia for the first time.

The ministry had in January decided that IITs would offer some seats to foreign students on supernumerary basis, which

means seats, would be added to accommodate them.

At present, foreigners can only join IITs as exchange students. The test will be a paper-pencil exam, same as the one held in India.

"The IITs are hoping to attract more international students from next year and this will increase their revenue to a certain extent too. At the same time it will make the institutes more diverse," said a senior HRD official. This year, the annual fee for B. Tech students was increased from ₹90,000 to ₹2 lakh.

There is a fierce competition to get into IITs.

More than one million aspirants appeared for the JEE main examination this year. The push for foreign students is not just driven by diversity concerns. Sources said the move would help in improving IITs global ranking as the number of foreign students was one of the major parameters for rating universities.

How IIT-Delhi is going about creating an ecosystem for women entrepreneurs

<http://economictimes.indiatimes.com/small-biz/startups/how-iit-delhi-is-going-about-creating-an-ecosystem-for-women-entrepreneurs/articleshow/55641099.cms>

On a lazy Sunday morning, a bunch of around 45 women with different business ideas sit in a classroom in Indian Institute of Technology-Delhi, taking notes on how to transport their ideas into successful business ventures. A session on the legal aspects of doing business is followed by a presentation on 'Being an Entrepreneur', which fleshes out the risks and rewards of starting up.

The women are in the age group of 18 to 57. Some are complete strangers to the startup arena, others have been there, still doing that. While the trajectories of these women are different, they have a common goal — to master the vocabulary of entrepreneurship. "IIT-Delhi is committed to creating an ecosystem for women entrepreneurs in the

country. You empower one woman, you empower an entire generation. There are many studies to show that women-led enterprises are more profitable. Our vision is to support these women entrepreneurs in every possible way... we wish to see more women founded enterprises and their increased contribution to India's GDP," IIT-Delhi director V Ramgopal Rao says. The spectrum of the businesses being mentored is broad — from organic farming, bee-hiving to tissue reproduction, online marketing to baking. The participants are ranked on a scale of 1 to 10 based on their experience or the lack of it — 1 is for a woman who has an idea and little else, and 10 for a woman who has a venture that's up, running and scaled.

"We want to create a culture where women empower other women through cooperatives and selfhelp groups," says Aparna Saroagi, chairperson of the Women Entrepreneurship and Empowerment Foundation, IIT-Delhi's initiative to train and empower women startup artistes.

The three-month free of cost course has two components: a Startup programme launched on October 1 for 30 women entrepreneurs who wanted to convert their ideas into a business; and an Accelerate programme launched on October 16 for 15 women entrepreneurs running businesses with revenues between Rs 25 lakh- Rs 3 crore. Here's a peek into the some of the women-driven ideas:

Mentoring Mantras, IIT-D Style

A three-month course started in October for women with startup ideas and those already running startups

From thousands of applicants, 45 were chosen

The course is free of cost and helps the women build their business ideas, connect with customers, network and attract funding

The women will stage a roadshow at IIT-Delhi in December to showcase their products

The next batch will start from January 2017

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PSUs set to make a comeback at IIT this year

VINAY UMARIJ
Ahmedabad, 28 November

Public sector units (PSUs) are set to make a comeback at Indian Institutes of Technology (IITs) campuses this final placement season. According to the premier institutes, confirmations from PSUs, especially from the core sector have been on the rise, ahead of the final placements process that begins on December 1.

For instance, while the Indian Navy and the Indian Space Research Organisation (ISRO) have already completed interviews at IIT-Madras, the likes of Oil and Natural Gas Corporation and Coal India have confirmed participation for campus placements. Among the core sectors, oil marketing companies (OMCs) such as Indian Oil Corporation, Bharat Petroleum Corporation Limited and Hindustan Petroleum Corporation Limited — and heavy engineering firms such as BHEL are likely to visit IIT campuses too.

According to placement officials of various IITs, hiring through PSUs at IITs has been boosted by the Madras High Court ruling in favour of PSUs last year, allowing them to pick students from campuses. Also barring computer science, students from other streams are witnessing a growing inkling towards PSUs, especially in the oil and gas, and heavy machinery sectors. Most of the IITs *Business Standard* spoke to refused to divulge further details on names of recruiters in these sectors.

