SCIENCE & TECHNICAL COMMITTEE, RGIPT

WINTER SCHOOL 2K19

BRIDGING THE SKILL GAP

INAUGURATION

Waquar Kaleem, Organizing Secretary, S&T Committee explained the theme and the motivation behind S&T Committee's Winter School. This was followed by lighting of the lamp and an address by the Chairperson of the S&T committee, **Dr Arshad Aizaz**. The audience was further addressed by **Dr Alok Kumar Singh**, Dean of Student Affairs, he spoke about the importance of bridging the skill gap and meeting the requirements of the industry. He spoke about the challenges of accomplishing the curriculum course and also imparting additional knowledge which is the need of the hour. **Dr Umaprasanna Ojha**, Dean of Academic affairs was then invited to address the audience, he highlighted the importance of data science in today's world, and how data is the most important commodity of our nation and the way in which we handle this data will be a determining factor for our future.

In the end the audience was enlightened by the **Prof P.K Bhattacharya**, Director RGIPT. He appreciated the initiative of S&T committee and also put forth a varied perspective on how along with gaining technical skills it is equally important to build our character and introspect often and ponder upon discovering life.

"Winter School is a technology teaching program by the **Science & Technical Committee**, RGIPT wherein students learn things which are beyond the realm of an ordinary classroom."

Dr Arshad Aijaz

Dr Alok Kumar Singh

Dr Umaprasanna Ojha

In this rapidly changing world, the goal of an ideal engineer must be to keep his skill set updated. However, the most that we learn at our academic institutes is knowledge, whereas the most that our jobs require is skills. This increases the costs for the companies to acquire & train talent and in essence, it increases unemployability. That's the gap we are trying to bridge by imparting skills that are in demand by companies with the: "Winter School 2019: Bridging The Skill Gap".

It is predicted that by 2020 there will be 14-25 million vacant jobs that we won't be able to fill. Also with the Big Crew Shift with 50% of the Oil & Gas Industry workforce retiring in the next 3-5 years, it becomes essential to empower the next generation leaders with capability and skills. Today with the rapid digitalisation in the Oil & Gas Industry, computational skills have to be additionally imbibed by us, the students of this field beside the extensive core subject knowledge as a part of our curriculum.


"WE MUST NOT BE MONOLITHIC"

DATA SCIENCE SCHOOL

Topics Covered

- Introduction to Machine Learning
- Broad Categories of Machine Learning Algorithms
- Machine Learning Algorithms Analysis
- Introduction to Python Programming
- Python Programming
- Usage of Python Standard Libraries
- Sorting & Searching Algorithms and Implementing them in Python
- Python Standard Library
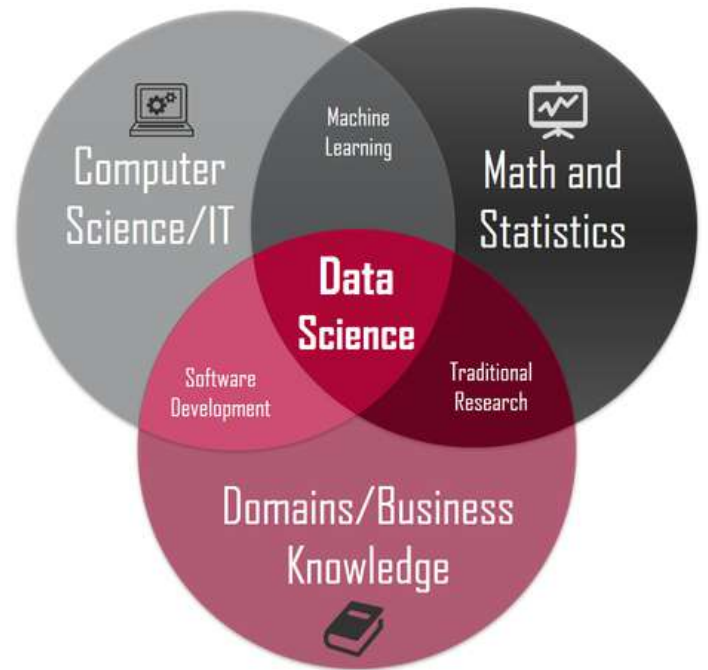
The world's most valuable resource is no longer oil, but data

