

| SEPTEMBER 2023 |

# KLSAT

"SUCCESS IS THE SUM OF SMALL EFFORTS  
REPEATED DAY IN AND DAY OUT."

Leo L0



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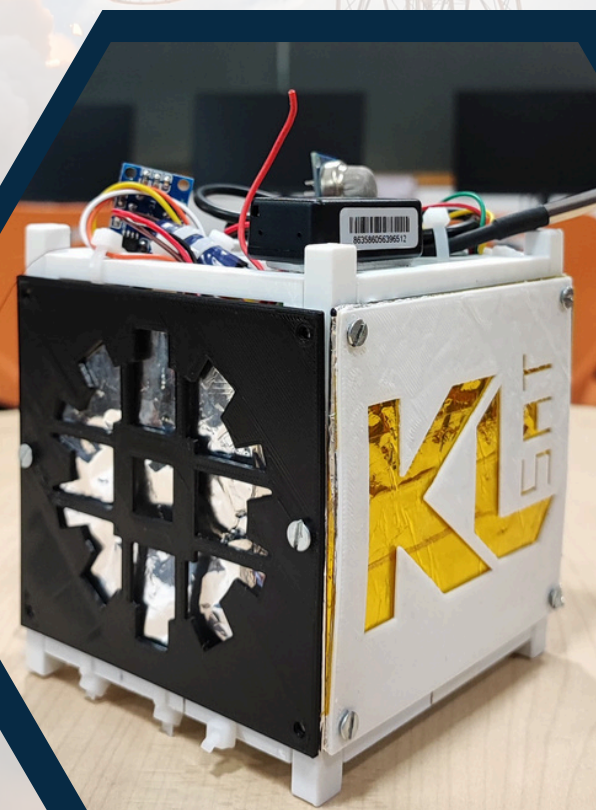
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# Introduction to the KL SAT Project

In a pioneering leap for student-driven space exploration, KL University proudly presents the KLSAT Mission—a project that embodies innovation, determination, and scientific excellence. Breaking away from traditional methods of satellite deployment, which often involve costly rocket launches, the KLSAT Mission utilizes high-altitude balloons to gather critical atmospheric data. This approach, not only cost-effective but also more sustainable, marks a significant advancement in how we study our planet's atmosphere. The mission focuses on key parameters like pressure, humidity, methane, and ozone concentrations at an impressive altitude of 28 kilometers, using a payload designed and developed by the students themselves.

Under the expert mentorship of Dr. Sarat Kumar and Dr. Kavya, the students have transformed theoretical knowledge into practical application, crafting a satellite equipped with sophisticated sensors and a custom-built battery management system. The KLAP Transceiver, alongside commercially available tracking technologies, ensures precise data collection and transmission, underscoring the technical ingenuity of the team. As the KLSAT Mission continues to gather valuable insights, it not only highlights the university's commitment to cutting-edge research but also sets a new standard for student-led initiatives in space science. This project is more than a scientific endeavor—it's a testament to the power of education, collaboration, and innovation in shaping the future of space exploration.









# Meet Our Team



## DR.KOTAMRAJU SARAT KUMAR

**PROFESSOR AND DIRECTOR (R & D, PR) AT KLU (ECE) & KLSAT CHIEF OF OPERATIONS AND MISSION DIRECTOR**

The KLSAT project stands as a milestone in our university's journey toward innovation and research excellence. It is a proud moment to witness our students and faculty come together with such dedication, transforming an ambitious vision into a remarkable reality. Over the past seven years, we have nurtured this dream, and today, we see it come to fruition. This mission not only demonstrates our technical capabilities but also embodies the spirit of exploration and collaboration that defines our institution. I am confident that KLSAT will inspire future generations to push the boundaries of knowledge and continue our legacy of pioneering advancements in space technology.



## DR.K.CH.SRI KAVYA

**PROFESSOR AND DIRECTOR (AR) AT KLU (ECE) & KLSAT CHIEF TECHNOLOGY OFFICER**

The KLSAT project represents the pinnacle of our collective technical expertise and creative ingenuity. It has been a privilege to guide and mentor our talented students through the challenges and triumphs of this mission. KLSAT is more than just a satellite; it is a symbol of our commitment to advancing knowledge and fostering innovation. The journey has been challenging, but seeing the passion and perseverance of our team has been truly inspiring. I am confident that the success of KLSAT will pave the way for future technological breakthroughs and reinforce our university's position as a leader in research and development.



## KOLACHALAM SAI CHARAN

**PROJECT LEAD(ECE)**

As the student team leader of the KL Satellite project, I am honored to lead a group where teamwork is at the heart of our journey. Together, we have navigated challenges, learned from our mistakes, and celebrated our successes, each team member playing a crucial role in our mission's achievements. Our aim isn't just to reach new heights but to also cherish the bonds we've formed and the invaluable lessons we've learned. This spirit of collaboration defines our project, and I am proud to be part of such an exceptional team as we continue to look ahead to the future of the KL CubeSatellite project.



## PUVVADA ADITHYA

**MAIN MODULE (ECE)**

I am thrilled to share that I have been a key member of the KL Satellite project, where I was responsible for the main module of the CubeSat. My role involved the critical task of sensor integration, which is essential for monitoring atmospheric conditions during flight. Additionally, I played a significant part in the assembly of the CubeSat, a process that presented numerous challenges. Each testing phase introduced new issues whether in payload, telemetry, or power sources that we successfully resolved. This experience provided me with invaluable hands-on expertise in both hardware and software successful.





## **VELISALA PRUDHVI GOPAL**

### **MAIN MODULE (ECE)**

In the KL Satellite project, I played a pivotal role within the main module team. My responsibilities included the assembly of the satellite's core components, such as the CubeSat structure, its equipment, power source, payload, and telemetry systems. Additionally, I led the testing phase and conducted final inspections to ensure that all systems were in optimal working condition before the satellite was cleared for its mission.



## **KORIVI AKHIL**

### **MAIN MODULE (ECE)**

In the KL SAT 1 project, I am a member of the Main Module Team, where I conducted research to select various components critical to the module's success. My expertise includes designing antennas for VHF and UHF frequencies and contributing to the assembly and testing of components on the PCB, particularly in the power, payload, and telemetry stages. I have also been actively involved in testing various sensors. Additionally, I played a key role in the Communication and Telemetry Handling Team, where I assisted in decoding telemetry data using Ground Station software.



## **DAMAVARAPU DEVA HARSHA**

### **MAIN MODULE (ECE)**

I played an integral role in the KL Satellite project, where I made significant contributions to the main module team. My responsibilities included testing modules for the payload board, conducting thorough tests on various GPS modules and battery boards to ensure their smooth and efficient operation, and assembling and testing antennas designed for different frequencies. Additionally, I was involved in the testing of the final stage of the satellite module.



## **AMBATI.BALA TULASI**

### **MAIN MODULE (ECE)**

In the KL Satellite project, I played a pivotal role as a member of the main module team, contributing to the intricate process of satellite development. This journey has been an exciting blend of innovation, collaboration, and the pursuit of knowledge beyond our terrestrial boundaries. My responsibilities focused on integrating the various components within the main module and assessing the satellite's overall functionality. My expertise lies in the reception of data packets through specialized software, where I handled the critical task of decoding these packets into a format suitable for transmission to the ground station.