"We have established contact with several PSUs who have responded well and we have had core sectors show interest too. Two of them have already completed placements while others are expected to come soon," V Babu, advisor for training and placements at IIT-Madras told *Business Standard*.

Since not all PSUs follow the same recruiting pattern as the private sector recruiters, IITs have urged the former to visit during the placement season that begins in December for hiring on-campus.

"Some PSUs may come during the time of their hiring but we have requested them to maintain our placement time of December. The regular PSU recruiters will, however, be coming in December," said Debasis Deb, chairman of IIT-Kharagpur's Career Development Centre.

Punjab Kesari ND 29.11.2016 P-4

जेईई मेन्स आवेदन प्रक्रिया से पहले आधार कार्ड में मिली राहत

नई दिल्ली, (पंजाब केसरी): जो छात्र जेईई मेन्स के लिए आवेदन करना चाहते हैं और उनके पास आधार कार्ड नहीं है। ऐसे सभी छात्रों के लिए एक राहत भरी खबर है। बोर्ड ने छात्रों की समस्या को समझते हुए कई शहरों में आधार कार्ड केंद्रों की स्थापना करने के निर्देश जारी किए हैं। इसे लेकर सोमवार को बोर्ड में काफी हलचल का माहौल रहा।

बोर्ड द्वारा 104 शहरों को चिन्हित किया गया है। जहां जाकर विद्यार्थी आधार कार्ड का पंजीकरण करवा सकेंगे। पंजीकरण के लिए विद्यार्थियों

आधार कार्ड नहीं है तो रजिस्ट्रेशन नंबर से करें आवेदन

से कोई शुल्क नहीं लिया जाएगा। बोर्ड ने साफ किया कि यदि केंद्रों पर आधार पंजीकरण की सुविधा नहीं संभव हो पाती। तो केंद्र विद्यार्थियों को रजिस्ट्रेशन नंबर जारी करेंगे। इस रजिस्ट्रेशन नंबर को आवेदक जेईई मेन 2017 के ऑन लाइन आवेदन पत्र में भर सकेगा। सभी केंद्रों की जानकारी www.jeemains.nic.in पर उपलब्ध है। जिसे देखकर आवेदक अपनी सहूलियत के अनुसार संबंधित केंद्र से संपर्क कर सकते हैं। ये सभी केंद्र एक दिसंबर से सक्रिय हो जाएंगे।

इसके अलावा बोर्ड ने असम, मेघालय और जम्मू-कश्मीर को छूट दे दी है। यहां विद्यार्थी पासपोर्ट, आईडी कार्ड का इस्तेमाल कर आवेदन भर सकेंगे।

उल्लेखनीय है कि कुछ दिन पूर्व बोर्ड ने जेईई अभ्यर्थियों को अपना आधार कार्ड का नंबर देने के निर्देश जारी किए हैं। जिसके बाद से बोर्ड के पास कई छात्रों ने आपत्तियां भेजी कि कार्ड में कोई भी जानकारी गलत हो सकती है। छात्र उसे ठीक करवाने में लग गए तो सारा समय औपचारिकताओं को पूरा करने में लग जाएगा। ऐसे में कोई बीच का रास्ता होना चाहिए जिससे विद्यार्थियों को सुविधा मिल सके।

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The engineering duo who pedalled into green tech

Pi Beam Labs manufactures eco-friendly tricycles using pedal-assist technology

N RAMAKRISHNAN

Jacob Thekkkara and Visakh Sasikumar proudly show off the tricycle they have designed. They are at the IITM Research Park in Taramani, Chennai, and Jacob pedals a short distance on the tricycle to show how easy it is. Of course, the tricycle is not carrying any load. But, still with the pedal-assist technology that the duo has provided on it, they say it should be a cinch to move around with the 250-kg payload that it can carry.

The two have founded a company Pi Beam Labs, incubated at the IITM Research Park, which has sold one vehicle, to French multinational tyre maker Michelin for use in its plant near Chennai, to move materials inside the factory. It has orders for at least 30 more, which it hopes to fulfil in the next few months.

