

Ranging from Healthcare to Defense, IIT Hyderabad demonstrated IInventiv Exhibition's Industry-ready Technologies

Highlights:

- *Out of 75 selected innovations from 23 IITs, IITH exhibited 6 Industry-ready technologies*
- *Included 1 special showcase demonstration out of 6 of the IInvenTiv Exhibition in Delhi on Electric Vehicle (EV)*
- *Technologies from readiness level TRL-6 to TRL-9 were showcased to strengthen the Industry-Academia connect*

Hyderabad, October 06, 2022: For the first time, all the 23 IITs of the country will come together for a mega Research & Development Fair to be held from October 14-15, 2022, at the Indian Institute of Technology Delhi premises. The inaugural session will be graced by Hon'ble Union Minister for Education and Skill Development and Entrepreneurship Shri Dharmendra Pradhan. A Steering Committee headed by Dr Pawan Goenka, Chairman, BoG IIT Madras and Dr BVR Mohan Reddy, Chairman, BoG IIT Hyderabad (IITH) and IIT Roorkee, has been assigned to look after the event. Named IInvenTiv, the event aims to create holistic awareness around the research and innovation work being done by the IITs and seek collaborative avenues among state universities and institutes, industry, and the IITs for better development and reach of the innovations at the grassroots level. ***In the able leadership of Prof B S Murty, Director, IITH, 7 out of 83 selected innovations for IInvenTiv were exhibited as mentioned below on the IITH Campus to demonstrate how the innovation quotient is augmenting & inventions are nurtured at IITH.*** A Media conference is also conducted in Hybrid mode to explain the technologies further by Prof B S Murty, Director, IITH, Prof C Krishna Mohan, Dean (PCR), Innovators of these technologies & Ms Mitalee Agrawal, PRO, IITH.

Talking about the significance of these technologies for the betterment of society & advancement of the industry, Prof B S Murty, Director, IITH, said, "IITH has a strong focus on innovation, and our philosophy is reflected in our motto "Inventing & Innovating in Technologies for Humanity (IITH). The demonstration of these 7 technologies reflects how aligned our goals are with the concept of thinking globally & acting locally to realize our Hon'ble Prime Minister's vision of Aatma Nirbhar Bharat. I am confident that such efforts will exponentially increase in the near future. Our 100+ startups have already created more than 1000 jobs and generated more than Rs. 800 Crores of revenue".

Addressing the media during the event, Prof C Krishna Mohan, Dean (Public & Corporate Relations), said, "Industry connect is the prime objective of us to remain relevant with the time. Events like IInvenTiv are a great platform to bring Industry & academia to work hand-in-hand. We are going to have many such avenues to work together & grow together".

IITH IInventiv Technologies:

1. Communication Technologies (including education and 5G)

Team led by Prof Kiran Kuchi, Department of Electrical Engineering & Founder of WiSig Networks, has demonstrated how his novel innovation NB-IoT is cable of interfacing with existing 4G&5G platform for applications like Tracking like Wearable device for human movement & Vehicle tracking & Smart measurement device like Smart Meters. The technology is even compatible with the latest development happening at IITH in the field of 6G, that we assist in communication over satellite applications planned to deploy by 2029, and it is at the TRL 6 readiness level.

2. Healthcare (including devices and digital health)

2.1 ArmAble: ArmAble is a game-based bilateral passive therapy device that augments active movements in patients. Performing high repetitions and high-intensity active exercises with ArmAble assists the brain in rewiring itself, thus helping build new neural connections in the brain as a result of neuroplasticity. ArmAble can benefit patients (pediatric/adults/geriatric) suffering from hemiplegia/hemiparesis due to conditions such as Stroke or TBI. Patients suffering from other conditions such as Spinal Cord Injury, Multiple Sclerosis, Cerebral Palsy, Frozen Shoulder etc. ArmAble is commercial and is deployed in more than 25 Clinics across India. It is at the TRL 9 readiness level.

2.2 DuroKea Technology: Despite ongoing prevention efforts over the last decade globally, Health Care Associated Infections (HAI) are a serious problem where 10-19 % of patients will acquire HAI during their hospital stay, resulting in morbidity, mortality, and increased costs. Antimicrobial Resistance (AMR) is associated with HAI; both issues are becoming a major threat to the country as cases have increased enormously. Maintaining 24x7 hygiene (hand and surfaces) is crucial in controlling pathogens and HAI transmission. DuroKea Technology, self-disinfecting surfaces nanotechnology developed at the Indian Institute of Technology (IITH), is a unique one-of-a-kind, providing innovative, long-lasting hygiene products to stop the spreading of germs and prevent HAI. It is at the TRL 9 readiness level.