## **M.THANMAYA VISHUNU PHANI**

### **MAIN MODULE (ECE)**

I led the development and integration of the payload module and played a key role in designing the satellite's power system. I was actively involved in field activities, managing testing equipment, conducting experiments, and meticulously recording data. Additionally, I spearheaded the logistical preparations for the satellite's launch day. This experience deepened my understanding of satellite technology and honed my skills in this innovative field, crucial for future space exploration.



## **CH.HEMANTH NAG**

### **COMMUNICATION AND TELEMTRY HANDLING(ECE)**

I played a crucial role in the Communication and Telemetry Handling Team of the KL Satellite project, ensuring smooth communication between the satellite and ground stations. She decoded telemetry data, integrated it with maps for real-time tracking, and transmitted this data to an internet server. Looking ahead, she is eager to set up a ground station to maintain strong communication with the KL satellite.

## **M.SREENIJA**

### **PAYLOAD AND PCB DESIGN(ECE)**

M. Sreenija was instrumental in the KL Satellite project, focusing on PCB design and generating Gerber files. She developed expertise in reverse engineering Gerber files and created footprints for the sensors used in the payload. Her dedication and analytical skills were crucial to the project's success.

## **KUKATLAPALLI PAVANI**

### **MAIN MODULE (ECE)**

In my role within the satellite project, I managed a range of responsibilities with a focus on the satellite's main module. I led the development and integration of the payload module, which featured essential sensors for data collection and analysis. Additionally, I played a key role in designing and implementing the power system to ensure the satellite's reliable operation. My involvement also included active participation in field activities, where I conducted thorough testing procedures to validate the satellite's functionality and performance.

## **VENIGANDLA BHARGAVI**

### **COMMUNICATION AND TELEMTRY HANDLING(ECE)**

In the KL Satellite Project, I made substantial contributions to antenna design using specialized software tools to accurately predict gain and radiation patterns. I also worked on ground station communication and telemetry to effectively receive data. My role included optimizing the performance of these critical components and exploring path prediction for balloon satellites, gaining insights into their complex dynamics. Additionally, I focused on meticulously selecting essential components for the balloon satellite.

## **NUNE.SUSHMA**

### **COMMUNICATION AND TELEMTRY HANDLING(ECE)**

During my involvement in the KL SAT project, I played a key role in the communication and telemetry team, focusing on coding for the KL-APRS module. Additionally, I was responsible for generating critical launch predictions, including path projections, weather assessments, and calculations for balloon specifications. I am deeply grateful for the opportunity to contribute to this prestigious project.







## **VARUN REEDY. VANGA**

### **WEB DESIGNING (ECE)**

Successfully launching our mini satellite has been a tremendous achievement. As a web designer, I created the live dashboard and data interface, blending technology and design to showcase real-time data. This experience has been both professionally rewarding and personally inspiring, deepening my passion for space technology.



## **SREEJA GADELA**

### **PAYLOAD AND PCB DESIGN(ECE)**

In the KL Satellite Project, I converted Gerber files into practical PCB designs, ensuring seamless electronic integration with precise attention to detail. I also contributed to antenna design and gained insights into satellite technology. Additionally, I acquired knowledge in ground station tracking and path prediction.



## **SIRAJ**

### **PAYLOAD AND PCB DESIGN(ECE)**

As a key member of the KL SAT project, I designed and decoded the KL APRS system, integrating it with mapping tools for accurate satellite tracking. I also established the ground station for signal reception and developed footprints, schematics, and Gerber files for the satellite's PCB design, ensuring all quality standards were met.



## **VINITHA ARAMASA**

### **PAYLOAD AND PCB DESIGN(ECE)**

My name is Vinitha Aramasa, and I am currently in my third year of the Electronics and Communication Engineering program at KL University. I am honored to be a part of the KL SAT project, where I have had the opportunity to expand my knowledge across various technical domains. My contributions include gaining a deep understanding of PCB design principles, mastering the software tools used, and acquiring hands-on experience in file conversion and the intricacies of PCB layouts.



## **P.SIDDHI CHANDRIKA**

### **MAIN MODULE (ECE)**

As a 2nd-year student, joining the KLSAT project allowed me to work on various modules from start to finish, learning from my seniors and contributing to a groundbreaking mission. This experience has been both challenging and rewarding, inspiring me to push my boundaries and dream bigger.



## **B.DEVI HARSHITHA**

### **COMMUNICATION AND TELEMETRY HANDLING(ECE)**

In the KL Satellite project, I started on the Communication and Telemetry Handling Team, developing the APRS module and setting up the ground station for monitoring communication. Later, I transitioned to the CubeSat Module Team, assembling the main board, battery board, and other components into a layered stack.





## SHAIK ROUF

### COMMUNICATION AND TELEMETRY HANDLING(ECE)

I was responsible for assessing and assembling antennas for the ground station, ensuring optimal reception across 140MHz to 440MHz frequencies. I actively participated in fieldwork, setting up ground stations, and overseeing all logistical preparations for the satellite's launch day.



## J S S PRAKASH

### MAIN MODULE (ECE)

I am part of the Main Module Team for KLSAT-1, where I contributed to assembling subsystems into a single cube and integrating sensors. I have expertise in monitoring and tracking KLSAT-1 during its operation using telemetry. Additionally, I researched and identified a reliable knot for securing the high-altitude balloon and module, and I am well-versed in telemetry and monitoring software.



## SURYA TEJA DIRISALA

### COMMUNICATION AND TELEMETRY HANDLING(ECE)

I was responsible for assembling and ensuring the proper functioning of antennas for effective satellite communication. Additionally, I played a key role in data reception at ground stations, testing sensors and modules to verify their compliance with specifications. I also contributed to consolidating requirements and checklists, ensuring thorough preparation for the CubeSat launch.



## DADANI KARTHIK KUMAR REDDY

### COMMUNICATION AND TELEMETRY HANDLING(ECE)

I played a pivotal role in the Communication and Telemetry Handling team of the KL Satellite project, contributing to the KLAP module by decoding telemetry data, integrating it with mapping systems for satellite tracking, and sharing this data. I also designed and assembled antennas for the ground station, tested payload sensors, and prepared for launch day to ensure robust communication with the KL Satellite.



## SUNKESULA VIJAY KUMAR

### COMMUNICATION AND TELEMETRY HANDLING(ECE)

Despite joining the KLSAT project later, I quickly immersed myself in the systems, focusing on communication and retrieval. This experience has been invaluable, allowing me to contribute meaningfully and enhance my skills through collaborative problem-solving. I'm grateful for the opportunity to be part of such a rewarding and impactful project.



## YALLA SAI TEJA

### DESIGN AND 3D PRINTING(MECH)

As a Design and 3D Printing Specialist for the balloon satellite project, I design and manufacture the satellite's structural components, including the balloon's framework and payload housing, using precise CAD models and 3D printing techniques. I also oversee the assembly, integration, and testing of these parts, ensuring they are lightweight, durable, and seamlessly integrated into the satellite's overall design.



