NARAYANA ENGINEERING COLLEGE::GUDUR
NAAC 'A' GRADE (AUTONOMOUS)
Dhurjati Nagar, Gudur, Tirupati Dist., AP - 524101

DEPARTMENT OF MECHANICAL ENGINEERING

REPORT ON INDUSTRIAL VISIT

ACADEMIC YEAR : 2023-2024

Date:22-03-2024

COMPANY NAME : SHAR- SRIHARIKOTA

DESCRIPTION:

SHAR refers to the Satish Dhawan Space Centre (SDSC) in Sriharikota, Andhra Pradesh, India, serving as the country's primary spaceport and the launching ground for the Indian Space Research Organisation (ISRO)'s rockets and satellites. Established to provide launch infrastructure, it was chosen for its proximity to the equator, which enhances launch efficiency, and its location on an uninhabited barrier island for safety. SHAR is equipped with facilities for solid fuel production, static testing, integration, and tracking, enabling launches of vehicles like the Polar Satellite Launch Vehicle (PSLV) and Geosynchronous Satellite Launch Vehicle (GSLV).

Key aspects of SHAR:

- **Location:**
  Sriharikota, an island in the Tirupati district, Andhra Pradesh, situated near the equator.
- **Function:**

  Provides the necessary infrastructure and support for ISRO's launch activities.

- **Historical Context:**

  An ideal location was chosen in 1969, and the centre became operational in 1971.

- **Naming:**
  Renamed the Satish Dhawan Space Centre (SDSC) SHAR in 2002, in honor of the former ISRO Chairman, Satish Dhawan.

Facilities and Activities:

- **Launch Pads:**

  Houses separate launch pads designed for different types of rockets, such as PSLV and GSLV.

- **Solid Propellant Production:**

  Contains a plant for processing solid propellants for use in rocket motors.

- **Testing Facilities:**

  Features static testing facilities for qualifying different types of solid rocket motors.

- **Integration and Tracking:**

  Includes facilities for rocket integration, as well as a telecommand and tracking network.

- **Launch Operations:**
  Supports the launch of various national and commercial satellites, including India's lunar orbiter Chandrayaan-1 and the Mars orbiter Mangalyaan.

Introduction

The Department of Mechanical Engineering,Narayana Engineering college- Gudur Campus, organized an industrial visit to the **Satish Dhawan Space Centre (SDSC) SHAR**, Sriharikota, on **22-03-2024**. The visit was undertaken as a part of the department's initiative to provide experiential learning and bridge the gap between theoretical concepts and practical applications in the field of space and satellite communication systems.

Objectives of the Visit

Exposure to India's space and satellite launch systems

Understand launch pads and mission control operations

Connect academic concepts with real-world applications

Inspire students through ISRO's innovations

Overview of Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota

SDSC SHAR is the **primary spaceport of the Indian Space Research Organisation (ISRO)**. It is responsible for satellite launch operations, vehicle assembly, integration, and launch. Named after the visionary space scientist **Dr. Satish Dhawan**, the centre plays a crucial role in launching India's Polar Satellite Launch Vehicles (PSLVs), Geosynchronous Satellite Launch Vehicles (GSLVs), and other missions.

Key Highlights of the Visit

Visit to PSLV and GSLV launch pad areas

Observation of Mission Control Centre and telemetry systems

Insights into range safety and propellant handling

Demonstrations of satellite models and mission videos

Insights into the Satellite Launch Process

By visiting the **launch pad** and **mission control unit**, Students gained a clear understanding of the satellite launch lifecycle, covering rocket and payload integration, launch pad setup, system checks, launch execution, satellite deployment, and telemetry tracking. ISRO experts explained each stage through briefings, and simulation videos, providing a structured overview of mission planning and execution.

Advancements Driving India's Space Missions

The visit showcased ISRO's advancements in cryogenic engine development, satellite communication systems, reusable and small satellite launch vehicles, real-time telemetry, and automation in mission control, reflecting India's growing technological self-reliance in space missions.

Environmentally Sustainable Practices at SDSC SHAR

SDSC SHAR's operations include the use of green propellants, efficient water and waste management systems, strict range safety protocols, and environmentally conscious planning to ensure minimal ecological impact during satellite launches.

Learning Outcomes

Acquired practical insights into satellite and communication technologies

Gained awareness of interdisciplinary roles in space missions

Motivated to explore careers and research in aerospace and electronics

Conclusion

The industrial visit provided an enriching and motivational experience, bridging academic knowledge with real-world space technology applications, and reinforcing the students' understanding of India's growing contributions to global space exploration.

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