Looking for funds

Jacob, 32, Chief Technology Officer, and Visakh, 27, Chief Executive Officer, Pi Beam, are in the process of raising about ₹1.5 crore that they will use to strengthen the team, especially marketing capabilities.

Both of them are engineering graduates from Kerala and worked in different companies before landing up at IIT-Madras to pursue Master's in different programmes. That is where they met.

Visakh had registered a company to do something on renewable energy, but was stuck because his co-promoters had walked out of the venture for different reasons. That the two met up on campus proved fortuitous as Jacob's mechanical engineering background came in handy when they decided to pivot and pursue the pedal-assist tricycle business.

After studying the design faults in some of the tricycles that were in the market, Pi Beam

Pi Beam Labs initially plans to concentrate on Chennai and Bengaluru, then move into other cities such as Mumbai, Pune and Amaravati (the new capital of Andhra Pradesh) and the many smart cities that are coming up.

has adopted a single frame modular chassis for the vehicle, which overcomes problems of alignment in some of the other models. The vehicle has a proprietary assist technology, where the rider can choose how much assistance he or she wants from the

motor. It has an intelligent torque management system through which the torque sensor communicates the assistance required to the controller, which, Jacob says, describes as the vehicle's brain.

Torque sensor

"The moment you apply a force on the pedal, the torque sensor will sense the torque that is being applied and as per the logic, the motor will kick in. So, then the effort (of pedalling) reduces right from the very beginning itself," says Jacob. "It is completely pedal assisted. You have to keep



Jacob Thekkkara, Chief Technology Officer, and Visakh Sasikumar, Chief Executive Officer, Pi Beam Labs, with the tri-cycle they have designed. N. RAMAKRISHNAN

pedalling and the motor will run simultaneously," he adds.

"We have the entire chassis design. We have validated whether it will withstand the load," says Jacob. Pi Beam sources the components from vendors and assembles the vehicle at the IITM Research Park.

Thanks to the incubation ecosystem, the two were able to tap into mentors from different fields to help in their project. MM Murugappan of the Chennai-based Murugappa group, is one of the mentors at the research park and through him, Pi

Beam was able to connect to TI Cycles, which is part of the Murugappa group, to fine tune their supply chain management.

Three variants

Pi Beam's tricycle comes in three variants - the basic model Titan priced at ₹30,000, Pluto at ₹60,000 and Mercury at ₹90,000. Titan has only the manual option, but has disc brakes and a gear mechanism. Pluto is the entry level electric tricycle with a 250W motor, intelligent torque management system and an optional gear mecha-

nism. Mercury, the top-end model, has a 400W electric motor, and has facilities for solar charging of the battery. The canopy covering the cargo has solar panels that can charge the battery on the go. The solar panels are sourced from Cygni, another IITM-incubated company.

According to Visakh, their venture has three potential markets that it can address. One is the private work spaces, which includes all factories, IT parks and universities. The latter two for moving people around. "Whatever space you take, they have some-

thing that needs to be carried," he explains. Then there are the public work spaces, which includes various applications for moving cargo such as gas cylinders, garbage collection and ice cream carts. The third category, according to him, is where last mile connectivity is required - say, from a metro rail station to the nearest bus stop. These vehicles are non-polluting and will find use in smart cities that are being set up in India, he adds.

Besides, says Visakh, there is a huge export market that is waiting to be tapped. In Bangladesh, Malaysia and Thailand, these tricycles can be used for public transportation or for ferrying tourists in pilgrimage spots. The vehicle has a top speed of 25 km an hour.

"We have got initial orders. We need to deliver them, make them happy customers," says Visakh. Michelin alone, he adds, has requirement for quite a few more of these vehicles, which they hope to tap into.

Expansion plans

Their plan is not to set up a plant, but be asset light and source components from various vendors. The company that supplies them the frame can easily handle up to 50,000 orders a year, adds Visakh. They initially plan to concentrate on Chennai and Bengaluru, then move into other cities such as Mumbai, Pune and Amaravati (the new capital of Andhra Pradesh) and the many smart cities that are coming up.

"Fourth year is the year of scale up. If we feel that we have enough orders and we are generating revenues and it makes sense to have a factory, then we will put up one," says Visakh.