

For Healthy DIAT of Entrepreneurs

By Mubarak Ansari

Defence institute sets up incubation cell with industry tie-up for students and faculty to get 'Make in India' opportunities and nurture their skill sets



Defence minister Manohar Parrikar at DIAT's convocation ceremony last week.

Pune's Defence Institute of Advanced Technology (DIAT) is collaborating with fellow institutions as well as industries to offer optimum entrepreneurship opportunities for its postgraduate students in a unique initiative that promises benefits for both. "We have recently initiated an incubation cell to promote entrepreneurship for postgraduate students and faculty with the support of industries. DIAT has signed memorandums of understanding with premier institutes and Indian industries," shared DIAT vice-chancellor Dr Surendra Pal. The institute has also started a practice school with the industries.

Dr S Christopher, secretary of the department of defence R&D, said, "From the 2016-17 academic year, DIAT will induct four new

specialisations on unmanned aerial vehicle (UAV) design and software engineering. DIAT has published 362 research papers in journals of repute." The institute's mission is to evolve as an innovative research university to develop indigenous and contemporary defence-related technologies in navigation systems, wireless sensors, efficient propulsion systems, weapon systems for defence services and technological solutions to the services to optimise combat battlefield effectiveness. Spread over a sprawling 496-acre campus overlooking the Khadakwasla Lake in Girinagar, about 20 kms from Pune, DIAT receives funds from the department of defence research and production of the Government of India.

A senior faculty member told *Pune Mirror*, "The Make in India project is set to boost entrepreneurship among students, who already get to interact with various laboratories of the Defence Research and Development Organisation (DRDO). Defence production involves vast knowledge and products are sourced from various vendors. So, this will give ample opportunity to our students who already know the technology."

Over the past one year, DIAT has filed 23 patents and has over 200 publications. It has also developed composites that could be used to build tyre-friendly and skid-proof roads. The project was to deliver the highest quality of composite roads. Last year, the project was awarded the green and innovative product of the year by the central government. "The main focus of the institute is to provide unique and innovative teaching- learning environment in cutting-edge technology for defence and R&D. The aim is to develop manpower for research laboratories and industries to develop and work on indigenous technologies relevant to the nation's security. What makes DIAT exclusive is that fresh students have an opportunity to interact with service officers who are doing their M Tech and share their field experience with them. The students are encouraged to do project work in DRDO labs, public sector units and industries," Pal added.

All railway coaches to have bio-toilets by 2019

Railways says all 55,000 coaches would be fitted with 1,40,000 bio-toilets by 2019 under its Swachh Rail-Swachh Bharat programme

New Delhi: Indian Railways will fit bio-toilets on all its coaches by 2019, two years ahead of schedule, a government official said.

“By 2019, all 55,000 coaches of Indian Railways would be fitted with 1,40,000 bio-toilets,” Railway Board member (mechanical) Hemant Kumar said at a conference on waste management in railways at Vigyan Bhawan on Monday. “Till 31 March, 2016, we have installed around 35,000 bio-toilets in 10,000 railway coaches and are quite confident of achieving this target.”

Train toilets in India have always emptied human waste on to railway tracks, an unhygienic practice that also corrodes tracks. Under its Swachh Rail-Swachh Bharat (Clean Rail-Clean India) programme, railways had planned to phase out such toilets by 2020-21.

According to a railway ministry official who did not want to be identified, apart from the rail budget, railways is also tapping corporate social responsibility (CSR) funds and adaptation and mitigation funds from the central government to pay for the bio-toilet installation. Besides, starting June, 1% of all project costs would be given to the environmental directorate of the railways which was set up last year, and spent for environmental purposes.

According to estimates by RITES, an engineering consultancy, Indian Railways generates 6000 tonnes solid waste from trains and passengers at railway stations every day, out of which about 4,000 tonnes of human waste is dumped directly onto the rail tracks.

In 2014, Indian Railways in collaboration with Defence Research and Development Organisation (DRDO) developed a bio-toilet. Flushing a bio-toilet discharges human waste into an underfloor holding tank where anaerobic bacteria remove harmful pathogens and break the waste down into neutral water and methane. These harmless by-products can then be safely discharged onto the tracks without causing corrosion or foul odours. A stainless steel bio-toilet set with six chambers costs around Rs.90,000.

Indian Railways, which consumes 1000 million litres per day (MLD), is also planning to increase its water-recycling capacity from 12 MLD to 200 MLD in the next five years, Railway Board member Kumar added.

Railways environment adviser K. Swaminathan said water recycling will be a key feature of railways' environmental sustainability effort. Around 40 water recycling plants are being constructed and commissioned. He added that Indian Railways has already conducted water audit at 85 locations in 2015-16.