A Report on Satish Dhawan Space Centre, Sriharikota
Industry Visit

Places Visited-

- Launch Pad 1
- Launch Pad 2
- Vehicle Assembly Building
- Mission Control Center
- Space Museum

Date - 19th March 2024

Pre-Visit-

Gokul Adithya, a first-year student, facilitated the visit of approximately 100 Spark IUCEE student chapter students to the Satish Dhawan Space Centre. The budgeting to the same was discussed and the number of participants was decided as 100. Necessary permissions were taken by our college as well as from the management Space Centre. Google forms were sent to 1st years to select the interested students. All the responsibilities of food, travel and accommodation were discussed among seniors and committees were formed to undertake the same along with some entertaining events. A briefing session Conducted to everyone to inform about the visit, rules to be followed, necessary safety precautions to be taken during the visit, etc.

Objectives of the Visit-

- Space Technology Insights: Our visit provided invaluable firsthand knowledge and insights into advanced space technology, including rocket propulsion, satellite systems, and mission operations.
- Launch Vehicle Assembly and Testing: Witnessing the assembly and testing of launch vehicles deepened our understanding of the complicated processes involved in preparing rockets for space missions.
- Educational Experience: The visit served as a comprehensive educational experience, bridging theoretical learning with practical applications in aerospace engineering and space exploration.
- Research and Development: Exploring the research and development activities at SDSC offered insights into the innovative initiatives driving advancements in space science and technology.

- Inspiration for Innovation: The engineering marvels and scientific breakthroughs showcased during our visit inspired us to innovate and contribute to future advancements in space exploration.
- Contribution to National Progress: Understanding the significant contributions of space technology towards national progress highlighted its role in telecommunications, remote sensing, and national security.

Departure: 18th March 2024

The departure time was set to 7pm to travel a night journey to reach our destination. Our beloved Dean Academics, Dr. Shanmukha Nagraj sir had come to the college to bid all the students a safety farewell. A devoted pooja was conducted by everyone in the Ganesha Temple of our college. A pooja was also conducted to the bus for good omen and the journey begun.

All the students were well settled in the bus and enjoyed the journey doing various fun activities like singing, dancing, reels etc. till 11pm and then rested for the rest of the night.

Arrival: 19th March 2023

We arrived at Sriharikota at around 4:00am in the morning and checked-in in our accommodations and had a 3 hour sleep. We had our breakfast and started our journey to Satish Dhawan Space Centre, Sriharikota.

Gateway to India's Space Exploration-

Satish Dhawan Space Centre, Sriharikota

The Satish Dhawan Space Centre (SDSC), located in Sriharikota, India, is the primary spaceport for the Indian Space Research Organisation (ISRO). Named after the renowned Indian scientist and former ISRO Chairman, Satish Dhawan, the centre serves as a crucial hub for launching satellites and spacecraft into various orbits.

Details about the Satish Dhawan Space Centre:

Location: SDSC is situated on Sriharikota Island, off the coast of Andhra Pradesh in India. It is approximately 80 kilometres (50 miles) north of Chennai.

Establishment: The space centre was established in 1971 and was originally known as the Sriharikota Range (SHAR).

Launch Vehicle Operations: SDSC is responsible for launching a variety of ISRO's satellite missions using different launch vehicles, including the Polar Satellite Launch Vehicle (PSLV) and the Geosynchronous Satellite Launch Vehicle (GSLV) series.

Facilities:

- Launch Complexes: SDSC has multiple launch complexes equipped for vehicle assembly, integration, and launch operations.
- Vehicle Assembly Building: This facility is used for the integration and assembly of launch vehicles before they are transported to the launch pad.

- Control Centre: The Mission Control Centre oversees launch operations and mission management.
- Range Operations Control Centre: Responsible for monitoring and controlling the entire range operations during launches.

Launch Vehicles:

- PSLV (Polar Satellite Launch Vehicle): Used for launching satellites into polar orbits.
- GSLV (Geosynchronous Satellite Launch Vehicle): Used for placing heavier payloads into geosynchronous transfer orbits (GTO).
- GSLV Mk III: India's heavy-lift launch vehicle designed for carrying heavier payloads to GTO and low Earth orbit (LEO).

Significance:

SDSC plays a vital role in India's space program, supporting various national and international satellite launches.

The centre has achieved several notable milestones, including the successful launch of Mars Orbiter Mission (Mangalyaan) and Chandrayaan missions to the Moon.