COMPUTATIONAL FLUID DYNAMICS SCHOOL

Topics Covered

- Review of Fluid Mechanics & Advanced Mathematics
- Basics of CFD
- Practical Sessions – Hands-on experience for participants using Altair Hyperworks AcuSolve
- Setting the flow physics
- Meshing, Solution Strategy, & Solving
- Post-processing of results
- Case studies based on industrial problems in Energy Sector
- Group discussions
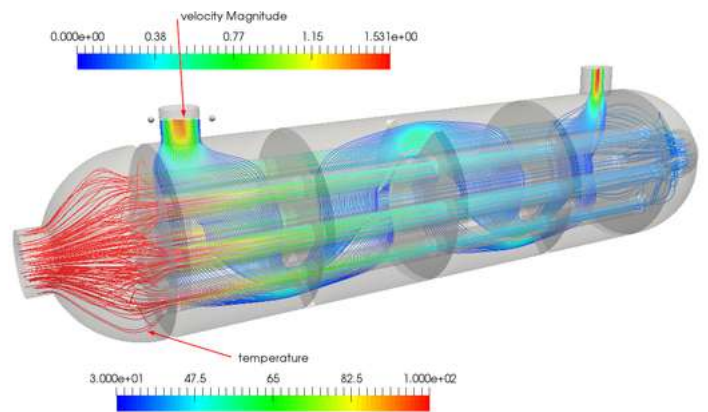
"When I meet God, I am going to ask him two questions: Why relativity? And why turbulence? I really believe he will have an answer for the first."

PROJECT EXHIBITS

Energy Flower

Renewable Energy Mapping Unit
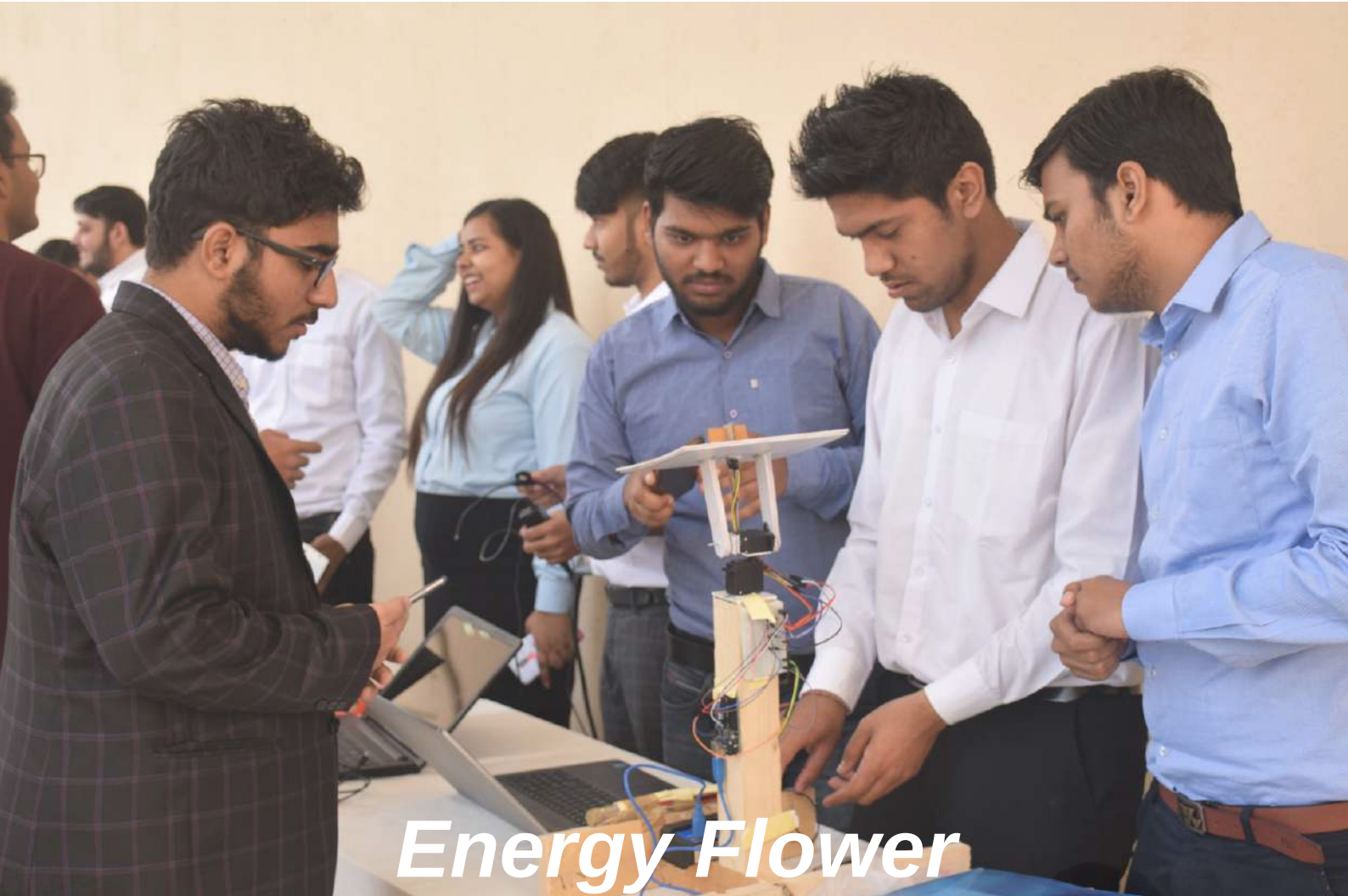
Wireless Electricity Transmission

