

The quest for ingenious ideas

From superhero robots to UAVs that can reach inaccessible areas, 'Quest Ingenium 2012' was a revelation of what engineering students could produce if given the right platform

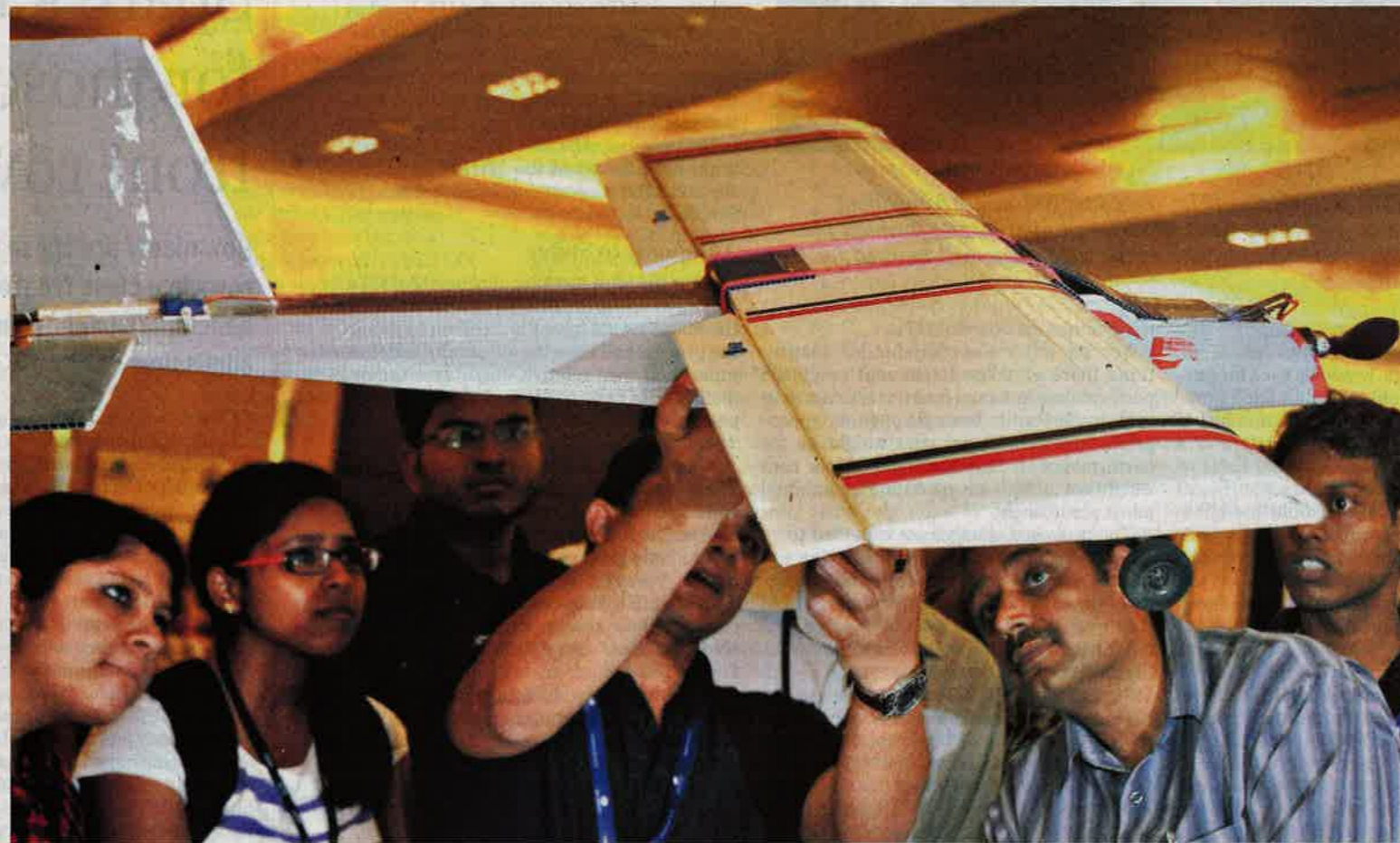
STAFF REPORTER

Engineering is meant to be a field that offers unlimited scope for innovation and creativity. But to what extent this is true in our engineering colleges is debatable.

When aspiring engineers watched the movie '3 Idiots', they fully identified themselves with the clash of intentions — the faculty members emphasising on examination scores while the students would rather apply skills they picked up during the course to create fascinating possibilities to aid the future generations.

'Quest Ingenium 2012', the finals of which was held in Bangalore last week, was a revelation of what engineering students could produce if given the right platform. From superhero robots to UAVs that can reach inaccessible areas, the competition threw up some promising creations.

From applications from over 200 colleges, the best nine were chosen to showcase their ingenious skills. The competition began in October 2011 when participants were asked to prepare projects based on topics related to aerospace, mechanical engineering, electrical electronics, and industrial engineering. After an internal evaluation, the best nine were shortlisted for the finals.