SDSC contributes to advancing India's capabilities in satellite technology, remote sensing, communication, and space exploration.

Public Outreach:

SDSC conducts educational programs, exhibitions, and outreach activities to engage students and the public in space science and technology.

History-

The Satish Dhawan Space Centre (SDSC), located in Sriharikota, India, has a rich history at the forefront of India's space exploration journey. Established in 1971 as the Sriharikota Range (SHAR), the centre was India's primary spaceport dedicated to launching rockets and satellites. Named after Dr. Satish Dhawan in 2002, the centre expanded its facilities and capabilities over the decades.

In the 1970s, SDSC commenced its operations with the successful launch of the Satellite Launch Vehicle (SLV-3), marking India's entry into space technology. Throughout the 1980s and 1990s, SDSC played a pivotal role in developing and launching the Augmented Satellite Launch Vehicle (ASLV) and the Polar Satellite Launch Vehicle (PSLV), which became workhorses for India's satellite deployment missions.

The 2000s saw significant advancements with the initiation of the Geosynchronous Satellite Launch Vehicle (GSLV) program, aimed at launching heavier payloads into geosynchronous orbits. Notable milestones during this period include the successful Chandrayaan-1 mission to the Moon in 2008.

In recent years, SDSC has continued to evolve, supporting critical missions like the Mars Orbiter Mission (Mangalyaan) in 2014, which made India the first Asian nation to reach Mars. Today, SDSC stands as a key player in the global space arena, conducting a wide range of satellite launches and advancing space technology for scientific exploration, communication, and national development. Its legacy reflects India's aspirations and achievements in space exploration, driven by indigenous innovation and a commitment to pushing the boundaries of space science and technology.

Places Visited-

- **Launch Pad 1**: This was an awe-inspiring site to behold. The moment students step onto Launch Pad 1, they feel the immense history and anticipation of space exploration. Unfortunately, photography wasn't allowed here, which made the experience feel even more exclusive and sacred. Standing at the very spot where rockets are launched into the unknown was truly humbling.
- **Launch Pad 2**: Like Launch Pad 1, this site had its own unique aura. While students couldn't capture the moment with a camera, the memories are vivid in their minds. Launch Pad 2 seemed to emanate a sense of readiness and purpose, like a silent giant waiting for its next mission.
- **Vehicle Assembly Building**: This colossal structure was mind-boggling in size. Inside, where the iconic spacecraft are assembled, no photography was permitted.

It added to the mystique of the place, allowing students to focus solely on the impressive engineering and craftsmanship on display.

- **Mission Control Centre**: Stepping into Mission Control was like stepping into history. The room buzzed with a quiet intensity, filled with screens and consoles manned by dedicated professionals. It was a privilege for students to witness the nerve centre of space missions, even without a camera.
- **Space Museum**: Finally, the Space Museum was a treasure trove of artifacts and information. Here, photography was allowed, which made it a delightful contrast to the other locations. Students captured numerous moments alongside iconic space gear and exhibits, rounding off their visit with tangible memories.

Overall, visiting these locations was an unforgettable journey into humanity's quest for the stars. The no-photography rule in certain areas heightened the sense of reverence and respect for the incredible work being done in the field of space exploration.

Key takeaways-

Insightful Space Technology Exposure: Experience first-hand the latest in space technology, from rocket propulsion and satellite design to mission planning, gaining valuable insights into the complexities of space exploration.

Educational and Inspirational Opportunity: Engage in an enriching educational experience that bridges theory with practical application in aerospace engineering and space science. Witnessing SDSC's research, development, and innovations inspires a passion for STEM fields and highlights the significant contributions of space technology to national progress.

Conclusion-

The visit of SPARK, the IUCEE-RVCE Student Chapter, to Satish Dhawan Space Centre, Sriharikota, was a highly enriching and insightful experience. Witnessing the operations and functions of such a prestigious space centre provided us with practical exposure and deepened our understanding of complex engineering processes involved in space exploration. This visit not only broadened our knowledge of aerospace technology but also emphasized the importance of innovation, precision, and teamwork in achieving remarkable feats in the field of science and technology.

Moreover, interacting with professionals at the space centre and witnessing real-world applications of theoretical concepts was invaluable for our academic and professional growth. The visit has inspired us to pursue excellence in our studies and future careers, instilling a deep appreciation for the significance of space research and its impact on society. We are grateful for this opportunity and look forward to applying the lessons learned to our future pursuits in engineering and technology.