Land Rover

Blue Bird (Data Analytics)

Wireless Gas Sensing Probe

Quadcopter

METAL AIR BATTERY

by Abhay Kedia, Mehul Gidwani, Tanishk Verma

Positive electrode: $LiCo^{3+}O_2 \xrightleftharpoons[Discharge]{Charge} x Li^+ + Li_{1-x}Co^{4+}_x Co^{3+}_{1-x} O_2 + e^-$

Negative electrode: $C + xLi^+ + e^- \xrightleftharpoons[Discharge]{Charge} Li_xC$

Overall: $LiCoO_2 + C \xrightleftharpoons[Discharge]{Charge} Li_{1-x}CoO_2 + Li_xC$
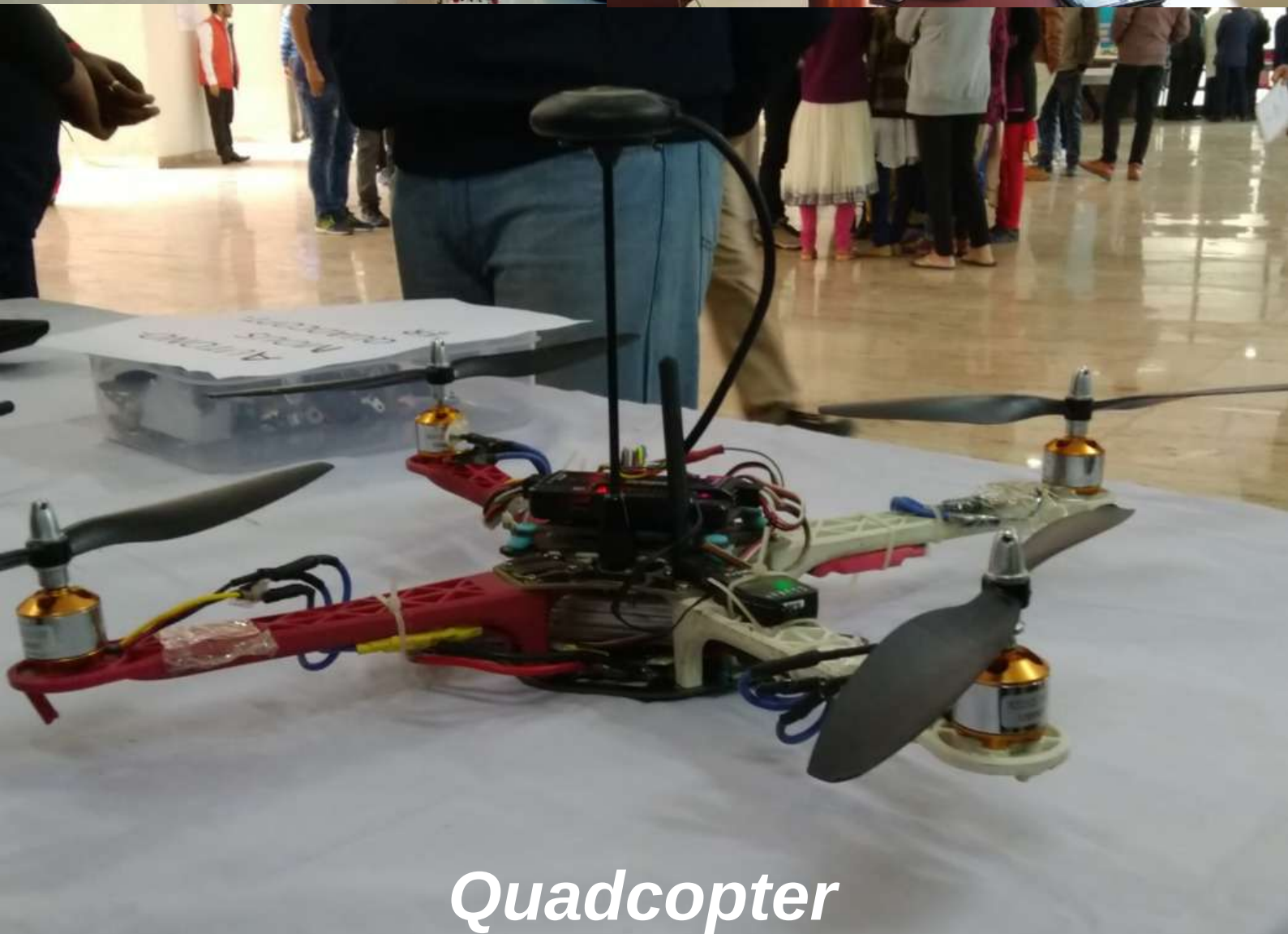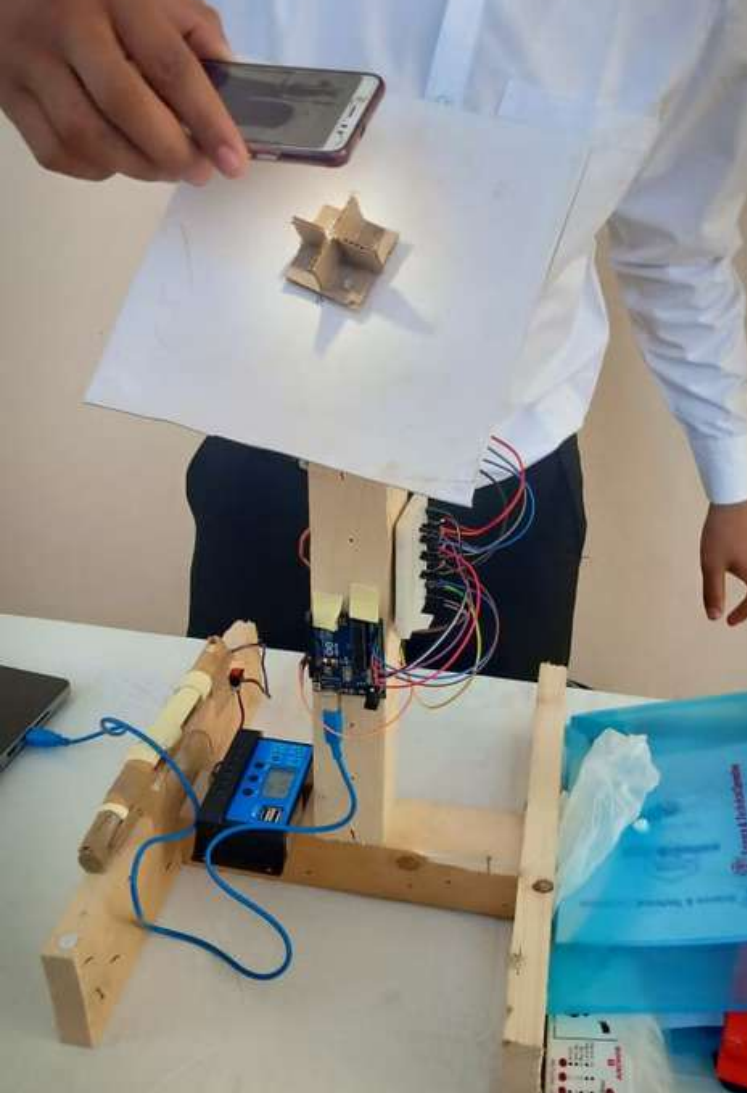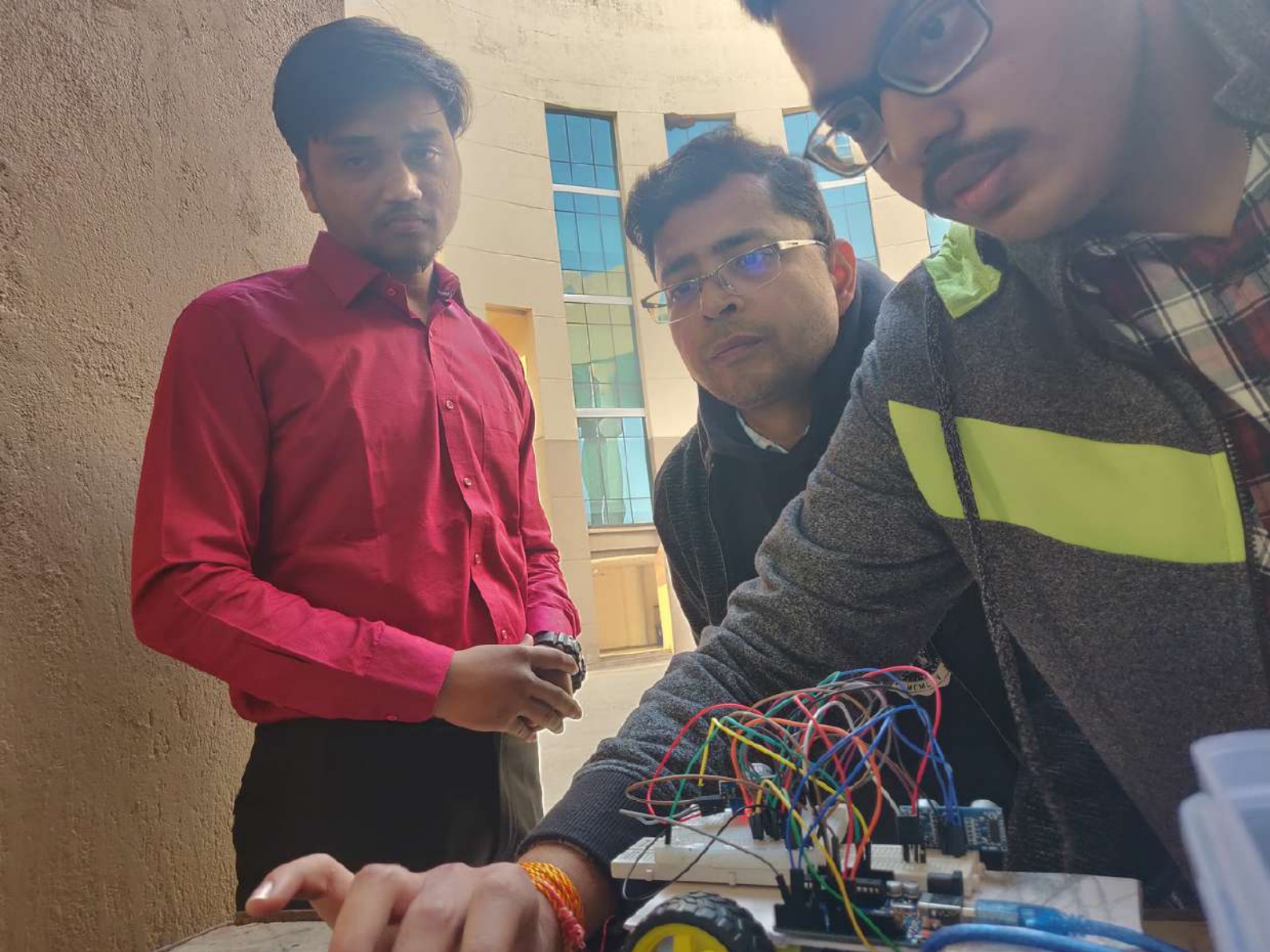
PROS