# Conceptualization & Planning



## Conceptualization

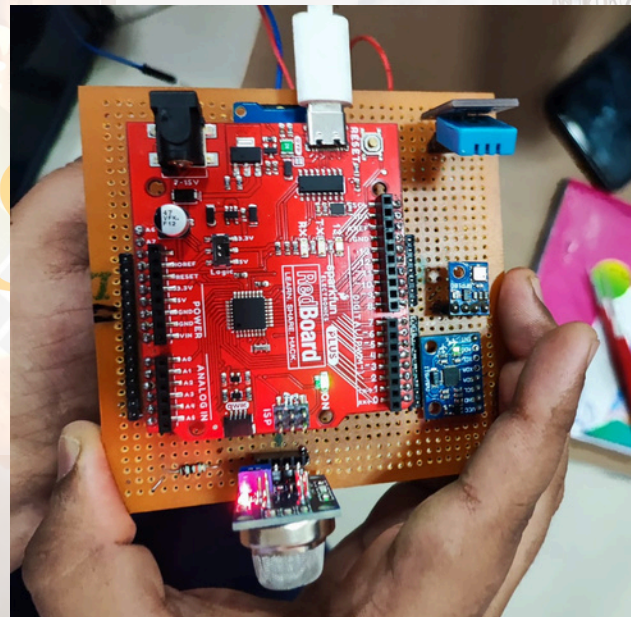
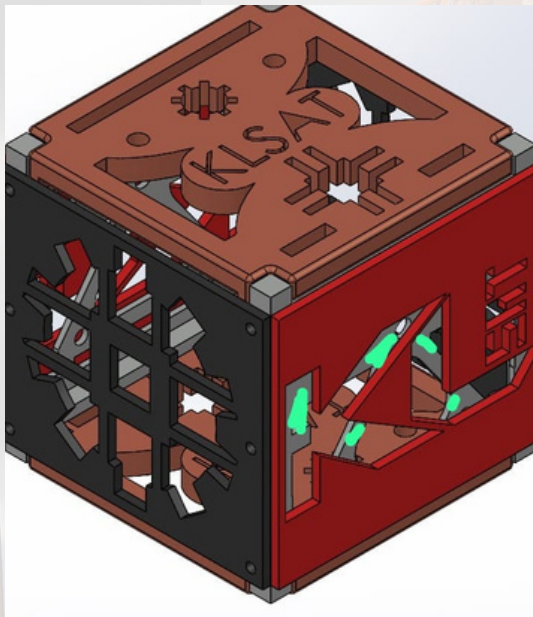
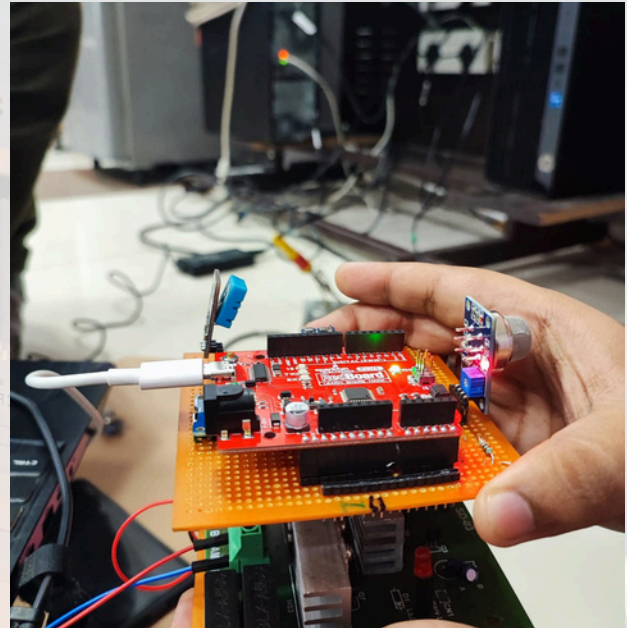
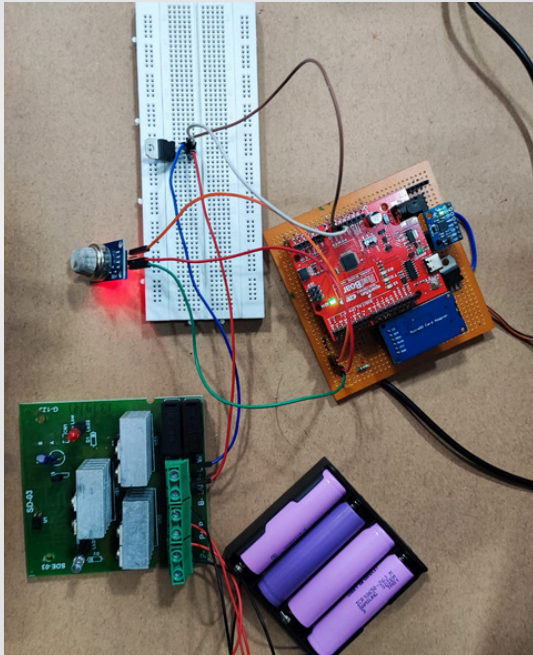
- The KLSAT mission was born out of a vision to explore atmospheric phenomena in a more innovative and cost-effective way. Rather than relying on conventional rocket launches, the team at KL University conceptualized a mission that would utilize a helium-filled balloon to carry a CubeSat into the stratosphere. This novel approach allowed for a more flexible and environmentally friendly method of deploying the satellite. The idea was to create a compact 1U CubeSat, measuring just 10x10x10 cm, equipped with sensors capable of measuring critical atmospheric parameters such as pressure, humidity, methane concentration, and ozone levels. This unconventional approach not only challenged the status quo but also provided an opportunity for students to engage in cutting-edge research and development.
- The conceptual phase also involved extensive research and brainstorming to ensure the feasibility of the mission. The team had to consider various factors, such as the weight and size constraints of the CubeSat, the types of sensors required to collect accurate data, and the potential challenges of transmitting this data back to Earth. Moreover, they had to envision a system that could withstand the harsh conditions of the upper atmosphere, including extreme temperatures and low pressure.

## Planning

- The planning phase of the KLSAT mission was marked by meticulous attention to detail, as the team translated their conceptual ideas into actionable steps. A major focus was on the design and integration of the CubeSat's components, ensuring that each part was optimized for the mission's objectives. The team selected sensors that could accurately measure the atmospheric parameters of interest while maintaining the CubeSat's compact and lightweight design. Additionally, they developed a robust telemetry system capable of transmitting data in real-time, as well as a ground station network to receive and analyze this data. Battery management was another critical aspect, with careful planning to ensure the CubeSat had sufficient power to operate throughout the mission.