2.3 nLite360TM: The team had done an extensive clinical immersion for 1 year in private and govt, settings in India to validate the need and solution with their stakeholders. nLite360® is an Intelligent Phototherapy System that provides customized Phototherapy for Neonatal Jaundice. The device is designed to solve two problems: 1. To address dynamic conditions of newborn jaundice ranging from mild to severe conditions & 2. Provision for uninterrupted treatment while breastfeeding and Kangaroo Mother Care. As the device is designed as a desktop model, it is compliant to treat the baby both in NICU settings and at home under the care of its mother & doctor's supervision. As the device is battery-powered, it can be used in resource-constrained settings or rural hospitals. The product is also supported by BIRAC, IIM Calcutta and ICMR. To meet the requirements of manufacturing and scalability, the Prototype was tested as per the Medical Device safety standards. It is at the TRL 6 readiness level.

3. Defence and Aerospace

Rapidly deployable lightweight bridge system: A lightweight man-portable composite bridge system is developed. The bridge can support a load of a 1.5-ton vehicle over a 9-meter span and can be disassembled into 12 segments. Each segment of the bridge weighs only 18 kg. The bridge can be dismantled and can be carried by a team of 12 personnel. The bridge is made of carbon fiber composites, high-strength syntactic foam, and high-strength-aluminium alloy-FRP composite gusset plates. The bridge has two types: (i) permanent connections within each segment and (ii) field connections between the segments. The bridge deck consists of sandwich CFRP panels. It is at the TRL 7 readiness level.

4. Environment and Sustainability (including air, water, and rivers)

An Improved Sequential Batch Reactor for Wastewater Treatment: The project aimed to improve the features of basic or conventional Sequential Batch Reactor by incorporating novel features such that the modified SBR can form an important component of containerized wastewater treatment systems. The technology was initially developed for small- and medium-scale industries and residential communities. However, at a later stage, it was realized that the innovative concept of the design and the improved features could be applied to larger site-built systems as well. The novel features of the reactor ensure uniform aeration and mixing and provide better control of sludge retention and wasting. An efficient decanting mechanism improves solids separation and ensures a better quality of the treated effluent. Recently, a full-scale effluent treatment plant has been constructed and operationalized. The improved SBR constitutes an important component of the ETP. It is at the TRL 9 readiness level.

5. Electric Vehicle:

TiHAN: NMICPS Technology Innovation Hub on Autonomous Navigation Foundation (NM-ICPS TiHAN) is a Section 8 company founded at IITH. Department of Science & Technology (DST), Govt of India, under the National Mission on Interdisciplinary Cyber-Physical Systems (NMICPS), has sanctioned the prestigious Technology Innovation Hub to IITH in the technological vertical of Autonomous Navigation and Data Acquisition System (UAVs, ROVs, etc.). TiHAN is a wholly funded Technology Innovation Hub in IITH by the Government of India through DST under NM-ICPS, which is a Pan India Mission and covers the entire gamut of India, including Central Ministries, State Governments, Industry and Academia. TiHAN has a prime focus on the development of Electric Vehicles & Smart Mobility technologies at IITH & various innovations from TRL - 1 to TRL 6 flourishing at this CoE at IITH.

PureEV: PURE acronym stands for Power Using Renewable Energy, and true to its name, ever since its inception at IITH, the company has focused on enabling the transition to sustainable energy sources. Energy storage technology has been a key area of focus since its inception, and the Company has developed strong expertise in Lithium battery technology. The company management team brings significant experience from academia and the energy industry. Incubated at IITH, the company is in the business of manufacturing electric scooters and motorcycles under the brand “PURE EV” and high-performance Lithium batteries under the brand “PURE Lithium”. The company has set up a dedicated EV and battery manufacturing unit measuring over 1 lakh sqft and has a dedicated facility for R&D for EV powertrain development and testing. PURE is currently one of the leading EV2W brands in India and also has a dominant position in exports to South Asian countries Nepal and Bhutan! The company is focused on building products beloved by the mass consumer and building a trustworthy brand name in EV. It is at the TRL 9 readiness level.

For details about InvenTiv, visit <https://iitshowcase.com/>

About IIT Hyderabad

Indian Institute of Technology Hyderabad (IITH) is one of the eight new IITs established by the Government of India in 2008. In a short span of **14** years, the institute has become a top-ranker. It has **286** full-time faculty, **~3,800** students, **18+1** Departments + Centre for Interdisciplinary Program, nearly **200+** state-of-the-art laboratories, and five research and entrepreneurship centers. The institute has a strong research focus with approx. Rs **535+** crore of sanctioned research funding, with PhD scholars accounting for about **30%** of total student strength. IITH has more than **7,500+** research publications with **1,00,000+** Citations, **190+** Published Patents, **1,700+** sponsored/consultancy projects with **500+** running projects, and about **100+** startups.

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