1. Eco Friendly- These are renewable sources of energy.

2. Low Maintenance- These have comparatively easily maintained then other rechargeable batteries.

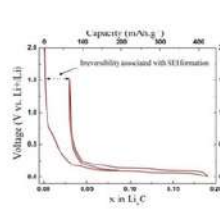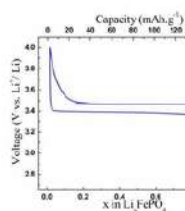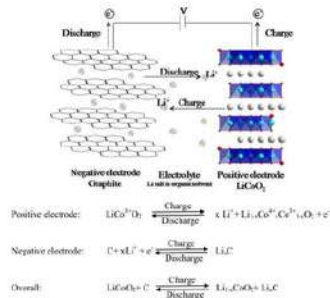3. Recharging makes it a better option for providing experimental purposes.

THEORY

.Metal air battery uses the concepts of electro-chemistry to maintain constant potential difference between the electrodes. For common instances the rusting of iron is an example in which the potential difference generates but is not used as the circuit is not completed.

MATERIALS

- NaCl solution, NaOH
- Multimeter
- Aluminum foil
- Crocodile clips
- Carbon Sheet
- Glass Container
- LED

RECENT ADVANCEMENTS

In a recent research paper published in 2010, it has shown that the nanoparticles increase the kinetics of metal air batteries by a huge margin.
Li-ion batteries has boasted the efficiency upto 77%.
And scientists has partly been successful in preparing nano structured manganse oxide.

TYPES

1. Lithium-Air
2. Sodium-Air
3. Calcium-Air
4. Zinc-Air
5. Magnesium-Air

CONS

1. Transportation costs- It takes a lot of space as compared to other batteries with similar potential.

2. Immature Technology- There are very few innovations, this technology has been discovered for quite a large time but still it is not used widely.

3. Availability of surrounding conditions. they are much responsible for the working of cell.

CLOSING CEREMONY

The ceremony started with the words of appreciation by the General Secretary of S&T Committee, Girish Joshi. Then vote of thanks was given by the Club Manager, Tinkering Lab, Anant Seth instilling in the audience the passion for learning, fabricating new ideas, urged to do something altruistic for the society. Prizes were distributed to the winners of the Tech Euphoria Project and Poster Exhibition by Dr Satish Sinha and Dr Arshad Aijaz. The event ended with memorable group photographs of the winners of the Winter School Project and Poster Exhibition and S&T Committee family.