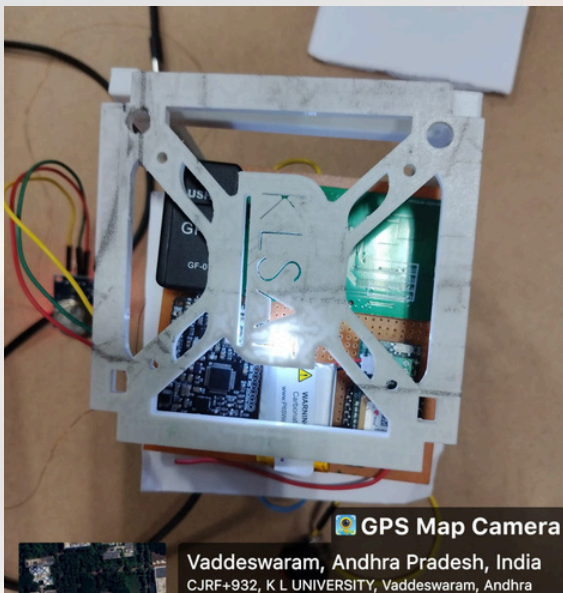
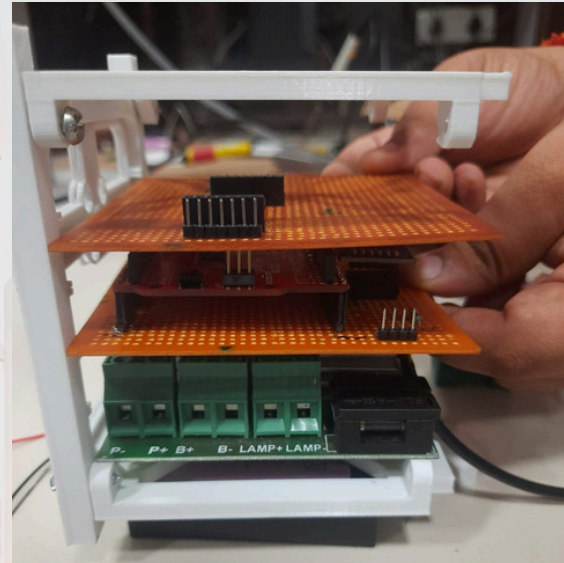
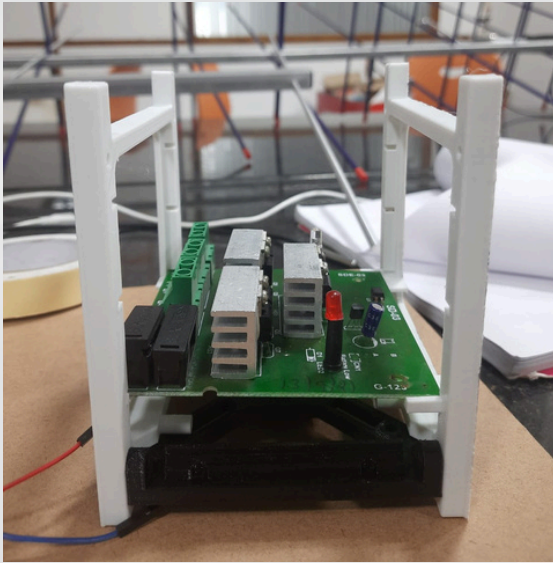
# Design & Development



The KL SAT-1 project stands as a beacon of innovation in satellite technology, meticulously designed to advance our understanding of atmospheric phenomena. This state-of-the-art satellite integrates cutting-edge telemetry systems, including Light APRS and Space SAT modules, ensuring seamless real-time communication with ground stations. The On-Board Computer layer, powered by the Sparkfun RedBoard and equipped with a sophisticated suite of sensors, delivers comprehensive environmental monitoring, capturing critical data on pressure, temperature, and gas concentrations. Supported by a robust Battery Management System, KL SAT-1 exemplifies engineering excellence, pushing the boundaries of scientific exploration and setting a new standard in atmospheric data collection.



# INTEGRATION PHASE



The integration phase of the KL SAT-1 project was a critical juncture where meticulous engineering and innovative design converged to ensure the satellite's seamless operation. During this phase, various components, including the payload, tracking and telemetry systems, and battery management, were meticulously assembled into a compact 1U CubeSat module. Each sensor, from the BMP180 pressure sensor to the MQ-9 and MQ-131 gas sensors, was carefully integrated and rigorously tested to ensure accurate data collection and reliable performance. The Raspberry Pi, serving as the onboard computer, was seamlessly connected with the sensors and the SD card module to facilitate real-time data processing and storage. This integration also included the assembly of the ground station network, which comprised stationary and remotely operated stations equipped with Yagi antennas for robust communication. The successful integration of these components, along with the custom-developed software for telemetry and data visualization, was essential in transforming the KL SAT-1 from a conceptual design into a fully operational satellite capable of achieving its mission objectives.

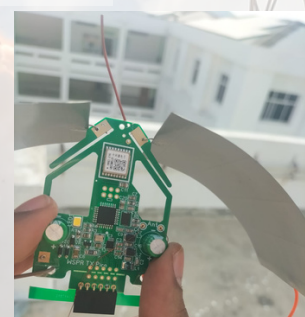
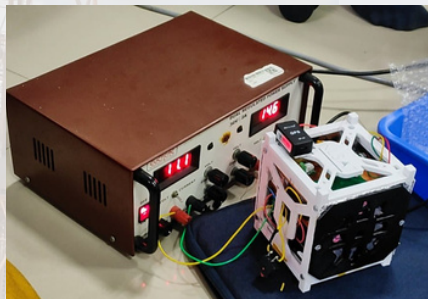
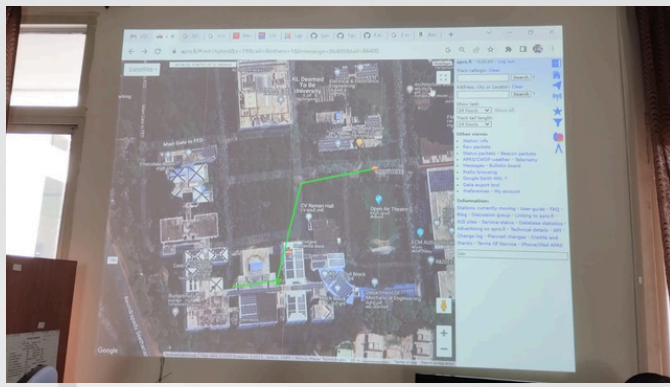


# RIGOROUS TESTING PHASES



The testing phase of the KLSAT mission was an essential step in ensuring the reliability and functionality of the entire system before the actual launch. During this phase, the team rigorously tested each component of the ground station setup, as well as the telemetry and tracking systems. The ground stations, including the three stationary and one mobile unit, were thoroughly evaluated to ensure they could maintain continuous communication with the KLSAT module under varying conditions. The antennas, both custom-built and commercially sourced Yagi types, were tested across different frequencies to confirm their ability to accurately track and receive signals from the module, even at high altitudes.