Students explaining to visitors about their invention at the Quest Ingenium national inter-collegiate engineering design contest. — PHOTO: V. SREENIVASA MURTHY

Gopalakrishna M. Kamath, stress specialist at Bombarrier Aerospace, Bangalore; Gopalan Jagadeesh, Department of Aerospace Engineering, Indian Institute of Science (IISc); C.V. Venugopalan, chief engineer, Quest, Bangalore; and U. Chandrashekhar, additional director at Gas Turbine Research Establishment (GTRE), were the jury members.

Here is a lowdown of what the best of the lot produced:

Renewable Energy Management Energy presented by Foot Step Power Generation, from Hyderabad Institute of Technology and Management, Hyderabad:

The project showcased the generation of electrical power as a non-conventional method by simply walking or

running on footsteps. The project showed how non-conventional energy using footsteps can be used to convert mechanical energy into electrical energy. A piezoelectric sensor along with embedded technology may be used for this purpose. This makes the system efficient and reliable. A micro controller and liquid crystal display (LCD) are some of the requirements for this model.

The project proposes the utilisation of wasted energy of human locomotion, especially in highly populated countries such as India and China, by conversion of force energy into electrical energy.

Photon Lighting System presented by Photon, from Kakatiya Institute of Technology and Science,

Warangal:

With a vision to illuminate the future, the Photon group presented its model which focused primarily on the conservation of energy and generation, of the same through other renewable means. The usage of electric power and photon lighting to generate energy is the main idea behind the project. The group threw light on the concept of photon lighting and explained how the mechanism of photon lighting is a modification of the solar lighting system.

The sun, which was a main

source, is being replaced by an electric bulb. The advantages of this model include: no direct power supply, eco-friendly, economical (cost is approx Rs. 350) and its compact size. The model can be used to supply continuous power which is being stored in battery, as well as to charge mobiles, in battery-driven calling bells and household lighting systems.

Design and Development of Multilink Spatial Hyper Redundant Robot presented by Tech Asimovs, from PSG College of Technology, Coimbatore:

(This was the winning project of the competition)

The group developed a robot that is unique in nature compared to conventional robots. The structure resembles an elephant trunk. The group focused on the efficiency of the serial manipulator (multilink spatial hyper redundant robot), which may be able to reduce the dependency on human energy particularly in a challenging environment (such as nuclear disasters). The team members informed the audience that they were currently working on the design of one such manipulator that can function in a hassle free milieu.

Tele-operated Fire Fighting-cum-Surveillance Bot presented by Dhruvam, from BVBCET, Hubli:

The working model includes a bot with surveillance capability which attempts to aid fire fighters in their rescue mission, by pinpointing the location of the victim stuck in the accident. The tele-operated bot requires human instinct to rescue the victims. The project is an integration of the fire fighting system as well as the autonomous system. The wireless camera gives the video feedback which acts as the eyes for the operator. The fire extinguisher eliminates any obstruction in the path of the bot.

Design and Fabrication of Radio-Controlled Surveillance Vehicles by Soaring Eagles, from Siddaganga Institute of Technology, Tumkur:

(This team was the second runner-up of the competition)

The main objective was to design and fabricate robust and cost-effective radio-controlled vehicles that can be used for surveillance purposes. The team created an aerofoil design and constructed a wind tunnel where the lift generated by the aerofoil was tested. Thereafter, a smoke flow test on the aerofoil was performed. The model also involves a camera and a payload trapdoor to function. This model was created to perhaps assist the military in their missions.

Energy-Efficient Ground-water Drill by Borewell, from Gogte Institute of Technology, Belgaum:

(This team was the first runner-up of the competition)

The project was made keeping in mind the necessity of providing water, particularly in the rural areas. With the help of an energy-efficient device, ground-water drilling is possible that conserves energy and reduces human efforts. The essential parts required include a bearing under the wheel, a winch, pulleys, and a pump. The group showcased how this model would be ideal for shallow ir-

INSIDE



- 2 EXAM TANGLE ENGG. ADMISSIONS
- 2 RIGHT COURSE HOTEL MANAGEMENT
- 3 U.S. EDUCATION CONSUL COUNSELS
- 4 NEW VISTAS STUDENTSPEAK

rigation wells needed for agriculture and its requirement in the villages which continue to crave for water day after day.

Flapping Wing Aerial Vehicle by the Flyingspur, from Manipal Institute of Technology, Manipal:

The model has been aimed to design a Flapping Wing Aerial Vehicle (FWAV) through a biomimetic approach. The group has focussed on flapping motion. To operate, the FWAV requires a lightweight design, flight controls, energy supply, power transmission, and a low Reynolds number. The rotary actuator generates a spatial mechanism. The flying pattern of birds is the concept behind this project.

Vehicle Takeoff and Landing Micro Aerial Vehicle with Ducted Design by Night Furi, from Dhana-lakshmi Srinivasan College of Engineering and Technology, Chennai:

Unlike most Unmanned Aerial Vehicles (UAVs), which require a fixed wing design, the Vertical Take Off and Landing (VTOL) UAVs with ducted design do not have wings, but rely on rotors inside a duct to generate lift.

The model is aimed to benefit several areas such as serve as a probe for accessing inaccessible areas and also as a reconnaissance and countermeasure tool in electronic warfare.

Over 200 colleges applied, and the best nine were chosen to showcase their skills