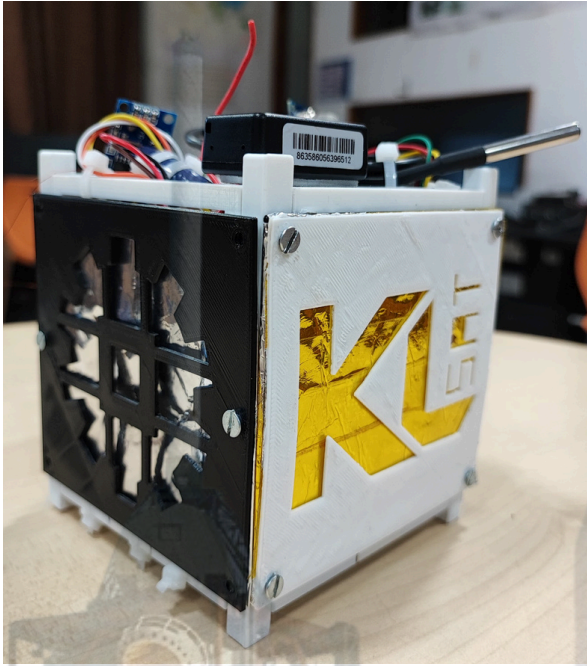




In addition to hardware testing, the software systems used for telemetry and tracking were also put through extensive trials. The LoRa module for telemetry and the APRS transmitter for tracking were tested to ensure they could reliably transmit and receive data between the KLSAT module and the ground stations. The Dire Wolf software was used to decode the APRS signals during these tests, allowing the team to verify the accuracy of the data being received. The custom UX/UI design for live data visualization was also tested to ensure that mission data could be displayed in real-time without any errors or delays. This comprehensive testing phase was crucial in identifying and resolving potential issues, ensuring that the KLSAT mission would proceed smoothly and successfully.

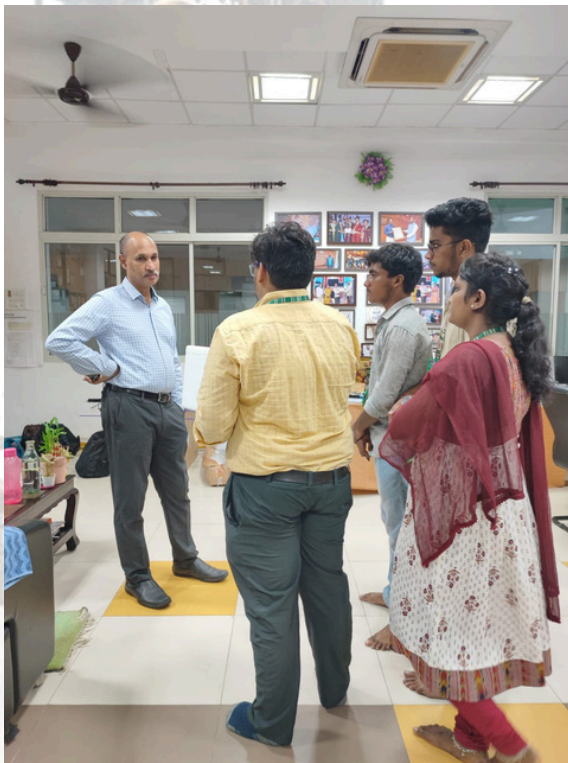


# FINAL PREPARATIONS



The final preparations for the KLSAT mission were a testament to precision and meticulous planning, as the team ensured every detail was addressed for a flawless launch. Comprehensive system checks were conducted on the CubeSat, ground stations, and integrated software, with the battery management system fully charged and all sensors finely calibrated for optimal data accuracy. Antennas were strategically placed to ensure maximum signal reception, and line-of-sight alignment between the CubeSat and ground stations was meticulously verified to avoid any communication loss. Environmental factors were also rigorously analyzed, with weather predictions carefully monitored and cross-referenced, leading to the selection of the optimal launch window on September 27, 2023, between 6:00 and 6:20 AM IST. This thorough attention to detail ensured the KLSAT mission was primed for success.





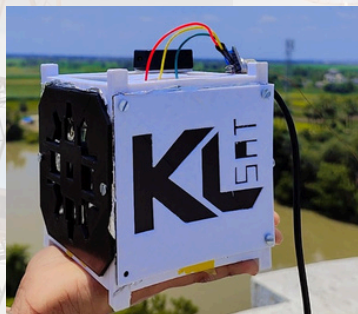


# THE LAUNCH EVENT



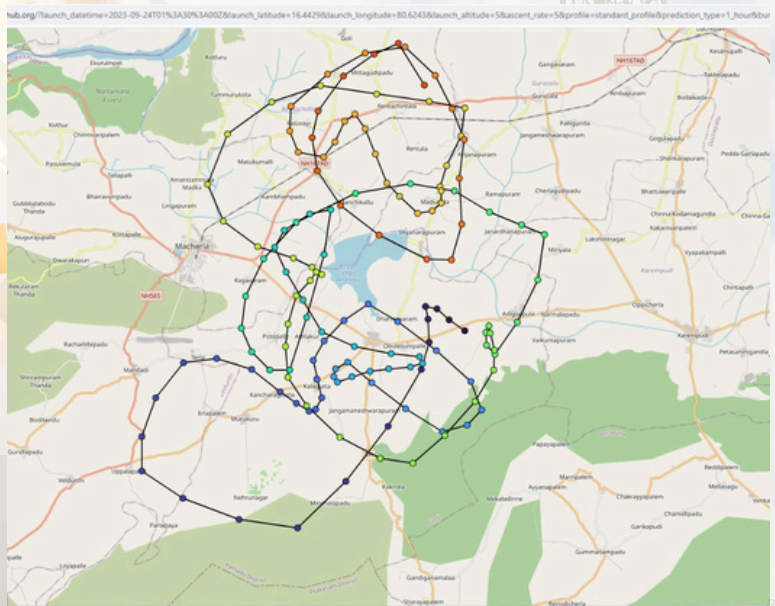
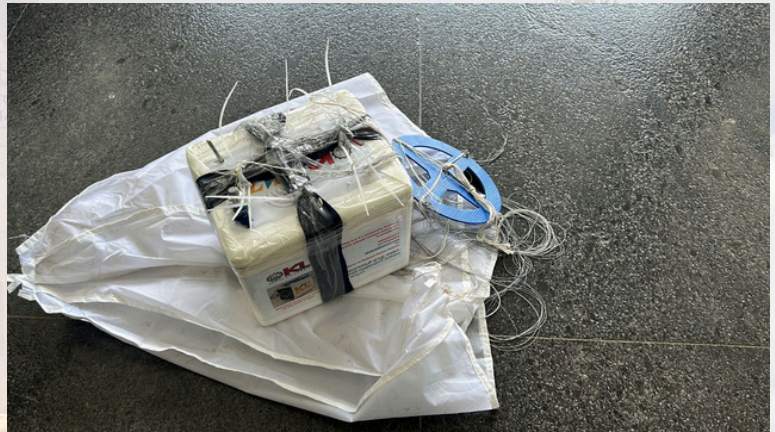
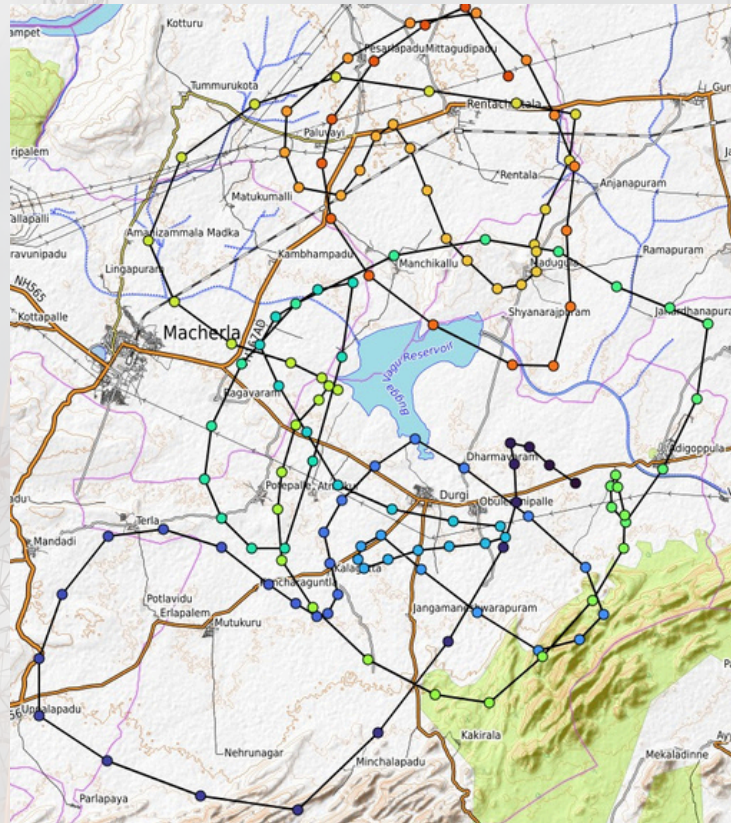
The KLSAT module was meticulously designed to integrate three key systems: the avionics system, the tracking and telemetry system, and the battery management system. A standout feature of this module is the SIM-based live transmission camera, capable of streaming real-time video within the range of a signal tower. This live feed is processed on a cloud platform and accessed via mobile devices using open-source software. For situations where the camera is out of signal range, the video is securely stored on a micro-SD card. The team developed a precise 3D model to house all components in a compact 10 x 10 x 10 cm CubeSat, ensuring efficient organization and durability in the challenging conditions of near-space.





In preparation for the mission, the CubeSat underwent rigorous testing to confirm its readiness. The 3D-designed cube featured engraved fan-in and fan-out connections, all scrutinized to ensure flawless operation. The camera module, housed in a protective storiform box with a dedicated 5V power supply, was thoroughly tested, yielding positive results that confirmed its operational status. Final preparations included an overnight charging of the CubeSat's battery to ensure peak performance. On September 27th, 2023, at precisely 06:17 AM, the module was launched via a helium-filled latex balloon. The team's meticulous calculations for the helium volume ensured the balloon could carry the CubeSat to its target altitude, marking the successful culmination of the project's extensive planning and development.







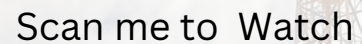
# POST LAUNCH OPERATIONS



Participants had the opportunity to explore the intricacies of satellite telemetry, data transmission protocols, and the real-time analysis of atmospheric parameters captured during the mission. The discussions also covered the satellite's power management strategies, the effectiveness of its on-board sensors, and the performance of the ground station network in maintaining continuous communication with the satellite. Furthermore, the workshop encouraged brainstorming sessions on future applications of the technologies used in KL SAT-1, inspiring new ideas for upcoming satellite missions and advanced atmospheric research projects. This event underscored KL University's commitment to pushing the frontiers of space technology and enhancing the educational experience through hands-on, real-world projects.



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చేసుచున్న అన్ని రకముల అనుమతులను ఉన్నతాధికారుల నుండి తీసుచున్నట్లు తెలిపారు. ఈ మిషన్ ద్వారా వాతావరణ క్రొత్త సాంకేతికతపై మన అవగాహనను పెంపొందించే లక్ష్యంతో పనిచేస్తుందన్నారు. కీలకమైన డేటాను సంగ్రహించడానికి, ప్రసారం చేయడానికి సహజంగా కలిసి పని చేసే ఎడదానితో ఎలదీ అనుసంధానించబడిన భాగాల సంక్లిష్ట పర్యవసాన ఉపయోగిస్తుందన్నారు. ఈ మిషన్ భూమి యొక్క వాతావరణం యొక్క రహస్యాలను అన్వేషించడంతో పాటు సంచలనాత్మక తాత్వీయ పరిశోధనలకు దోహద పడుతుందన్నారు. మిషన్ యొక్క ఇరవై క్షిప్రమైన పౌర అన్-బోర్న్ రంఘులర్ (సెన్సార్స్) లేయర్, క్షిప్రమైన పర్యావరణ డేటాను సంగ్రహించడానికి వాహత పరిపూరించినట్లు. ఇది వాతావరణ మేదాన్ని కొలిచే వివిధ రకాల సెన్సార్లను కలిగి ఉందన్నారు. ద్వారానే మోనాక్రిడ్, మీషన్ వంటి వివిధ వాయువులను గుర్తించడం, అభివృద్ధి చెలనం, ధోరణిని ట్రాక్ చేయడం, ఉష్ణోగ్రతను పర్యవేక్షించడం, ఓహోన్ స్థాయిలను గుర్తించడానికి అంతరిక్షంలోకి వెళ్లడమని పేర్కొన్నారు. నిరంతర విద్యుత్ సరఫరాను నిర్ధారించడం అనేది బ్యాలిస్టి నిర్వహణ వ్యవస్థ (బిఎన్ఎస్) లేయర్, ఇది మిషన్-క్షిప్రమైన భాగం. ఈ లేయర్లో సౌర ఫలదాల మేయూ లిథియం-అయోన్ బ్యాటరీలు వంటి విద్యుత్ సరఫరా గాఢాలు ఉంటాయన్నారు. ఈ సందర్భంగా ఉపగ్రహానికి రూపకల్పన చేసిన ద్వంద సమ్యులను, విద్యుత్తులను పరిశీలి చైర్మన్ కోడేను సభ్యనారాయణ, వైస్ చాన్సలర్ చార్లర్ షి. పార్థసారథివర్మ, ట్రో వైస్ చాన్సలర్లు చార్లర్ ఎ.వి.వి. ప్రసాద్, చార్లర్ ఎన్. వెంకటరామ్, డిప్యూటీ చార్లర్ రె.సుబ్బారావు, తదితరులు అభివ్రంశించారు.





## రేపు కేఎల్ యూ శాటిలైట్ ప్రయోగం

- సర్వం సిద్ధం చేసిన నిర్వాహకులు
- వాతావరణ మార్పులపై పరిశోధనకు ఊతం

**తాడేపల్లి రూరల్:** తాడేపల్లి రూరల్ పరిధిలోని వడ్డేశ్వరం కేఎల్ విశ్వవిద్యాలయం సొంత పరిజ్ఞానంతో రూపొందించిన చిన్న తరహా ఉపగ్రహ ప్రయోగం చేయబోతున్నామని వైస్ చాన్సలర్ డాక్టర్ జి. పార్థసారథి వర్మ అన్నారు. సోమవారం ఏర్పాటు చేసిన సమావేశంలో ఆయన మాట్లాడుతూ భూమి నుండి సుమారు 95 కి.మీ. ఎత్తు వరకు వాతావరణంలో వస్తున్న మార్పులను ఎప్పటికప్పుడు పర్యవేక్షిస్తూ పరిశోధనలు చేయడానికి కేఎల్ శాట్ పేరుతో



ఉపగ్రహాన్ని రూపొందించిన సభ్యులను అభినందిస్తున్న వీసీ పార్థసారథి వర్మ, కిషోర్ బాబు

తెలిపారు. మొత్తం 22 మంది ఇనీషియేటర్లతో ఒక మెకానికల్ ఇంజనీరింగ్ విద్యార్థితో కలసి ఆరు నెలలుగా శ్రమించి ఈ ఉపగ్రహానికి రూపకల్పన చేశారన్నారు. ఇది 95 కి.మీ ఎత్తు వరకు వెళుతుంద



Scan me to Watch

ఆంధ్రోళనలు చేయడం ద్వారా చంద్రబాబు నుంచి తక్షణమే విడుదలయ్యేలా చూడాలి. రుటు పాల్గొన్నారు.

## వాతావరణంలో మార్పులపై పరిశోధనలకు 'కేఎల్ శాట్'

ఈ నెల 27న  
ప్రయోగానికి ఏర్పాట్లు



మీసీ ఉపగ్రహాన్ని రూపొందించిన బృంద సభ్యులతో కేఎల్ యూ వీసీ డా.పార్థసారథి వర్మ, ఎంహెచ్ఎస్ డీన్ డా.కిషోర్ బాబు, డీన్ డా.శ్రీనాథ్

**తాడేపల్లి, న్యూస్టుడే:** వాతావరణంలో మార్పులను ఎప్పటికప్పుడు పర్యవేక్షిస్తూ పరిశోధనలు చేసేందుకు 'కేఎల్ శాట్' మీసీ ఉపగ్రహానికి రూపకల్పన చేసి కేఎల్ యూనివర్సిటీ ప్రాజెక్టు, విద్యార్థులు ఆరు వైసే ఫునత సాధించారు. గుంటూరు జిల్లా తాడేపల్లి మండలం వడ్డేశ్వరం కేఎల్ విశ్వవిద్యాలయంలో పరిశోధనా అభివృద్ధి డైరెక్టర్ డా.కె.శరత్ కుమార్, ప్రొఫెసర్ డా.కేసీహెచ్ కామ్రత్ పాటు ఈ విద్యార్థులు 21 మంది, మెకానికల్ విభాగం నుంచి మరో విద్యార్థి కలిసి కేఎల్ శాట్ ను రూపొందించారు. వాతావరణంలో వస్తున్న మార్పులపై పరిశోధనలు చేసేందుకు భూమి నుంచి 95 కిలోమీటర్ల ఎత్తులో దీన్ని ఉంచి పర్యవేక్షించనున్నట్లు వారు తెలిపారు. ఈ మేరకు అవసరమైన ఆన్ని ఏర్పాట్లు పూర్తి చేశారు. ఈ ప్రయోగానికి విజయవాడ, చెన్నైలోని ఏటీఎస్ కార్యాలయం నుండి ఆన్ని రకాల ఆనుమతులు లీసుకున్నామన్నారు. ఈ నెల 27వ తేదీ వడ్డేశ్వరంలోని కేఎల్ యూ క్రికెట్ మైదానంలో మీసీ ఉపగ్రహాన్ని లాంచ్ చేసేందుకు సిద్ధం చేస్తున్నామని ప్రతినిధులు తెలిపారు.



కేఎల్ శాట్

### రూ.2.75 లక్షలతోనే తయారీ...

దేశీయ పరికరాలు ఉపయోగించి కేవలం రూ.2.75 లక్షల అతి తక్కువ వ్యయంతో మీసీ ఉపగ్రహాన్ని తయారు చేశాం. హై ఆర్టిట్యూడ్ బెల్టాన్ (హెచ్ఎబీ) సాయంతో దీన్ని గాలిలోకి పంపుతాం. నిర్దేశిత కక్ష్యలోకి చేరిన తర్వాత పారాచ్యూట్ ఓపెన్ ఆవుతుంది. దాని సాయంతో 95 కి.మీ. పైన ఇది నిలిచి ఉంటుంది. దీన్ని భూమి పైనుంచి పర్యవేక్షించడానికి ఎస్టీఆర్ జిల్లా కొండపల్లి, కేఎల్ యూనివర్సిటీ, పల్నాడు జిల్లా పిడుగురాళ్ల వద్ద మూడు మానిటరింగ్ గదులు ఏర్పాటు చేశాం. 80 కి.మీ. వీన్స్ రింగ్లో వాతావరణ పరిస్థితులను ఇది తెలుసుకొని సమగ్ర సమాచారాన్ని అందిస్తుంది. కేఎల్ యూ అధ్యక్షుడు కోనేరు సత్యనారాయణ ఉపగ్రహం రూపకల్పనకు ఆర్థిక సాయం అందజేశారు.

- డా.కె.శరత్ కుమార్ (పరిశోధన, అభివృద్ధి డైరెక్టర్, కేఎల్ యూ), డా.కేసీహెచ్ కామ్రత్ (చీఫ్ టెక్నాలజీ అఫీసర్, ప్రాఫెసర్, కేఎల్ యూ)



# NEWS PAPER CLIPINGS AFTER LAUNCH

## KL Deemed to be University successfully launches its First Satellite—KLSAT

KL Deemed to be University proudly announces the successful launch of its first satellite, KLSAT, from its Green Fields campus in Vijayawada. This momentous event occurred on September 27, 2023, at 6:30 AM and represents a significant advancement in atmospheric measurement technology. This miniature satellite, 1U CubeSat equipped with atmospheric sensors, reached an altitude of 28 kilometers (92,000 feet), gathering valuable data for research purposes. During the landing process, it deployed its parachute to control the satellite's velocity, and as expected safely landed within an approximately 80-kilometer radius. At 10:30 AM, signals from the satellite were tracked near Vutukuru.

The KLSAT project is an endeavour aimed at advancing the understanding of atmospheric measurement technology in a given specific area. It employs a complex system of interconnected components that work seamlessly together to capture and transmit crucial data, contributing to pioneering scientific research on Earth's atmosphere.

The success of this mission hinges on the Telemetry layer, a fundamental component responsible for communication and data transmission. This layer comprises three vital elements:



KLAP, SpaceSat Tracker Module, and GPS Module. KLAP, developed in-house at KL Deemed to be University, plays a pivotal role in ensuring smooth data transmission and ground communication. The Ground Station Antennas, also meticulously designed in-house, operate at six frequencies across HF, VHF, and UHF bands. KLAP, a telemetry module, and SpaceSat Tracker are hardware modules that are indigenously developed, along

with onboard computers, battery management, and other communication modules. Ground stations are established as part of the overall mission operations and observations.

Applauding the efforts of KLSAT team and University community, Er. Koneru Satyanarayana, President of KL Deemed to be University said, "I am profoundly delighted to witness the successful launch of KLSAT, a testament to the re-

lentless pursuit of knowledge and innovation that defines KL Deemed to be University. This achievement signifies not only a significant milestone in the field of atmospheric measurement technology but also a giant leap forward for our institution. We have always been dedicated to pushing the boundaries of scientific discovery and technological advancement. As we reach venture into space, KLSAT will undoubtedly provide us with

invaluable insights into Earth's atmosphere. This mission represents the beginning of a new era for our university and a brighter future for scientific research. I am immensely proud of our university's achievements, and I look forward to witnessing the discoveries that KLSAT."

Dr. K. Sarat Kumar, Professor and Director, Research & Development, PR served as the KLSAT Mission Director and Chief of Operations, while Dr. K. Ch. Sri Kavya, Professor and Director, assumed the role of Chief Technology Officer. Twenty-two B.Tech students from Electronics and Communication and Mechanical Engineering courses dedicated six months to software coding, hardware integration, assembly, testing, and the final module.

The entire project received proud funding and unwavering support from Er. Koneru Satyanarayana, Hon'ble President of KL Deemed to be University and the University's administration. Dr. G. Partha Saradhi Varma, the University Vice-Chancellor, Dr. A.V. Prasad, Pro Vice-Chancellor, Dr. N. Venkatram, Pro Vice-Chancellor, and other esteemed authorities extend their heartfelt congratulations to the dedicated team members who have been instrumental in making this mission possible.

## KL Deemed to be University successfully launches its First Satellite—KLSAT

**The Hindu Bureau**  
VIJAYAWADA

KL Deemed To Be University recently announced the launch of its first satellite, KLSAT, from its Green Fields campus in Vijayawada.

The miniature satellite, 1U CubeSat equipped with atmospheric sensors reached an altitude of 28 kilometres (92,000 feet), gathering data for research purposes, a release from the management said. During the landing process, it deployed its parachute to control the satellite's velocity, and landed within approximately 80-kilometer radius.

The KLSAT project is an endeavour aimed at advancing the understanding of atmospheric measurement technology in a specific area, the release said.

### Valuable insights

Lauding the KLSAT team and the university community, university president Koneru Satyanarayana said: "KLSAT will provide us with invaluable insights about the atmosphere. This mission represents the beginning of a new era for our university and a brighter future for scientific research." Professor K. Sarat Kumar served as the KLSAT Mission Director and Chief of Operations, while professor K. Ch. Sri Kavya served as the Chief Technology Officer.

Twenty-two B.Tech students from Electronics and Communication and Mechanical Engineering departments dedicated six months to software coding, hardware integration, assembly, testing, and the final module into building the satellite.

## केएल डीमड टू बी ने अपना पहला सैटेलाइट केएलसैट लांच किया

नई दिल्ली, एजेंसी. केएल डीमड टू बी यूनिवर्सिटी ने अपनी पहली सैटेलाइट - केएलसैट की सफलतापूर्वक उड़ान भरी है, यह उड़ान विजयवाड़ा कैम्पस के ग्रीन फील्ड्स में भरी गई और यह वायुमंडल मापन प्रौद्योगिकी में एक महत्वपूर्ण कदम है। इस मिनिअर सैटेलाइट में वायुमंडलीय सेंसर 1U क्यूबसैट लगा हुआ है। यह सैटेलाइट तेज गति से 28 किलोमीटर (92,000 फीट) की ऊंचाई तक पहुँची और अनुसंधान के उद्देश्यों के लिए मूल्यवान डेटा को जुटाया। लैंडिंग प्रक्रिया के दौरान, इसने अपने पैराशूट को प्रसारित किया ताकि सैटेलाइट की गति को नियंत्रित किया जा सके, और जैसा की प्रत्याशित था, यह सैटेलाइट लगभग 80 किलोमीटर के रेडियस के भीतर सुरक्षित रूप से



उतर गई। 10:30 बजे, सैटेलाइट से सिग्नल वुटुकुरु के पास से ट्रैक किए गए। केएल डीमड टू बी यूनिवर्सिटी के प्रेजिडेंट कोनेरु सत्यनारायणा ने कहा कि मुझे गर्व है कि मैं केएलसैट के सफल लांच को देख पाया, जो केएल डीमड टू बी यूनिवर्सिटी की ज्ञान और

नवाचार की तरफ किए गए अथक प्रयास का प्रमाण है।

यह उपलब्धि केवल वायुमंडल मापन प्रौद्योगिकी के क्षेत्र में एक महत्वपूर्ण मील का पत्थर ही नहीं है, बल्कि हमारे संस्थान के लिए भी एक बड़ा कदम है।









# Appreciation & Recognition





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Building on the success of our initial missions, the KLSAT series is set to reach new heights with KLSAT 2 and KLSAT 3. These upcoming missions will feature extended lifespans and advanced sensors, furthering our capability to explore and understand atmospheric phenomena. With a bold vision of achieving orbital launches and targeting altitudes above 100 km, we are committed to pushing the boundaries of atmospheric and space research.

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## SAT-2





# ACKNOWLEDGMENT

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# WORKSHOP ON CUBESAT DESIGN



**FACULTY COORDINATOR**  
**DR K SARAT KUMAR**  
MISSION DIRECTOR AND CHIEF OF OPERATIONS, KLSAT  
PROFESSOR AND DIRECTOR (R&D AND PR)  
**DR K CH SRI KAVYA**  
CHIEF TECHNOLOGY OFFICER, KLSAT

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Sai Charan, Akhil, Deva harsha, Thanmaya, Sneha, bala Tulasi, Abdul Rouf, Vinodha, Sai Teja, Surya, Bhargavi, Sushma, Hemant nag, Prakash, Karthik, Prudhvi, Chandrika, Siraj



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KL UNIVERSITY

KL UNIVERSITY IS GOING TO LAUNCH ITS FIRST SATELLITE ON  
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UNDER GUIDANCE OF

**Dr K Sarat kumar**  
Mission Director and Chief of operations, KLSAT  
Professor and Director (R&D and PR)

**Dr K Ch Sri Kavya**  
Chief Technology Officer KLSAT, Professor and Director (AR)

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**KLSAT**



**KL UNIVERSITY PROUDLY LAUNCHES ITS FIRST SATELLITE**  
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Heartfelt thanks to the Management of KLEF  
**Dr. K Sarat kumar**  
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**Dr. K Ch Sri Kavya**  
Chief Technology Officer KLSAT, Professor and Director & Satellite Club students' team

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**ALL SET TO LAUNCH FIRST KL SATELLITE**

**27<sup>th</sup> Sep 2023**  
Launching Time  
06:00 AM IST

**KLSAT**

**KL University Proudly Launches its First Satellite**  
on 27th September 2023

**27<sup>TH</sup> SEPT 2023**

Heartfelt thanks to the management of 'KLEF'  
**Dr. K Sarat Kumar**  
Mission Director and Chief of Operations KLSAT, Professor and Director (Research & Development, PR)  
**Dr. K Ch Sri Kavya**  
Chief Technology Officer KLSAT, Professor and Director & Satellite Club students' team

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